PROFILE ON THE PRODUCTION OF INDUSTRIAL CANVAS

Table of Contents

I. SUMMARY

This profile envisages the establishment of a plant for the production of industrial canvas with a capacity of 200 tons per annum. Industrial canvas is used to manufacture tents, sacks, bags, tarpaulins, sails, temporary coverings and other similar articles.

The demand for industrial canvas is met through import. The present (2012) demand for industrial canvas is estimated at 762 tons. The demand for industrial canvas is projected to reach 1,227 tons and 1,976 tons by the year 2017 and 2022, respectively.

The principal raw material required is cotton which is available locally.

The total investment cost of the project including working capital is estimated at Birr 59.31 million. From the total investment cost the highest share (Birr 51.26 million or 86.42%) is accounted by fixed investment cost followed by pre operation cost (Birr 5.38 million or 9.07%) and initial working capital (Birr 2.67 million or 4.51%). From the total investment cost Birr 33.53 million or 56.54% is required in foreign currency.

The project is financially viable with an internal rate of return (IRR) of 20.95% and a net present value (NPV) of Birr 29.82 million, discounted at 10%.

The project can create employment for 28 persons. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports. The project will create backward linkage with agricultural sector forward linkage with the textile manufacturing subsector and also generates income for the Government in terms of tax revenue and payroll tax.

II. PRODUCT DESCRIPTION AND APPLICATION

Industrial canvas is a coarse cloth made of cotton or other fibrous materials. The product is used to manufacture tents, sacks, bags, tarpaulins, sails, temporary coverings and other similar articles. Fiber processing for manufacturing industrial canvas is much the same as for lighter textiles, but due to the yarn count, the spinning and weaving machines are heavier and stronger and operate at a lower speed. The operation (mercerizing, washing, bleaching, dyeing, etc) can be performed in the same production line as other textiles.

Industrial canvas made of cotton or hemp are the best since the fiber from which they are made more durable and comfortable than synthetic products for the same application.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Past Supply and Present Demand

Canvas based products such as bags, tents and camping goods and trunks constitute the major users of canvas fabrics. Currently, the demand for canvas fabrics is met through imports and hence import data is used in estimating the demand for the product. The amount of imports of the product during 2002 - 2011 is shown in Table 3.1

Table 1.1

IMPORT OF CANVAS FABRICS (TONS)

Year	Quantity
2002	255.10
2003	126.30
2004	206.01
2005	279.17
2006	304.10
2007	385.00
2008	1172.73
2009	900.12
2010	323.12
2011	375.00
Average	**432.67**

Source: *Ethiopian Revenues & Customs Authority.*

As could be seen from Table 3.1, import of canvas fabric fluctuates from year to year. During this period, imports of canvas fabrics varied from 126.3 tons in 2003 to 1,172.73 tons in 2008. However, it exhibited a rising trend with average annual growth rate of 24.11% during 2002--2011. The increasing trend could be easily seen when the data set is analyzed by grouping in to different periods. During the period 2002---2005, the yearly average level of import was about 216 tons. In the following two years i.e. 2006-2007, it increased to annual average of 345 tones. a huge increase of import is registered during year 2008 & year 2009, which amount to a yearly average of 1,036 tones , although it decreased to about 350 tones during the last two years of the data set.

To determine the present unsatisfied demand for canvas fabrics, recent four years average import of the product which is 692 tones, is first assumed to reflect the demand for the year 2011. Then, a modest estimate of average annual growth rate of 10% is applied to arrive at the current (year 2012) unsatisfied demand for the product. Thus, the current unsatisfied demand for the product is estimated at 762 ton.

2. Projected Demand

It is clearly indicated that the entire demand for the product is met through import. The demand for the product is expected to grow with population and income. Based on the significant annual population and economic growth and import of the product (24.11%) observed during 2002-2011, a modest estimate of average annual growth rate of 10% is assumed in projecting the future demand for canvas fabrics. The projected demand for the product is depicted in Table 3.2.

Table 3.2

PROJECTED DEMAND OF CANVAS FABRICS (TONS)

Year	Quantity
2013	838
2014	922
2015	1,014
2016	1,115
2017	1,227
2018	1,350

2019	1,484
2020	1,633
2021	1,796
2022	1,976

Demand for canvas fabrics will increase from 838 tons in the year 2013 to 1,350 tones and 1,976 tones in the year 2018 and year 2022, respectively.

3. Pricing and Distribution

Based on the CIF price of canvas fabrics and allowing for import duty and other clearing expensed, the factory gate price for the envisaged plant is estimated at Birr 139,210 per ton.

