

**61. PROFILE ON THE PRODUCTION OF POLISH
(SHOE & FLOOR)**

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I. SUMMARY

This profile envisages the establishment of a plant for the production of polish (shoe and floor) with a capacity of 700 tons per annum. Polishes are substances used to make something smooth or shiny.

The country's requirement of polish is met through import. The present (2012) demand for polish is estimated at 600 tons. The demand for the product is projected to reach 759 tons and 924 tons by the year 2018 and 2023, respectively.

The principal raw materials required are polishing agents, solvents and emulsifiers which have to be imported.

The total investment cost of the project including working capital is estimated at Birr 18.92 million. From the total investment cost the highest share (Birr 12.40 million or 65.55%) is accounted by initial working capital followed by fixed investment cost (4.92 million or 26.01%) and pre operation cost (Birr 1.60 million or 8.03%).

The project is financially viable with an internal rate of return (IRR) of 30.37% and a net present value (NPV) of Birr 25.90 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 generate income for the Government in terms of tax revenue and payroll tax.

II. PRODUCT DESCRIPTION AND APPLICATION

Substance used to make something smooth or shiny. Polishes differ according to their intended use. Among the variety of polishes the most common are shoe and floor polishes.

Shoe polish is a waxy paste or cream used to shine water proof or improve and restore the appearance of leather footwear and products and it is used in both liquid and semi-solid form. Weather inexpensive or high end, all leather shoes require a good polishing to prolong their lives and keep them looking new. Shoe polish consists of waxes and solvents. Shoes polish is

available in a number of colors e.g. black, brown, transparent etc. Liquid polishes are also available where the waxes exist as an emulsion. Shoe polish is not only used on footwear but can also be applied to all leather materials including bags, etc.

Floor polishes are pastes, creams, or lotions used to clean, protect, and shine floor. These products were originally made from natural waxes, which were hard to apply and tended to leave a heavy buildup over time. Today these formulations combine natural waxes and oils with petroleum based ingredients and synthetic polymers.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Past Supply and Present Demand

The demand for polishes is largely met through import. Ethiopia imports a variety of polishes and creams used in different applications. The data source for import statistics i.e. Ethiopian Revenue and Customs Authority classifies import of polishes and creams under the following headings.

- 34051000 – polishes, creams and similar preparations for foot wear or leather;
- 34052000 – polishes, creams and similar preparations for maintenance of wood work; and
- 34053000 –polishes, creams and similar preparations for coachwork (excluding metal).

Among the above four types of polishes and creams imported during the period 2000-2011, only the first two types, which are intended for use in footwear and wood are considered in the analysis of past supply and presented demand. The quantity and value of the two types of polishes and creams imported in the past 12 years covering the period 2000 - 2011 is presented in Table 3.1.

Table 3.1
IMPORT OF POLISHES AND CREAMS

Year	Qty (Tons)	Value ('000 Birr)
2000	382.2	9776
2001	478.8	12,959
2002	393.7	10,825
2003	345.0	86,42
2004	473.4	12,495
2005	586.2	15,312
2006	587.5	19,159
2007	672.3	20,441
2008	661.1	23,482
2009	495.0	25,095
2010	568.0	37,991
2011	442.1	33,313

Source: - Ethiopian Revenues and Customs Authority.

Table 3.1 reveals that import of polishes and creams during the period 2000-2007/08 has been modestly rising. The annual average level of import which was 400 tons during the period 2000 – 2003 has increased to annual average of 580 tones during the years 2004-2007/08. However, during the last recent three years i.e. 2009 – 2011 the mean figure has slightly declined to about 540 tons. Hence, by looking to the historical data the present demand is estimated at about 600 tons.

2. Demand Projection

The factors that affect the demand for shoe and floor polishes are urbanization and urban population growth, and income rise of the urban population. Footwear and floors that require polishing are basically found in the urban areas. Hence, an annual average growth rate of 4% is

taken in forecasting the future demand by linking with urbanization and urban population growth (see Table 3.2).

