

**188. PROFILE ON THE PRODUCTION OF SLIDING
DOORS AND FOLDING GATES**

TABLE OF CONTENTS

		<u>PAGE</u>
I.	SUMMARY	188-2
II.	PRODUCT DESCRIPTION & APPLICATION	188-3
III.	MARKET STUDY AND PLANT CAPACITY	188-3
	A. MARKET STUDY	188-3
	B. PLANT CAPACITY & PRODUCTION PROGRAMME	188-5
IV.	MATERIALS AND INPUTS	188-6
	A. RAW & AUXILIARY MATERIALS	188-6
	B. UTILITIES	188-7
V.	TECHNOLOGY & ENGINEERING	188-7
	A. TECHNOLOGY	188-7
	B. ENGINEERING	188-8
VI.	HUMAN RESOURCE & TRAINING REQUIREMENT	188-12
	A. HUMAN RESOURCE REQUIREMENT	188-12
	B. TRAINING REQUIREMENT	188-12
VII.	FINANCIAL ANALYSIS	188-13
	A. TOTAL INITIAL INVESTMENT COST	188-13
	B. PRODUCTION COST	188-14
	C. FINANCIAL EVALUATION	188-15
	D. ECONOMIC AND SOCIAL BENEFITS	188-17

I. SUMMARY

This profile envisages the establishment of a plant for the production of folding gates and sliding doors with a capacity of 26,950 m² per annum. Folding gates and sliding doors are fabricated items made of steel products like angle, channels, flat plates and other steel profiles. These types of doors are pushed or pulled for opening and closing.

The demand for folding gates and sliding doors is met through both local production and import. The present (2012) demand for folding gates and sliding doors is estimated at 80,215 m². The demand for folding gates and sliding doors is projected to reach 97,594 m² and 118,738 m² by the year 2017 and 2022, respectively.

The principal raw materials required are rectangular steel pipes, angle, channel of different sizes, mild steel rods, strips, pipes, sheets, etc. of different sizes, fasteners, rollers, bearings, handle. All the principal raw materials have to be directly imported or to purchase from importers. Some of the inputs can be obtained from local manufacturers.

The total investment cost of the project including working capital is estimated at Birr 5.38 million. From the total investment cost the highest share (Birr 3.48 million or 64.75%) is accounted by fixed investment cost followed by fixed initial working capital (Birr 1.17 million or 21.76%) and pre operation cost (Birr 726.71 thousand or 13.50%).

The project is financially viable with an internal rate of return (IRR) of 35.62% and a net present value (NPV) of Birr 7.21 million discounted at 10%.

The project can create employment for 21 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 backward linkage with the metal sub sector and forward linkage with the construction sub sector and also generates income for the Government in terms of tax revenue and payroll tax.

II. PRODUCT DESCRIPTION AND APPLICATION

Folding gates and sliding doors are fabricated items made of steel products like angle, channels, flat plates and other steel profiles. Sliding doors are made of flat mild steel parts machined at the top and bottom which provide a sliding motion when it moves on fixed rails. These types of doors are pushed or pulled for opening and closing.

Sliding doors, folding gates and other steel products have good mechanical properties like strength, resistance for load, etc. Sliding doors and folding gates are widely used for building constructions or housing activities.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Past Supply and Present Demand

Sliding doors and folding gates are items required for the houses that are anticipated to be used for business purpose. Hence, their consumption is interrelated with cities plan of construction of houses. Although there are some metal workshops in the country that supply a limited amount of sliding doors, the major sources of supply of sliding doors and folding gates to the domestic market are imports. However, the Ethiopian Customs Authority External Trade Statistics doesn't report imports of sliding doors and folding gates separately. Hence, available data on the end users of the products are considered in determining the demand for the products.

