PROFILE ON THE PRODUCTION OF SOCKS AND STOCKINGS

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I. SUMMARY

This profile envisages the establishment of a plant for the production of socks and stockings with a capacity of 1.21 million pairs per annum. Socks are protective knitwear for the foot while Stockings are long knitted coverings for leg and foot, usually worn by women of all ages.

The country`s requirement of socks and stockings is largely met through import. The present (2012) demand for socks and stockings is estimated at 1.05 million dozen pairs. The demand for the product is projected to reach 1.35 million dozen pairs dozen pairs and 1.72 million dozen pairs by the year 2017 and year 2022, respectively.

The principal raw materials required are dyed nylon stretch; acrylic yarn and rubber thread latex, which have to be imported.

The total investment cost of the project including working capital is estimated at Birr 35.34 million. From the total investment cost the highest share (Birr 22.98 million or 64.96%) is accounted by fixed investment cost followed by initial working capital (Birr 8.78 million or 24.84%) and pre operation cost (Birr 3.61 million or 10.20%). From the total investment cost Birr 16.54 million or 46.77% is required in foreign currency.

The project is financially viable with an internal rate of return (IRR) of 27.26% and a net present value (NPV) of Birr 29.41 million discounted at 10%.

The project can create employment for 50 persons. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports and also generates income for the Government in terms of tax revenue and payroll tax.

II. PRODUCT DESCRIPTION & APPLICATION

Socks are protective knitwear for the foot which is characterized by elastic and plastic characteristics. Socks could be knitted from natural fiber (cotton, wool), textured yarn of nylon, mixed spun yarn of synthetic fiber and natural fiber, and mixed knit of synthetic filament textured yarn and spun yarn of natural fiber. Socks are mostly used by men of all ages.

Stockings are long knitted coverings for leg and foot, usually worn by women of all ages. They can be produced from nylon wool, silk, etc. As the technology of knitted fabrics is improving from time to time the quality of socks and stockings is also improving. This has given rise to the growth in demand of the knitted items.

All of the raw materials required for production of socks and stockings have to be imported. However, there is an established domestic market for the product as evidenced by the quantity of the product annually imported. Therefore, the envisaged project is aimed at substituting the current import.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Past Supply and Present Demand

The local demand for socks and stockings is largely met through import. Ethiopia imports a variety of hosiery and foot wear of wool, cotton, synthetic fibers and other textile materials to fulfill the demand of the population. The amount of import during the period 2002 – 2011 is shown in Table 3.1.

Table 3.1

IMPORT OF HOSIERY & FOOTWEAR (SOCKS, STOCKINGS, PANTYHOSE & TIGHTS)[1]

Year	Quantity (Tons)	Quantity (Dozens)	Value (`000 Birr)
2002	596	596,000	11,478
2003	892	896,000	19,110
2004	474	474,000	10,993
2005	1,029	1,029,000	25,208
2006	1,011	1,011,000	27,447
2007	819	819,000	28,201
2008	753	753,000	24,045
2009	947	947,000	44,010
2010	1,081	1,081,000	51,113
2011	999	999,000	65,360

***Source**: - Ethiopian Revenues and Customs Authority*

As can be seen from Table 3.1, the level of imports of socks and stockings shows a general increasing trend although there are some fluctuations. During the initial three years of the data set (2002--2004) the yearly average level of import was about 654,000 dozens. In the middle of the data set, the average yearly quantity increased to a level of 903,000 dozens, which is an increase of by about 38%. During the last three recent years (2009--2011) the annual average level of import has reached at about 1.01 million dozens, which is again an increase of by about 11% compared to the previous four years average. Generally, in the past ten years the annual average growth rate of import is about 6%.

[1] ***Note: -*** *The import data obtained from ERCA is in weight, i.e. in tones. To convert the weight in to pair dozens, on the average 100 tones of hosiery products is assumed to be equal 1.2 million pairs or one pair to be 0.08 kg.*

In estimating the present demand the growth trend observed in the past has been applied by taking year 2011 as a base. Based on this approach the present demand for socks and stockings is estimated at 1,058,940 dozen pairs.