The envisaged plant can use the existing textile materials wholesale and retail channel to distribute its product.

B. PLANT CAPACITY & PRODUCTION PROGRAM

1. Plant Capacity

Based on the demand figures and available technological facilities, it is proposed that the canvas fabrics manufacturing plant will have annual production capacity of 200 tones. This is equivalent to 400,000 m^2 of canvas fabrics. Assuming that the width of the canvas fabric is 1.5 m, the plant will produce about 266,667 meters of canvas fabrics. The plant will operate single shift 8 hours a day and for 300 days a year.

2. Production Program

Production will normally start at a lower level of plant capacity since time is required for production workers to master the skill of operation of production equipment, and for the plant to establish potential market outlets. In view of this, the plant will start operation at 75% of its installed capacity at the first year of operation, and then production will rise to 85% and finally to 100% or full capacity during the 2^{nd} and 3^{rd} year and then after, respectively. Production build-up program together with corresponding capacity utilization is shown in Table 3.3.

Table 3.3

ANNUAL PRODUCTION PROGRAM

Year	1	2	3 and above
Capacity utilization (%)	75	85	100
Production a) In tone b) In M^2	 150 300,000	 170 340,000	 200 400,000

IV. MATERIALS AND INPUTS

A. RAW MATERIAL

The major raw material considered for the production of canvas fabrics is cotton. The proposed cloth is made of woven cotton starting from bales of cotton, so that the cotton is the only required raw material. The yield of cloth is assumed to be 90% by weight of cotton supplied as an input. The canvas fabric has an average weight of 500 gm/m^2. Thus, the weight of cotton required to produce 400,000 m^2 of canvas fabric will be: (0.5 x 400,000) /0.9 or 222.22 tones. The raw material will be procured from local markets and annual cost is estimated at Birr 9,688,800. For details of raw material requirement at full capacity operation see Table 4.1.

Table 4.1

RAW MATERIAL REQUIREMENT AND COST

No.	Description	Qty	Cost ('000 Birr)		
			LC	FC	TC
1	Raw Cotton (tone)	222.22	8888.8	-	8888.8

2	Costs associated with raw material	-	800.0	-	800.0
	Total	**-**	**9688.8**	**-**	**9,688.8**

B. UTILITIES

Utilities required consist of electricity, water, steam, fuel oil, oil and lubricants. Annual requirement of these items and related costs at full capacity production is Birr 462,550.00, as shown in Table 4.2.

Table 4.2
ANNUAL REQUIREMENTS OF UTILITIES AND COST

No.	Description	Annual Consumption	Unit	Unit Cost (Birr)	Total Cost ("000 Birr)
1	Electricity (kWh)	275,000	kWh	0.65	178.75
2	Water (M3)	15,000	m^3	10.00	150.00
3	Fuel oil (liters)	5,000	ltr	25.00	125.00
4	Oils and lubricants (kg)	120	kg	-	8.80
Total Annual cost					**462.55**

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

The project takes into consideration all the process steps from cotton bale plucking to the woven fabric. Other operations such mercerizing, bleaching, dyeing or impregnation are presumed as being carried out in other textile factories residing in Addis.

In connection with the high strength required, the classic ring spinning in the carded system is suggested and no combing machine is included. Consequently the production process consists of the following unit operations:

- Yarn Spinning
- Thread preparation
- Cloth preparation

a) Yarn spinning: - This unit operation consists of the following sub processes:

- Bale plucking
- Fibers beating and cleaning
- Carding
- Multiple coupling and drawing
- Roving frame
- Ring spinning frame

b) Thread Preparation: - The preparation of thread can be carried out through the following sub processes:

- Cone winding
- Double winding
- Double twist frames

c) Cloth preparation: - Cloth is prepared by carrying out weaving operations.

It is to be noted here that the warp preparation as well as the finishing or dyeing treatment are presumed as being accomplished in other Textile Factories, as the installation of new machinery for such a small capacity is not economically viable.

2. Environmental Impact Assessment

The technology of production of industrial canvas based on cotton does not have an adverse environmental impact.

B. ENGINEERING

1. Machinery and Equipment

The total cost of machinery and equipment is estimated at Birr 41,564,390.00 out of which Birr 33,534,250.00 is required in foreign currency. The list of machinery and equipment required is shown in Table 5.1.