The major users of sliding doors and folding gates include one or more storied housing units, commercial and industrial buildings. According to the 2007 Population and Housing Census, one or more storied housing units accounted for 16,668 units (2.65%) of all the housing units in Addis Ababa in year 2007. Moreover, according to the Report on Distributive and Service Trade Survey (CSA, 2003), the number of commercial enterprises and hence commercial buildings in Addis Ababa was 63,784 in year 2001/02. Taking into account the recent developments in modern housing construction in the country in general and in Addis Ababa in particular, the proportion of one or more storied housing units is estimated to have risen to 5.3% (i.e. it has

doubled since 2007). According to the UNDP report in 1996, the annual average growth rate of business ventures was estimated to be 4% (UNDP, 1996), and assuming that this annual average growth rate is the same, it has been used for this study.

In addition to the above estimates, the following assumptions are made in the current demand for sliding doors and folding gates.

- About 25% of the one or more storied housing units use one sliding door and folding gate each.
- Each business unit uses at least two sliding doors and folding gates.

On the base year housing data of 2007 and the above stated 4% growth rate on the base year commercial enterprises data of 2001/02 and adopting expert estimate of an average area of 19.25 meter square for sliding doors and folding gates weighing, on the average, 300 kg., the current effective demand (for 2011) for sliding doors and folding gates in Addis Ababa City Administration is estimated at 80,215 m²

2. Projected Demand

Making use of the above stated assumptions and estimates and using the annual growth rate 4% the projected demand for sliding doors and folding gates is given in Table 3.1.

Table 3.1

PROJECTED DEMAND FOR SLIDING DOORS AND FOLDING GATES

Year	Quantity m²
2013	83,434
2014	86,761
2015	90,231
2016	93,840
2017	97,594
2018	101,498
2019	105,558
2020	109,780
2021	114,171
2022	118,738
2023	123,488
2024	128,428
2025	133,565

As could be seen from the Table 3.1 the demand for folding gates and sliding doors is expected to grow from 83,434 m² in year 2013 to 109,780 m²-and133,565 m² by the year 2020 and 2025, respectively. This is a satisfactory volume of market to recommend the establishment of sliding doors and folding gates manufacturing plant.

3. Pricing and Distribution

According the information obtained from to some selected shops that sell the product, the current average price of sliding doors and folding gates in Addis Ababa ranges from Birr 1,800 to Birr 2,500, including the accessories and labor cost per meter square. Since this price is the price for imported product, Birr 1,250 is proposed for the products of the new plant.

Regarding distribution, the product can get its market outlet through direct sales to customers that include individuals and contractors.

B. PLANT CAPACITY AND PRODUCTION PROGRAMME

1. Plant Capacity

Taking into consideration about 30% share of the year 2014 projected demand, the capacity of the envisaged project is 26,950 m² of sliding doors and folding gates per 300 days and single shift per day. The production capacity can be increased by increasing the number of shifts.

2. Production Programme

The production programme is indicated in Table 3.2. At the initial stage of production, the project requires some years to penetrate the market. Therefore, in the first and second year of production the capacity utilization rate will be 75% and 90%, respectively. In the third year and onwards, full capacity production shall be attained.

Table 3.2**ANNUAL PRODUCTION PROGRAMME**

Product	Production Year		
	1	2	3--15
Sliding doors and folding gates (m ²)	20,213	24,255	26,950
Capacity utilization rate (%)	75	90	100

IV. RAW MATERIALS AND INPUTS**A. RAW MATERIALS**

The major raw materials required for the production of sliding doors & folding gates are:

- Rectangular steel pipes, angle, channel of different sizes,
- Mild steel rods, strips, pipes, sheets, etc. of different sizes,
- Fasteners, rollers, bearings, handle & others, and
- Consumables like welding rod, cotton waste, lubricants, emery paper, paints, putty, antirust, grinding discs, etc.

The total cost of raw materials is estimated at Birr 5,787,104. The type of raw materials by quantity and their cost at full capacity operation are indicated in Table 4.1.