2. Demand Projection

The demand for socks and stockings is mainly influenced by urban population growth and income rise. Hence, an annual average growth rate of 5% is taken to forecast the future demand, which is lower than the observed trend in the past ten years. The projected demand is shown in Table 3.2.

Table 3.2

PROJECTED DEMAND OF SOCKS & STOCKINGS (DOZEN)

Year	Projected Demand
2013	1,111,887
2014	1,167,481
2015	1,225,855
2016	1,287,148
2017	1,351,506
2018	1,419,081
2019	1,490,035
2020	1,564,536
2021	1,642,763
2022	1,724,902

The demand for socks and stockings will grow from 1,111,887dozens in the year 2013 to 1,419,081 dozens and 1,724,902 dozens by the years 2018 and 2022, respectively**.**

3. Pricing and Distribution

The price of socks and stockings varies according to their material. Cotton socks and stockings to be produced could be either plain, colored printed etc. For the purpose of this project average factory gate price Birr 30 per pair is adopted.

Currently distribution of socks and stockings is undertaken by long established whole sellers, most of them located in Merkato area of Addis Ababa and other big towns. The envisaged plant can also adopt the existing distribution system.

B. PLANT CAPACITY AND PRODUCTION PROGRAM

1. Plant Capacity

The market study indicates that the demand for socks and stockings will grow from 1,111,887dozens in the year 2013 to 1,419,081 dozens and 1,724,902 dozens by the years 2018 and 2022, respectively**.** Therefore, it is proposed that the envisaged plant will have annual production capacity of 100 tones or 1,211,970 pairs or about 101,000 dozen. The plant will operate two shifts 8 hours a day and for 300 days a year.

2. Production Program

In order to provide adequate time for production skill development and establish market outlets, the plant will be made to operate at lower capacity (75%) during the first year of operation. Then production build-up will be 85% and 100% during the 2nd year, the 3rd year and then after, respectively. Table 3.3 below shows production build-up program.

Table 3.3

PRODUCTION PROGRAMME

Year	1	2	3 and above
Capacity utilization (%)	75	85	100
Production (dozens)	75,750	85,850	101,000

IV. MATERIALS AND INPUTS

A. RAW AND AUXILIARY MATERIALS

The major raw materials required for the production of socks and stockings are dyed nylon stretch (nylon 110/2 denier), acrylic yarn and rubber thread latex. These materials are not produced locally and will have to be imported from countries like Korea, Taiwan, China, India, etc. Auxiliary materials required for the production of socks and stockings include sewing thread, lubricating oil for production equipment, labels, packing materials, etc. Annual requirement of these items at full capacity production is given in Table 4.1.

Table 4.1

ANNUAL REQUIREMENT OF RAW AND AUXILIARY MATERIALS

Sr. No.	Description	Qty (ton)	Unit Price (Birr)	Cost ('000 Birr)		
				LC	FC	TC
A. Raw materials						
1	Nylon stretch (nylon 110/2 denier)	49.5	280,000.00	-	13,860.00	13,860.00
2	Acrylic yarn	49.5	280,000.00	-	13,860.00	13,860.00
3	Latex (Rubber thread)	3	375,000.00	-	1,125.00	1,125.00
Sub total		**102**	**-**	**-**	**28,845.00**	**28,845.00**
B. Auxiliary materials						
1	Sewing thread	Reqd	-	25.00	-	25.00
2	Lubricating oil	Reqd	-	25.00	-	25.00
3	Labels	Reqd	-	30.00	-	30.00
4	Packing materials (pp sheets, carton, hard paper, etc)	Reqd	-	50.00	-	50.00
Sub total		Reqd	-	130.00	-	130.00
Total		**-**	**-**	**130.00**	**28,845.00**	**28,975.00**

B. UTILITIES

Utilities required in the process of socks and stockings production consist of electricity, water, steam, fuel oil and lubricating oils. Electricity is required to operate production equipment, for power sockets and lighting points. Water is required for drinking, sanitation and for steam production. Fuel oil is used as source of energy in the operation of boiler. The boiler generates steam required by the plant. Lubricating oil is applied on yarn winding machine to facilitate easy sliding of the yarn. The total annual cost for utility is estimated to be 246,500. The detail requirement and cost of raw and auxiliary materials at full capacity operation is given in Table 4.2.