Table 3.2

PROJECTED DEMAND FOR POLISHES AND CREAMS (TONS)

Year	Projected Demand
2013	624
2014	649
2015	675
2016	702
2017	730
2018	759
2019	790
2020	821
2021	854
2022	888
2023	924

Demand for polishes and creams are forecasted to grow from 624 tons in the year 2013 to 759 tons and 924 tons by the year 2018 and 2023, respectively.

3. Pricing and Distribution

Based on the CIF price of year 2011 and considering other import related costs a factory gate price of Birr 90,422 per ton is recommended.

The product is a consumer item which is to be demanded by most of the middle and high income households. Hence, the product has to reach the final consumer through a two step channel i.e. distributors and retailers.

B. PLANT CAPACITY AND PRODUCTION PROGRAM

1. Plant Capacity

The market study shows that demand for shoe and floor polish increases from 624 tons in the year 2013 to 924 tons in the year 2023. Based on the market study and period required to implement the project and market penetration and technical skill development, the envisaged plant capacity is 700 tons per annum on a single shifts of 8 hours per day and 250 working days per year.

2. Production Program

In order to develop the operators' skill in production and quality control, it is vital to have a gradual capacity buildup. In addition to this, a period is required to penetrate to the market. Hence, it is assumed that the plant will go into full capacity operation in four years' time starting with 70% capacity in the first year and progressively developing to 85%, 95% and 100% in the second, third and fourth year and then after, respectively. The production program of the envisaged plant is given in Table 3.3.

Table 3.3

PRODUCTION PROGRAM

Sr.No.	Item Description	1 st year	2 nd year	3 rd year	4 th -10 th
1	shoe and floor polish (tons)	490	595	665	700
2	Capacity utilization (%)	70	85	95	100

IV. MATERIALS AND INPTUS

A. MATERIALS

The primary ingredients used to prepare polishes are polishing agents, solvents, and emulsifiers. Auxiliary materials include colorant and packing material. The total annual cost of raw material at full capacity operation is estimated at Birr 52,767,600. The annual requirement of raw material and their estimated costs are presented in Table 4.1.

Table 4.1**ANNUAL REQUIREMENT OF RAW AND AUXILIARY MATEIRALS AND COST**

Sr.No.	Item Description	Quantity	Cost ('000 Birr)		
			LC	FC	TC
1	Candle wax	100		6,862.6	6,862.6
2	Charcoal	100		5,080.0	5,080.0
3	Paraffin oil	200		18,725.0	18,725.0
4	Bar soap	100		8,500.0	8,500.0
5	Vegetable oil	200		8,000.0	8,000.0
6	Packing material	2,800,000		5,600.0	5,600.0
	Grand Total			52,767.6	52,767.6

B. UTILITIES

Utilities required are electricity and water. The total annual cost of utilities is estimated at Birr 790,350. The annual quantities and cost of utilities are estimated as shown in Table 4.2.

Table 4.2**ANNUAL UTILITIES REQUIREMENT AND COST**

Sr.No.	Description	Qty	Cost (' 000 Birr)		
			F.C	L.C	Total
1	Electric Power (kWh)	500,600	-	290.35	290.35
2	Water (m ³)	50,000	-	500.00	500.00
	Total			790.35	790.35

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production process

Polish can be manufactured using vats equipped with reasonably powerful heaters and coolers. There is no set method of manufacture although most methods use pressure. The process consists of homogenizing molten waxes and other additives followed by thinning with solvent. This involves heating the wax in high temperatures of up to 85°C. The mixing tanks are typically constructed of stainless steel and are equipped with a jacketed shell that allows steam and cold water to be circulated around the tank. This provides a way to heat and cool the batch without letting it come in contact with external water. The mixing kettle is also configured with temperature controls, and inlet and outlet plumbing for adding ingredients and pumping out the finished product. Heating and mixing continues until the batch is homogeneous at which point cooling is initiated. As the batch cools, other ingredients such as preservatives, dyes, and fragrance are added. When the batch is complete, it is assayed to insure it meets quality control standards for solids, pH, etc. The batch may be pumped to a filling line or stored in tanks until it is ready to be filled.