Table 5.1

LIST OF PLANT MACHINERY & EQUIPMENT

S/N	Description	Qty
1	Spinning department	1
	a) Bale puckers	2
	b) Cleaning and beating units	1
	c) Carding machine	1
	d) First draw frame	1
	e) Second draw frame	1
	f) Roving frame	1
	g) Spinning frame	1
2	Thread preparation room	1
	a) Automatic cone winder fitted with 48	2
	b) Doubling winders with 24 spindles	2
	c) Twisters with spindles	1
3	Loom department	-
	a) Rapier weaving machine (in 1900mm	2
	b) Loom, fitted with a dobby system for	1
4	Auxiliary units	3
	a) Air conditioning units for winding,	2
	b) Compressed air system (one stand-by)	Set
	c) Anti-fine system of sprinkler type	Set
	d) Boiler	1

Note:-*The finishing treatments may include scorching, mercerizing, bleaching, drying, dyeing, water proofing and packaging. All these treatments may be carried out in other textile factory. All these treatments are evaluated at a cost ranging from Birr 50 to Birr 60 per meter sq.*

2. Land, Building and Civil Works

The total land area required for the envisaged plant is estimated at about 3,500 m^2. The total built-up area will be Birr 2,000 m^2, and at the rate of Birr 4,500 per m^2, the total cost of building will be Birr 9 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 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 m^2 is estimated at Birr 931,000 of which 10% or Birr 93,100 will be paid in advance. The remaining Birr 837,900 will be paid in equal installments with in 28 years i.e. Birr 29,925 annually.

NB: The land issue in the above statement narrates or shows only Addis Ababa's city administration land lease price, policy and regulations.

Accordingly the project profile prepared based on the land lease price of Addis Ababa region.

To know land lease price, police and regulation of other regional state of the country updated information is available at Ethiopian Investment Agency's website www.eia.gov.et on the factor cost.

VI. HUMAN RESOURCE AND TRAINING REQUIREMENT

A. HUMAN RESOURCE REQUIREMENT

The total human resource requirement of the plant is estimated to be 28. The total annual cost of man power is estimated at Birr 586,500. The human resource list and salary costs are shown in Table 6.1.

Table 6.1

HUMAN RESOURCE REQUIREMENT AND LABOR COST

S/N	Description	No.	Monthly salary (Birr)	Annual Salary (Birr)
1	General manager	1	6,000	72,000
2	Executive secretary	1	2,000	24,000
3	Accountant	2	5,000	60,000
4	Casher	1	900	10800
5	Purchasing and sales	2	5,000	60,000
6	Personnel	1	2,000	24,000
7	Production and technical	1	3,000	36,000
8	Supervisor	1	2,000	24,000
9	Operator technician	4	4,800	57,600
10	Assistant operator	4	3,600	43,200
11	Messenger and cleaner	4	1,600	19,200
12	Guard	4	1,600	19,200
13	Driver	2	1,600	19,200
	Sub total	**28**	**39,100**	**469,200**
	Employees benefit (25%		9,775	117,300
	Grand Total		**48,875**	**586,500**

B. TRAINING REQUIREMENT

The production process is simple and does not require special training except basic orientation during plant erection and commissioning.

VII. FINANCIAL ANALYSIS

The financial analysis of the industrial canvas 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
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 59.31 million (see Table 7.1). From the total investment cost the highest share (Birr 51.26 million or 86.42%) is accounted by fixed investment cost followed by pre operation cost (Birr 5.38 million or 9.07%) and initial working capital (Birr 2.67 million or 4.51%). From the total investment cost Birr 33.53 million or 56.540% 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	93.10		93.10	0.16
1.2	Building and civil work	9,000.00		9,000.00	15.17
1.3	Machinery and equipment	8,030.14	33,534.25	41,564.39	70.08
1.4	Vehicles	450.00		450.00	0.76
1.5	Office furniture and equipment	150.00		150.00	0.25
	Sub total	**17,723.24**	**33,534.25**	**51,257.49**	**86.42**
2	**Pre operating cost ***				
2.1	Pre operating cost	1,496.93		1,496.93	2.52
2.2	Interest during construction	3,880.08		3,880.08	6.54
	Sub total	**5,377.01**		**5,377.01**	**9.07**
3	**Working capital ****	**2,675.27**		**2,675.27**	**4.51**
	Grand Total	**25,775.51**	**33,534.25**	**59,309.76**	**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 3.51 million. However, only the initial working capital of Birr 2.67 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 25.20 million (see Table 7.2). The cost of raw material account for 38.45% of the production cost. The other major components of the production cost are depreciation, financial cost, repair and maintenance and labor which account for 36.03%, 14.82%, 4.95%, and 1.86% respectively. The remaining 3.89%

is the share of utility, cost of marketing and distribution, labor 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	9,689	38.45
Utilities	463	1.84
Maintenance and repair	1,247	4.95
Labor direct	469	1.86
Labor overheads	117	0.46
Administration Costs	150	0.60
Land lease cost	0	0.00
Cost of marketing and distribution	250	0.99
Total Operating Costs	**12,385**	**49.15**
Depreciation	9,077	36.03
Cost of Finance	3,735	14.82
Total Production Cost	**25,197**	**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 3.68 million to Birr 10.54 million during the life of the project. Moreover, at the end of the project life the accumulated net cash flow amounts to Birr 78.86 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.