Table 4.2

ANNUAL REQUIREMENT OF UTILITIES & COST

Sr. No	Description	Annual Consumption	Unit	Unit Cost (Birr)	Total Cost ("000 Birr)
1	Electricity (kWh)	10,000	kWh	0.65	6.50
2	Water (M3)	8,000	m^3	10.00	80.00
3	Fuel Oil (liters)	6,000	liter	25.00	150.00
4	Lubricating oil (kg)	As reqd.	As reqd.	-	10.00
Total Annual Cost					**246.50**

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

The production process of socks and stockings consist of the following operations:

- Raw material preparation.
- Winding of raw material into cones ,

- Knitting operation on a knitting machine ,
- Linking operation ,
- Cleaning products from stains and dust ,
- Dyeing ,
- Setting and finishing ,
- Inspection ,
- Matching size, color and pattern (design),
- Attaching, labeling and packing ,and
- Dispatching to market.

The manufacturing process begins with raw material preparation, and then winding of the raw materials, yarn into cone will take place. In order to make the yarn slide easily it is necessary to apply oils during winding operation. The yarn is then set on the designated sock knitting machine and is knitted into either sock or stocking shape. The open part of the stock that comes out of the knitting machine is then linked in a linking machine.

Socks which have gone through the various processes will have oil stains and dust. Hence, to begin with they are washed to get rid of oil stains and dust. Then the process of dyeing takes place. The dyed socks (stockings) subsequently undergo the setting and finishing process in order to assume their final shape and good link.

Finally, the socks which pass final inspection are arranged into pairs by matching their size, color and pattern and then packed into boxes.

2. Environmental Impact Assessment

As there is no application of any chemical in the technology of production of socks and stockings, it does not have an adverse environmental impact.

B. ENGINEERING

1. Machinery and Equipment

The total cost of machinery and equipment is estimated at Birr 19.85 million out of which Birr 16.54 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 AND EQUIPMENT

Sr. No.	Description	Qty	Cost ('000 Birr)		
			FC	LC	TC
1	Single cylinder double welt socks knitting machine 4-14 pairs/hr each	14	3,850.00	-	3,850.00
2	Double cylinder sock knitting machine, 4-8 pairs/hr each	14	3,500.00	-	3,500.00
3	Cone winder	1	1,200.00	-	1,200.00
4	Linking machine, 2-20 pairs/hr each	8	1,400.00	-	1,400.00
5	Setting machine, 240 pairs/hr	2	4,200.00	-	4,200.00
6	Dyeing machine, 50 kg/operation	1	600.00	-	600.00
7	Steam Iron	4	4.00	-	4.00
8	Boiler for steam generation	1 unit	1,000.00	-	1,000.00
9	Spare parts (5%)		787.70		787.70
	Total Fob Price		**16,541.70**		16,541.70
	Freight, port handling, inland transport etc			3,308.34	3,308.34
	Grand Total		**16,541.70**	**3,308.34**	**19,850.04**

2. Land, Building and Civil Works

Land is required for factory buildings, administration building, internal road and pathways, and for future expansion. Accordingly the total land requirement for socks and stockings producing

plant is estimated to be 1,000 m^2. Of the total area of land the built-up area will be 400 m^2. At the rate of Birr 4,500 per m^2, the building cost will be Birr 1.8 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 266,000 of which 10% or Birr 26,600 will be paid in advance. The remaining Birr 239,400 will be paid in equal installments with in 28 years i.e. Birr 8,550 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 REQUIREMENTS

A. HUMAN RESOURCE REQUIREMENT

The total human resource requirement of the plant is estimated to be 50. The total annual cost of human resource is estimated at Birr 956,160. The human resource list and salary costs are shown in Table 6.1.