Table 4.1**RAW MATERIALS REQUIREMENT AND COST**

Sr. No.	Raw Material	Qty (tones)	Cost ('000 Birr)
1	Rectangular pipes, angle, channels of different sizes	115	3,552.5
2	Rods, strips, sheets, etc of different size	115	2,070.0
3	Fasteners, rollers, handles and other hard wares	25	119.6
4	Welding rod, cotton waste, lubricants, emery papers, etc.	5	45.0
	Total		5,787.1

B. UTILITIES

Electricity and water are the principal utilities of the project. Annual cost of utilities is Birr 56,535. The annual utility requirement and cost at full capacity operation are indicated in Table 4.2.

Table 4.2
UTILITIES REQUIREMENT AND COST

Sr. No.	Utility	Qty	Cost ('000 Birr)
1	Electricity (kWh)	84,000	48.535
2	Water (m3)	800	8.000
	Total		56.535

VI. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

Manufacturing process of sliding doors and folding gates involve the following stages.

- Pipes, angles, channels, sheets, plates, strips, etc. are cut to the required size.
- The component parts are fixed and take the desired shape as per the design of the doors and gates. Machining may take place whenever necessary.
- Washing and other finishing jobs shall be carried out at final stages.

2. Environmental Impact

The production process does not have any negative impact on the environment.

B. ENGINEERING

1. Machinery and Equipment

The total cost of machinery is estimated at Birr 815,000. The list of machinery and equipment required by the envisaged project is indicated in Table 5.1.

Table 5.1

LIST OF MACHINERY AND EQUIPMENT

Sr. No.	Description	Qty
1	Centre lathe, head length 1000 mm, center height 202 mm	2
2	Bench grinder, wheel size 150 x 20 x 15.9	1
3	Bench drilling machine, \square 13 mm	1
4	Hand grinder, disc \square 125 mm	1
5	Pillar drilling machine, \square 25 mm	1
6	Spot welding, of 7.5 kV, air cooled	1
7	Gas welding, complete with accessories	2 set
8	Arc welding machines 300-500 amps	3
9	Air compressor and paint spraying equipment (50 lt)	1
10	Shearing machine	1
11	Hacksaw machine	1
12	Riveting press	1
13	Hand drilling machine	1
14	Tools and other small gadgets	set

2. Land, Building and Civil works

The total land required by the project is about 800 m², of which 300 m² is built-up area. The cost of building and civil works is estimated at Birr 1,500,000.

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

Zone	Level	Floor price/m²
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 & TRAINING REQUIREMENT

1. HUMAN RESOURCE REQUIREMENT

The plant requires 21 persons. The total annual labour cost is estimated at Birr 229,500. The list of human resource and annual labour cost is indicated in Table 6.1.

Table 6.1

LIST OF MANPOWER AND REQUIREMENT LABOUR COST

Sr. No.	Manpower	Req. No.	Monthly Salary (Birr)	Annually Salary (Birr)
1.	General manager	1	4000	48,000
2.	Secretary cashier	1	1200	14,400
3.	Welders	5	9,000	108,000
4.	Machinist	2	4,000	36,000
5.	Helpers	7	5,250	63,000
6.	Labourers	3	1,650	19,800
7.	Guards	2	1,100	13,200
	Sub Total	21	26200	302,400
	Benefit (25% basic salary)		6550	75,600
	Grand Total		32750	378,000

B. TRAINING REQUIREMENT

Currently, government, private and other institutions are training several students on metal work and general mechanic. Therefore, the cost of training is practically negligible.

VII. FINANCIAL ANALYSIS

The financial analysis of the folding gates and sliding doors 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	5 years
Bank interest	10%
Discount cash flow	10%
Accounts receivable	30 days
Raw material local	30 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 5.38 million (See Table 7.1). From the total investment cost the highest share (Birr 3.48 million or 64.75%) is accounted by investment cost followed by fixed initial working capital (Birr 1.17 million or 21.76%) and pre operation cost (Birr 726.71 thousand or 13.50%). No foreign currency is required.