$$\text{Break-Even Sales Value} = \frac{\text{Fixed Cost + Financial Cost}}{\text{Variable Margin ratio (\%)}} = \text{Birr } 11{,}694{,}000$$

$$\text{Break -Even Capacity utilization} = \frac{\text{Break- even Sales Value}}{\text{Sales revenue}} \times 100 = 59.38\ \%$$

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 5 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 20.95% 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 29.82 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 28 persons. The project will generate Birr 21.00 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 agricultural sector forward linkage with the textile manufacturing subsector.

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	1,937.80	2,180.03	2,422.25	2,422.25	2,422.25	2,422.25	2,422.25	2,422.25	2,422.25	2,422.25
Accounts receivable	829.83	930.96	1,032.08	1,032.08	1,034.58	1,034.58	1,034.58	1,034.58	1,034.58	1,034.58
Cash-in-hand	22.03	24.79	27.54	27.54	27.96	27.96	27.96	27.96	27.96	27.96
CURRENT ASSETS	**2,789.67**	**3,135.77**	**3,481.88**	**3,481.88**	**3,484.78**	**3,484.78**	**3,484.78**	**3,484.78**	**3,484.78**	**3,484.78**
Accounts payable	114.40	128.70	143.00	143.00	143.00	143.00	143.00	143.00	143.00	143.00
CURRENT LIABILITIES	**114.40**	**128.70**	**143.00**	**143.00**	**143.00**	**143.00**	**143.00**	**143.00**	**143.00**	**143.00**
TOTAL WORKING CAPITAL	**2,675.27**	**3,007.07**	**3,338.88**	**3,338.88**	**3,341.78**	**3,341.78**	**3,341.78**	**3,341.78**	**3,341.78**	**3,341.78**

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	7,751	8,720	9,689	9,689	9,689	9,689	9,689	9,689	9,689	9,689
Utilities	370	417	463	463	463	463	463	463	463	463
Maintenance and repair	998	1,122	1,247	1,247	1,247	1,247	1,247	1,247	1,247	1,247
Labour direct	375	422	469	469	469	469	469	469	469	469
Labour overheads	94	105	117	117	117	117	117	117	117	117
Administration Costs	120	135	150	150	150	150	150	150	150	150
Land lease cost	0	0	0	0	30	30	30	30	30	30
Cost of marketing and distribution	250	250	250	250	250	250	250	250	250	250
Total Operating Costs	**9,958**	**11,172**	**12,385**	**12,385**	**12,415**	**12,415**	**12,415**	**12,415**	**12,415**	**12,415**
Depreciation	9,077	9,077	9,077	9,077	9,077	375	375	375	375	375
Cost of Finance	0	4,268	3,735	3,201	2,668	2,134	1,601	1,067	534	0
Total Production Cost	**19,035**	**24,517**	**25,197**	**24,663**	**24,160**	**14,924**	**14,390**	**13,857**	**13,323**	**12,790**

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	22,274	25,058	27,842	27,842	27,842	27,842	27,842	27,842	27,842	27,842
Less variable costs	9,708	10,922	12,135	12,135	12,135	12,135	12,135	12,135	12,135	12,135
VARIABLE MARGIN	**12,566**	**14,137**	**15,707**	**15,707**	**15,707**	**15,707**	**15,707**	**15,707**	**15,707**	**15,707**
in % of sales revenue	56.42	56.42	56.41	56.41	56.41	56.41	56.41	56.41	56.41	56.41
Less fixed costs	9,327	9,327	9,327	9,327	9,357	655	655	655	655	655
OPERATIONAL MARGIN	**3,239**	**4,809**	**6,380**	**6,380**	**6,350**	**15,052**	**15,052**	**15,052**	**15,052**	**15,052**
in % of sales revenue	14.54	19.19	22.91	22.91	22.81	54.06	54.06	54.06	54.06	54.06
Financial costs		4,268	3,735	3,201	2,668	2,134	1,601	1,067	534	0
GROSS PROFIT	**3,239**	**541**	**2,645**	**3,179**	**3,682**	**12,918**	**13,452**	**13,985**	**14,519**	**15,052**
in % of sales revenue	14.54	2.16	9.50	11.42	13.23	46.40	48.31	50.23	52.15	54.06
Income (corporate) tax	0	0	0	0	0	3,875	4,035	4,196	4,356	4,516
NET PROFIT	**3,239**	**541**	**2,645**	**3,179**	**3,682**	**9,043**	**9,416**	**9,790**	**10,163**	**10,536**
in % of sales revenue	14.54	2.16	9.50	11.42	13.23	32.48	33.82	35.16	36.50	37.84