The semi-solid polish is packed in round tins, while the liquid polish is packed in plastic bottles having sponge pasted caps. Dyes are added and mixed in turpentine oil if it is not a neutral polish. The mixed mass is reduced slowly to 50 °C, and as its viscosity increases, it is poured through a closed funnel into a cooling chamber. The poured mass is allowed to settle slowly, providing uniform distribution.

2. Environmental Impact Assessment

The production process involves simple mixing and packing and as a result it does not have an adverse impact in environment.

B. ENGINEERING

1. Machinery and Equipment

The total cost of machinery and equipment is estimated at Birr 2.5 million, all of which is required in local currency. The list of machinery and equipment required for the envisaged plant is given in Table 5.1.

Table 5.1
LIST OF MACHINERY & EQUIPMENT

Sr. No.	Description	Qty.
1	Reaction vessel with heater, cooler and mixer	2
2	Storage vessel	3
3	Water tank	1
4	Packing machine	1
5	Rota stamping machine	1
6	Weighing balance	1

2. Land, Buildings & Civil Works

The total area required by the project is 800 m², of which 300 m² is built-up area. The cost of building at unit cost of Birr 4,000 per m² is, thus, estimated at Birr 1,200,000.

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 m² 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 m² 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 m². 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 m². 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 m² (see Table 5.2).

Table 5.2

NEW LAND LEASE FLOOR PRICE FOR PLOTS IN ADDIS ABABA

Zone	Level	Floor Price/m²
Central Market District	1 st	1686
	2 nd	1535
	3 rd	1323
	4 th	1085
	5 th	894
Transitional zone	1 st	1035
	2 nd	935
	3 rd	809
	4 th	685
	5 th	555
Expansion zone	1 st	355
	2 nd	299
	3 rd	217
	4 th	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 m² 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 criteria 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 Completion 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 m² 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

Total human resource required is 22 persons. The total annual cost labor is estimated at Birr 538,500. The details of the human resource requirement and the estimated annual labor cost including employees' benefit are given in Table 6.1.

Table 6.1

HUMAN RESOURCE REQUIREMENT AND ESTIMATED LABOR COST(BIRR)

Sr.No.	Item Description	No. of Persons	Monthly Salary	Annual Salary
1	General Manager	1	6,000	72,000
2	Executive Secretary	1	1,500	18,000
3	Production & Technical Head	1	4,000	48,000
4	Accountant	2	3,000	36,000
5	Cashier	1	1,500	18,000
6	Sales man and Purchase officer	2	4,000	48,000
7	Store Keeper	1	2,400	28,800
8	Chemist	1	2,000	24,000
9	Shift supervisor	1	2,000	24,000
10	Operator technician	3	3,600	43,200
11	Assistant Operator technician	3	2,700	32,400
12	Driver	2	1,400	16,800
13	Guard	3	1,800	21,600
	Sub -total	22	35,900	430,800
	Employees benefit (25% of basic salary)		8,975	107,700
	Grand Total		44,875	538,500

B. TRAINING REQUIREMENT

The production of polish is simple and involves simple mixing and does not need any special training.

VII. FINANCIAL ANALYSIS

The financial analysis of the polish 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 local	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 18.92 million (see Table 7.1). From the total investment cost the highest share (Birr 12.40 million or 65.55%) is accounted by initial working capital followed by fixed investment cost (4.92 million or 26.01%) and pre operation cost (Birr 1.60 million or 8.03%).