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	0.40
1.2	Building and civil work	1,500.00	-	1,500.00	27.86
1.3	Machinery and equipment	815.00	-	815.00	15.14
1.4	Vehicles	900.00	-	900.00	16.71
1.5	Office furniture and equipment	250.00	-	250.00	4.64
	Sub total	3,486.28	-	3,486.28	64.75
2	Pre operating cost *				
2.1	Pre operating cost	374.45	-	374.45	6.95
2.2	Interest during construction	352.26	-	352.26	6.54
	Sub total	726.71	-	726.71	13.50
3	Working capital **	1,171.58	-	1,171.58	21.76
	Grand Total	5,384.57	-	5,384.57	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 1.66 million. However, only the initial working capital of Birr 1.17 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 6.60 million (see Table 7.2). The cost of raw material account for 72.46% of the production cost. The other major components of the production cost are depreciation, financial cost and direct labor which account for 7.61%, 4.57% and 4.40%, respectively. The remaining 5.66% 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	4,787.00	72.46
Utilities	57.00	0.86
Maintenance and repair	41.00	0.62
Labour direct	302.00	4.57
Labour overheads	76.00	1.15
Administration Costs	200.00	3.03
Land lease cost	-	-
Cost of marketing and distribution	350.00	5.30
Total Operating Costs	5,813.00	87.99
Depreciation	502.89	7.61
Cost of Finance	290.62	4.40
Total Production Cost	6,606.51	100

C. FINANCIAL EVALUATION**1. Profitability**

Based on the projected profit and loss statement, the project will generate a profit through out its operation life. Annual net profit after tax will grow from Birr 937 thousand to Birr 1.48 million during the life of the project. Moreover, at the end of the project life the accumulated net cash flow amounts to Birr 15 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.

$$\text{Break Even Sales Value} = \frac{\text{Fixed Cost} + \text{Financial Cost}}{\text{Variable Margin ratio (\%)}} = \text{Birr } 2,674,401$$

$$\text{Break Even Capacity utilization} = \frac{\text{Break even Sales Value}}{\text{Sales revenue}} \times 100 = 33\%$$

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 2 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 35.62% 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 7.21 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 21 persons. The project will generate Birr 3.89 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 backward linkage with the metal sub sector and forward linkage with the construction sub sector and also generates other income for the Government.

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	3,351	3,830	4,308	4,787	4,787	4,787	4,787	4,787	4,787	4,787
Utilities	40	46	51	57	57	57	57	57	57	57
Maintenance and repair	29	33	37	41	41	41	41	41	41	41
Labour direct	211	242	272	302	302	302	302	302	302	302
Labour overheads	53	61	68	76	76	76	76	76	76	76
Administration Costs	140	160	180	200	200	200	200	200	200	200
Land lease cost	0	0	0	0	7	7	7	7	7	7
Cost of marketing and distribution	350	350	350	350	350	350	350	350	350	350
Total Operating Costs	4,174	4,720	5,267	5,813	5,820	5,820	5,820	5,820	5,820	5,820
Depreciation	503	503	503	503	503	85	85	85	85	85
Cost of Finance	0	387	339	291	242	194	145	97	48	0
Total Production Cost	4,677	5,611	6,109	6,607	6,565	6,099	6,050	6,002	5,953	5,905