Table 6.1

HUMAN RESOURCE REQUIREMENT AND LOUBER COST

Sr. No.	Job Title	No.	Salary (Birr)	
			Monthly	Annual
1	General Manager	1	4,000	48,000
2	Secretary	1	1,000	12,000
3	Production & Technical Head	1	2,500	30,000
4	Commercial Head	1	2,500	30,000
5	Finance & Administration Head	1	2,500	30,000
6	Personnel	1	2,000	24,000
7	Accountant	1	2,000	24,000
8	Accounts Clerk	1	1,000	12,000
9	Cashier	1	1,500	18,000
10	Sales person	1	1,000	12,000
11	Purchaser	1	1,500	18,000
12	Store Keeper	1	1,500	18,000
13	Quality Controller	1	1,500	18,000
14	Shift Leader	2	2,000	48,000
15	Operator	7	1,500	126,000
16	Assistant Operator	14	1,000	168,000
17	Labourers	5	600	36,000
18	Mechanic	2	1,500	36,000
19	Electrician	2	1,500	36,000
20	Driver	2	1,000	24,000
21	Guard	3	800	28,800
	Sub – Total	**50**		**796,800**
	Employee's Benefit (20% of salary)			159,360
	Grand Total			**956,160**

B. TRAINING REQUIREMENT

The production head and machinery operators will have to be trained on knitted and dyeing technology. It is proposed that an expert from machinery supplier will provide the training program during erection and commissioning of the plant with a total cost of Birr 50,000.

VII. FINANCIAL ANALYSIS

The financial analysis of the socks and stockings 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 days
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 35.34 million (see Table 7.1). From the total investment cost the highest share (Birr 22.98 million or 64.96%) is accounted by fixed investment cost followed by initial working capital (Birr 8.78 million or 24.84%) and pre operation cost (Birr 3.61 million or 10.20%). From the total investment cost Birr 16.54 million or 46.77% 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	26.60		26.60	0.08
1.2	Building and civil work	1,800.00		1,800.00	5.09
1.3	Machinery and equipment	3,308.34	16,541.70	19,850.04	56.12
1.4	Vehicles	900.00		900.00	2.54
1.5	Office furniture and equipment	400.00		400.00	1.13
	Sub total	**6,434.94**	**16,541.70**	**22,976.64**	**64.96**
2	**Pre operating cost ***				
2.1	Pre operating cost	1,292.50		1,292.50	3.65
2.2	Interest during construction	2,313.82		2,313.82	6.54
	Sub total	**3,606.32**		**3,606.32**	**10.20**
3	**Working capital ****	**8,785.42**		**8,785.42**	**24.84**
	Grand Total	**18,826.68**	**16,541.70**	**35,368.38**	**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 9.80 million. However, only the initial working capital of Birr 8.78 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 38.67 million (see Table 7.2). The cost of raw material account for 74.90% of the production cost. The other major components of the production cost are depreciation, financial cost, repair and maintenance, and labor, which account for 11.69%, 6.58%, 2.57%, and 2.06% respectively. The remaining 2.20% is the share of utility, 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 three)

Items	Cost (in 000 Birr)	%
Raw Material and Inputs	28,975	74.90
Utilities	247	0.64
Maintenance and repair	993	2.57
Labor direct	797	2.06
Labor overheads	159	0.41
Administration Costs	150	0.39
Land lease cost	0	0.00
Cost of marketing and distribution	300	0.78
Total Operating Costs	**31,620**	**81.74**
Depreciation	4,521	11.69
Cost of Finance	2,545	6.58
Total Production Cost	**38,686**	**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 6.58 million to Birr 7.47 million during the life of the project. Moreover, at the end of the project life the accumulated net cash flow amounts to Birr 67.06 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.

$$\text{Brake Even Sales Value} = \frac{\text{Fixed Cost + Financial Cost}}{\text{Variable Margin ratio (\%)}} = \text{Birr } 17{,}815{,}980$$

$$\text{Brake Even Capacity utilization} = \frac{\text{Break even Sales Value}}{\text{Sales revenue}} \times 100 = 43.43\%$$

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 27.26% 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 29.41 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 50 persons. The project will generate Birr 15.06 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 and also generates income for the Government in terms of payroll tax.