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	0.11
1.2	Building and civil work	2,000.00	-	1,200.00	6.34
1.3	Machinery and equipment	2,500.00	-	2,500.00	13.21
1.4	Vehicles	450.00	-	900	4.76
1.5	Office furniture and equipment	250.00	-	300	1.59
	Sub total	5,221.28	-	4,921.28	26.01
2	Pre operating cost *		-		
2.1	Pre operating cost	317.50	-	300	1.59
2.2	Interest during construction	1,280.38	-	1,280.38	6.77
	Sub total	1,597.88	-	1,597.88	8.44
3	Working capital **	12,402.32	-	12,402.32	65.55
	Grand Total	19,221.48	-	18,921.48	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 17.74 million. However, only the initial working capital of Birr 12.40 million during the first year of production is assumed be funded through external sources. During the remaining years the working capital requirement will be financed by funds 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 56.51 million (see Table 7.2). The cost of raw material account for 93.38% of the production cost. The other major components of the production cost are financial cost, depreciation and utility which account for 1.87%, 1.47% and 1.40%, respectively. The remaining 3.28% is the share of labor, repair and maintenance, labor overhead and administration cost. For detail production cost see Appendix 7.A.2.

Table 7.2**ANNUAL PRODUCTION COST AT FULL CAPACITY (YEAR FOUR)**

Items	Cost (in 000 Birr)	%
Raw Material and Inputs	52,768	93.38
Utilities	790	1.40
Maintenance and repair	125	0.22
Labor direct	431	0.76
Labor overheads	108	0.19
Administration Costs	150	0.27
Land lease cost	0	0.00
Cost of marketing and distribution	250	0.44
Total Operating Costs	54,621	96.66
Depreciation	829	1.47
Cost of Finance	1,056	1.87
Total Production Cost	56,506	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 ranges from Birr 4.75 million to Birr 5.99 million during the life of the project. Moreover, at the end of the project life the accumulated net cash flow amounts to Birr 60.27 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.

$$\text{Break -Even Sales Value} = \frac{\text{Fixed Cost} + \text{Financial Cost}}{\text{Variable Margin ratio (\%)}} = \text{Birr } 26,583,480$$

$$\text{Break -Even Capacity utilization} = \frac{\text{Break - even Sales Value}}{\text{Sales revenue}} \times 100 = 30\%$$

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 3 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 30.37% 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 principle, 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 25.90 million which is acceptable. For detail discounted cash flow see Appendix 7.A.5.

D. ECONOMIC & SOCIAL BENEFITS

The project can create employment for 22 persons. The project will generate Birr 16.44 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 generate income for the Government in terms of payroll tax.

Appendix 7.A
FINANCIAL ANALYSES SUPPORTING TABLES

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	36,937	44,852	50,129	52,768	52,768	52,768	52,768	52,768	52,768	52,768
Utilities	553	672	751	790	790	790	790	790	790	790
Maintenance and repair	88	106	119	125	125	125	125	125	125	125
Labour direct	302	366	409	431	431	431	431	431	431	431
Labour overheads	75	92	102	108	108	108	108	108	108	108
Administration Costs	105	128	143	150	150	150	150	150	150	150
Land lease cost	0	0	0	0	7	7	7	7	7	7
Cost of marketing and distribution	250	250	250	250	250	250	250	250	250	250
Total Operating Costs	38,310	46,466	51,903	54,621	54,628	54,628	54,628	54,628	54,628	54,628
Depreciation	829	829	829	829	829	105	105	105	105	105
Cost of Finance	0	1,408	1,232	1,056	880	704	528	352	176	0
Total Production Cost	39,139	48,703	53,964	56,506	56,337	55,437	55,261	55,085	54,909	54,733

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	44,306	53,800	60,129	63,294	63,294	63,294	63,294	63,294	63,294	63,294
Less variable costs	38,060	46,216	51,653	54,371	54,371	54,371	54,371	54,371	54,371	54,371
VARIABLE MARGIN	6,246	7,584	8,476	8,923	8,923	8,923	8,923	8,923	8,923	8,923
in % of sales revenue	14.10	14.10	14.10	14.10	14.10	14.10	14.10	14.10	14.10	14.10
Less fixed costs	1,079	1,079	1,079	1,079	1,085	362	362	362	362	362
OPERATIONAL MARGIN	5,167	6,506	7,398	7,844	7,837	8,561	8,561	8,561	8,561	8,561
in % of sales revenue	11.66	12.09	12.30	12.39	12.38	13.53	13.53	13.53	13.53	13.53
Financial costs		1,408	1,232	1,056	880	704	528	352	176	0
GROSS PROFIT	5,167	5,097	6,165	6,788	6,957	7,857	8,033	8,209	8,385	8,561
in % of sales revenue	11.66	9.47	10.25	10.72	10.99	12.41	12.69	12.97	13.25	13.53
Income (corporate) tax	0	0	0	2,036	2,087	2,357	2,410	2,463	2,515	2,568
NET PROFIT	5,167	5,097	6,165	4,751	4,870	5,500	5,623	5,746	5,869	5,992
in % of sales revenue	11.66	9.47	10.25	7.51	7.69	8.69	8.88	9.08	9.27	9.47