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	**52,754**	**28,944**	**25,072**	**27,856**	**27,842**	**27,842**	**27,842**	**27,842**	**27,842**	**27,842**	**27,842**	**12,715**
Inflow funds	52,754	6,670	14	14	0	0	0	0	0	0	0	0
Inflow operation	0	22,274	25,058	27,842	27,842	27,842	27,842	27,842	27,842	27,842	27,842	0
Other income	0	0	0	0	0	0	0	0	0	0	0	12,715
TOTAL CASH OUTFLOW	**52,754**	**16,628**	**21,121**	**21,801**	**20,921**	**20,420**	**23,759**	**23,386**	**23,013**	**22,639**	**16,931**	**0**
Increase in fixed assets	52,754	0	0	0	0	0	0	0	0	0	0	0
Increase in current assets	0	2,790	346	346	0	3	0	0	0	0	0	0
Operating costs	0	9,708	10,922	12,135	12,135	12,165	12,165	12,165	12,165	12,165	12,165	0
Marketing and Distribution cost	0	250	250	250	250	250	250	250	250	250	250	0
Income tax	0	0	0	0	0	0	3,875	4,035	4,196	4,356	4,516	0
Financial costs	0	3,880	4,268	3,735	3,201	2,668	2,134	1,601	1,067	534	0	0
Loan repayment	0	0	5,335	5,335	5,335	5,335	5,335	5,335	5,335	5,335	0	0
SURPLUS (DEFICIT)	**0**	**12,316**	**3,952**	**6,056**	**6,921**	**7,422**	**4,083**	**4,456**	**4,829**	**5,203**	**10,911**	**12,715**
CUMULATIVE CASH BALANCE	**0**	**12,316**	**16,268**	**22,323**	**29,244**	**36,665**	**40,748**	**45,204**	**50,033**	**55,236**	**66,148**	**78,863**

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**	**22,274**	**25,058**	**27,842**	**27,842**	**27,842**	**27,842**	**27,842**	**27,842**	**27,842**	**27,842**	**12,715**
Inflow operation	0	22,274	25,058	27,842	27,842	27,842	27,842	27,842	27,842	27,842	27,842	0
Other income	0	0	0	0	0	0	0	0	0	0	0	12,715
TOTAL CASH OUTFLOW	**55,430**	**10,290**	**11,503**	**12,385**	**12,388**	**12,415**	**16,290**	**16,450**	**16,610**	**16,770**	**16,931**	**0**
Increase in fixed assets	52,754	0	0	0	0	0	0	0	0	0	0	0
Increase in net working capital	2,675	332	332	0	3	0	0	0	0	0	0	0
Operating costs	0	9,708	10,922	12,135	12,135	12,165	12,165	12,165	12,165	12,165	12,165	0
Marketing and Distribution cost	0	250	250	250	250	250	250	250	250	250	250	0
Income (corporate) tax		0	0	0	0	0	3,875	4,035	4,196	4,356	4,516	0
NET CASH FLOW	**-55,430**	**11,984**	**13,555**	**15,457**	**15,454**	**15,427**	**11,552**	**11,392**	**11,232**	**11,072**	**10,911**	**12,715**
CUMULATIVE NET CASH FLOW	**-55,430**	**-43,445**	**-29,891**	**-14,434**	**1,020**	**16,447**	**27,999**	**39,391**	**50,622**	**61,694**	**72,605**	**85,320**
Net present value	-55,430	10,895	11,202	11,613	10,555	9,579	6,521	5,846	5,240	4,695	4,207	4,902
Cumulative net present value	-55,430	-44,535	-33,333	-21,720	-11,164	-1,585	4,935	10,781	16,021	20,716	24,923	29,825

NET PRESENT VALUE	29,825
INTERNAL RATE OF RETURN	20.95%
NORMAL PAYBACK	5 years