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	6,519.38	7,243.75	7,243.75	7,243.75	7,243.75	7,243.75	7,243.75	7,243.75	7,243.75	7,243.75
Accounts receivable	2,374.01	2,635.01	2,635.01	2,635.01	2,635.73	2,635.73	2,635.73	2,635.73	2,635.73	2,635.73
Cash-in-hand	26.23	29.15	29.15	29.15	29.27	29.27	29.27	29.27	29.27	29.27
CURRENT ASSETS	**8,919.62**	**9,907.91**	**9,907.91**	**9,907.91**	**9,908.74**	**9,908.74**	**9,908.74**	**9,908.74**	**9,908.74**	**9,908.74**
Accounts payable	134.20	149.11	149.11	149.11	149.11	149.11	149.11	149.11	149.11	149.11
CURRENT LIABILITIES	**134.20**	**149.11**	**149.11**	**149.11**	**149.11**	**149.11**	**149.11**	**149.11**	**149.11**	**149.11**
TOTAL WORKING CAPITAL	**8,785.42**	**9,758.80**	**9,758.80**	**9,758.80**	**9,759.63**	**9,759.63**	**9,759.63**	**9,759.63**	**9,759.63**	**9,759.63**

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	26,078	28,975	28,975	28,975	28,975	28,975	28,975	28,975	28,975	28,975
Utilities	222	247	247	247	247	247	247	247	247	247
Maintenance and repair	893	993	993	993	993	993	993	993	993	993
Labour direct	717	797	797	797	797	797	797	797	797	797
Labour overheads	143	159	159	159	159	159	159	159	159	159
Administration Costs	135	150	150	150	150	150	150	150	150	150
Land lease cost	0	0	0	0	9	9	9	9	9	9
Cost of marketing and distribution	300	300	300	300	300	300	300	300	300	300
Total Operating Costs	**28,488**	**31,620**	**31,620**	**31,620**	**31,629**	**31,629**	**31,629**	**31,629**	**31,629**	**31,629**
Depreciation	4,521	4,521	4,521	4,521	4,521	112	112	112	112	112
Cost of Finance	0	2,545	2,227	1,909	1,591	1,273	954	636	318	0
Total Production Cost	**33,009**	**38,686**	**38,368**	**38,050**	**37,740**	**33,013**	**32,695**	**32,377**	**32,059**	**31,741**

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	38,177	42,419	42,419	42,419	42,419	42,419	42,419	42,419	42,419	42,419
Less variable costs	28,188	31,320	31,320	31,320	31,320	31,320	31,320	31,320	31,320	31,320
VARIABLE MARGIN	**9,989**	**11,099**	**11,099**	**11,099**	**11,099**	**11,099**	**11,099**	**11,099**	**11,099**	**11,099**
in % of sales revenue	26.16	26.16	26.16	26.16	26.16	26.16	26.16	26.16	26.16	26.16
Less fixed costs	4,821	4,821	4,821	4,821	4,829	421	421	421	421	421
OPERATIONAL MARGIN	**5,168**	**6,278**	**6,278**	**6,278**	**6,270**	**10,678**	**10,678**	**10,678**	**10,678**	**10,678**
in % of sales revenue	13.54	14.80	14.80	14.80	14.78	25.17	25.17	25.17	25.17	25.17
Financial costs		2,545	2,227	1,909	1,591	1,273	954	636	318	0
GROSS PROFIT	**5,168**	**3,733**	**4,051**	**4,369**	**4,679**	**9,406**	**9,724**	**10,042**	**10,360**	**10,678**
in % of sales revenue	13.54	8.80	9.55	10.30	11.03	22.17	22.92	23.67	24.42	25.17
Income (corporate) tax	0	0	0	0	0	2,822	2,917	3,013	3,108	3,203
NET PROFIT	**5,168**	**3,733**	**4,051**	**4,369**	**4,679**	**6,584**	**6,807**	**7,029**	**7,252**	**7,475**
in % of sales revenue	13.54	8.80	9.55	10.30	11.03	15.52	16.05	16.57	17.10	17.62