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	5,889	58,021	53,807	60,134	63,294	63,294	63,294	63,294	63,294	63,294	63,294	20,211
Inflow funds	5,889	13,715	7	5	0	0	0	0	0	0	0	0
Inflow operation	0	44,306	53,800	60,129	63,294	63,294	63,294	63,294	63,294	63,294	63,294	0
Other income	0	0	0	0	0	0	0	0	0	0	0	20,211
TOTAL CASH OUTFLOW	5,889	52,025	52,295	56,669	60,361	59,357	59,450	59,327	59,203	59,080	57,197	0
Increase in fixed assets	5,889	0	0	0	0	0	0	0	0	0	0	0
Increase in current assets	0	12,435	2,660	1,773	887	1	0	0	0	0	0	0
Operating costs	0	38,060	46,216	51,653	54,371	54,378	54,378	54,378	54,378	54,378	54,378	0
Marketing and Distribution cost	0	250	250	250	250	250	250	250	250	250	250	0
Income tax	0	0	0	0	2,036	2,087	2,357	2,410	2,463	2,515	2,568	0
Financial costs	0	1,280	1,408	1,232	1,056	880	704	528	352	176	0	0
Loan repayment	0	0	1,761	1,761	1,761	1,761	1,761	1,761	1,761	1,761	0	0
SURPLUS (DEFICIT)	0	5,996	1,512	3,464	2,933	3,937	3,844	3,967	4,091	4,214	6,097	20,211
CUMULATIVE CASH BALANCE	0	5,996	7,508	10,973	13,905	17,842	21,687	25,654	29,744	33,958	40,056	60,267

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	44,306	53,800	60,129	63,294	63,294	63,294	63,294	63,294	63,294	63,294	20,211
Inflow operation	0	44,306	53,800	60,129	63,294	63,294	63,294	63,294	63,294	63,294	63,294	0
Other income	0	0	0	0	0	0	0	0	0	0	0	20,211
TOTAL CASH OUTFLOW	18,291	40,963	48,235	52,787	56,658	56,715	56,985	57,038	57,091	57,144	57,197	0
Increase in fixed assets	5,889	0	0	0	0	0	0	0	0	0	0	0
Increase in net working capital	12,402	2,653	1,769	884	1	0	0	0	0	0	0	0
Operating costs	0	38,060	46,216	51,653	54,371	54,378	54,378	54,378	54,378	54,378	54,378	0
Marketing and Distribution cost	0	250	250	250	250	250	250	250	250	250	250	0
Income (corporate) tax		0	0	0	2,036	2,087	2,357	2,410	2,463	2,515	2,568	0
NET CASH FLOW	-18,291	3,343	5,565	7,342	6,636	6,579	6,309	6,256	6,203	6,150	6,097	20,211
CUMULATIVE NET CASH FLOW	-18,291	14,948	-9,383	-2,041	4,594	11,173	17,482	23,738	29,941	36,091	42,189	62,400
Net present value	-18,291	3,039	4,600	5,516	4,532	4,085	3,561	3,210	2,894	2,608	2,351	7,792
Cumulative net present value	-18,291	15,252	-10,653	-5,137	-604	3,480	7,041	10,252	13,146	15,754	18,105	25,897

NET PRESENT VALUE 25,897
INTERNAL RATE OF RETURN 30.37%
NORMAL PAYBACK 3 years