Appendix 7.A.3
NET 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	5,614	7,219	8,021	8,021	8,021	8,021	8,021	8,021	8,021	8,021
Less variable costs	3,824	4,370	4,917	5,463	5,463	5,463	5,463	5,463	5,463	5,463
VARIABLE MARGIN	1,790	2,849	3,104	2,558	2,558	2,558	2,558	2,558	2,558	2,558
in % of sales revenue	31.89	39.46	38.70	31.89	31.89	31.89	31.89	31.89	31.89	31.89
Less fixed costs	853	853	853	853	860	442	442	442	442	442
OPERATIONAL MARGIN	937	1,996	2,251	1,705	1,698	2,116	2,116	2,116	2,116	2,116
in % of sales revenue	16.69	27.65	28.07	21.26	21.17	26.38	26.38	26.38	26.38	26.38
Financial costs		387	339	291	242	194	145	97	48	0
GROSS PROFIT	937	1,608	1,912	1,414	1,456	1,922	1,971	2,019	2,068	2,116
in % of sales revenue	16.69	22.28	23.84	17.63	18.15	23.97	24.57	25.17	25.78	26.38
Income (corporate) tax	0	0	0	424	437	577	591	606	620	635
NET PROFIT	937	1,608	1,912	990	1,019	1,346	1,380	1,413	1,447	1,481
in % of sales revenue	16.69	22.28	23.84	12.34	12.71	16.78	17.20	17.62	18.04	18.47

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	3,861	7,158	7,222	8,024	8,021	8,021	8,021	8,021	8,021	8,021	8,021	2,935
Inflow funds	3,861	1,544	3	3	0	0	0	0	0	0	0	0
Inflow operation	0	5,614	7,219	8,021	8,021	8,021	8,021	8,021	8,021	8,021	8,021	0
Other income	0	0	0	0	0	0	0	0	0	0	0	2,935
TOTAL CASH OUTFLOW	3,861	5,718	5,758	6,256	7,178	6,984	7,075	7,041	7,007	6,973	6,455	0
Increase in fixed assets	3,861	0	0	0	0	0	0	0	0	0	0	0
Increase in current assets	0	1,192	166	166	166	1	0	0	0	0	0	0
Operating costs	0	3,824	4,370	4,917	5,463	5,470	5,470	5,470	5,470	5,470	5,470	0
Marketing and Distribution cost	0	350	350	350	350	350	350	350	350	350	350	0
Income tax	0	0	0	0	424	437	577	591	606	620	635	0
Financial costs	0	352	387	339	291	242	194	145	97	48	0	0
Loan repayment	0	0	484	484	484	484	484	484	484	484	0	0
SURPLUS (DEFICIT)	0	1,440	1,464	1,768	843	1,037	946	980	1,014	1,048	1,566	2,935
CUMULATIVE CASH BALANCE	0	1,440	2,904	4,671	5,514	6,551	7,497	8,478	9,492	10,540	12,106	15,041

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	5,614	7,219	8,021	8,021	8,021	8,021	8,021	8,021	8,021	8,021	2,935
Inflow operation	0	5,614	7,219	8,021	8,021	8,021	8,021	8,021	8,021	8,021	8,021	0
Other income	0	0	0	0	0	0	0	0	0	0	0	2,935
TOTAL CASH OUTFLOW	5,032	4,337	4,884	5,430	6,238	6,257	6,397	6,411	6,426	6,440	6,455	0
Increase in fixed assets	3,861	0	0	0	0	0	0	0	0	0	0	0
Increase in net working capital	1,172	163	163	163	1	0	0	0	0	0	0	0
Operating costs	0	3,824	4,370	4,917	5,463	5,470	5,470	5,470	5,470	5,470	5,470	0
Marketing and Distribution cost	0	350	350	350	350	350	350	350	350	350	350	0
Income (corporate) tax		0	0	0	424	437	577	591	606	620	635	0
NET CASH FLOW	-5,032	1,277	2,335	2,591	1,783	1,764	1,624	1,610	1,595	1,581	1,566	2,935
CUMULATIVE NET CASH FLOW	-5,032	-3,755	-1,420	1,171	2,954	4,718	6,343	7,953	9,548	11,129	12,695	15,631
Net present value	-5,032	1,161	1,930	1,947	1,218	1,095	917	826	744	670	604	1,132
Cumulative net present value	-5,032	-3,871	-1,941	5	1,223	2,319	3,236	4,062	4,806	5,476	6,080	7,212

NET PRESENT VALUE 7,212
INTERNAL RATE OF RETURN 35.62%
NORMAL PAYBACK 2 years