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	**24,269**	**49,410**	**42,434**	**42,419**	**42,419**	**42,419**	**42,419**	**42,419**	**42,419**	**42,419**	**42,419**	**13,180**
Inflow funds	24,269	11,233	15	0	0	0	0	0	0	0	0	0
Inflow operation	0	38,177	42,419	42,419	42,419	42,419	42,419	42,419	42,419	42,419	42,419	0
Other income	0	0	0	0	0	0	0	0	0	0	0	13,180
TOTAL CASH OUTFLOW	**24,269**	**39,722**	**38,335**	**37,029**	**36,711**	**36,402**	**38,905**	**38,682**	**38,459**	**38,236**	**34,832**	**0**
Increase in fixed assets	24,269	0	0	0	0	0	0	0	0	0	0	0
Increase in current assets	0	8,920	988	0	0	1	0	0	0	0	0	0
Operating costs	0	28,188	31,320	31,320	31,320	31,329	31,329	31,329	31,329	31,329	31,329	0
Marketing and Distribution cost	0	300	300	300	300	300	300	300	300	300	300	0
Income tax	0	0	0	0	0	0	2,822	2,917	3,013	3,108	3,203	0
Financial costs	0	2,314	2,545	2,227	1,909	1,591	1,273	954	636	318	0	0
Loan repayment	0	0	3,182	3,182	3,182	3,182	3,182	3,182	3,182	3,182	0	0
SURPLUS (DEFICIT)	**0**	**9,689**	**4,099**	**5,390**	**5,708**	**6,017**	**3,514**	**3,737**	**3,960**	**4,183**	**7,587**	**13,180**
CUMULATIVE CASH BALANCE	**0**	**9,689**	**13,788**	**19,178**	**24,886**	**30,904**	**34,418**	**38,155**	**42,115**	**46,298**	**53,885**	**67,065**

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**	**38,177**	**42,419**	**42,419**	**42,419**	**42,419**	**42,419**	**42,419**	**42,419**	**42,419**	**42,419**	**13,180**
Inflow operation	0	38,177	42,419	42,419	42,419	42,419	42,419	42,419	42,419	42,419	42,419	0
Other income	0	0	0	0	0	0	0	0	0	0	0	13,180
TOTAL CASH OUTFLOW	**33,055**	**29,462**	**31,620**	**31,620**	**31,621**	**31,629**	**34,450**	**34,546**	**34,641**	**34,737**	**34,832**	**0**
Increase in fixed assets	24,269	0	0	0	0	0	0	0	0	0	0	0
Increase in net working capital	8,785	973	0	0	1	0	0	0	0	0	0	0
Operating costs	0	28,188	31,320	31,320	31,320	31,329	31,329	31,329	31,329	31,329	31,329	0
Marketing and Distribution cost	0	300	300	300	300	300	300	300	300	300	300	0
Income (corporate) tax		0	0	0	0	0	2,822	2,917	3,013	3,108	3,203	0
NET CASH FLOW	**-33,055**	**8,715**	**10,799**	**10,799**	**10,798**	**10,790**	**7,969**	**7,873**	**7,778**	**7,682**	**7,587**	**13,180**
CUMULATIVE NET CASH FLOW	**-33,055**	**-24,339**	**-13,540**	**-2,741**	**8,057**	**18,847**	**26,815**	**34,689**	**42,466**	**50,149**	**57,735**	**70,915**
Net present value	-33,055	7,923	8,925	8,113	7,375	6,700	4,498	4,040	3,628	3,258	2,925	5,081
Cumulative net present value	-33,055	-25,131	-16,207	-8,093	-718	5,982	10,480	14,520	18,148	21,406	24,331	29,413

NET PRESENT VALUE	29,413
INTERNAL RATE OF RETURN	27.26%
NORMAL PAYBACK	4 years