155. PROFILE ON ASSEMBLY OF BICYCLE

TABLE OF CONTENTS

I. SUMMARY

This profile envisages the establishment of a plant for the assembly of bicycle with a capacity of 30,000 units per annum. Bicycles are very useful and popular simple machines that serve as personal means of transport.

The demand for bicycles is met through import. Accordingly present (2012) effective demand for the products is estimated at 48,950 units. The demand for bicycles is projected to reach 68,655 units and 96,293 units by the year 2017 and 2022, respectively.

.

The principal raw materials required are front wheel assembled, rear wheel assembled, crank, pedal, chain & sprocket assembled, steering fork assembled, and frame assembled all of which have to be imported.

The total investment cost of the project including working capital is estimated at Birr 24.21 million. From the total investment cost the highest share (Birr 15.35 million or 63.42%) is accounted by initial working capital followed by fixed investment cost (Birr 6.83 million or 28.20%) and pre operation cost (Birr 2.03 million or 8.38%). From the total investment cost Birr 1.58 million or 6.53% is required in foreign currency.

The project is financially viable with an internal rate of return (IRR) of 22.50% and a net present value (NPV) of Birr 20.67 million discounted at 10%.

The project can create employment for 52 persons. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports. The project will also generate income for the Government in terms of tax revenue and payroll tax.

II. PRODUCT DESCRIPTION AND APPLICATION

Bicycles usually consisting of two wheels fixed to a frame, steered by handlebars, and propelled by an arrangement of pedals and gears that are driven by the feet. Different types of bicycles are tailored for different kinds of riding. The term bicycle is sometimes extended to include rider-propelled three-wheeled tricycles, which are favored by young children and others, who lack the balance needed to operate a two wheeled bicycle.

Bicycles are very useful and popular simple machines that serve as personal means of transport. Designed mainly for one man ride (and non sportive use) in this project, the bicycles can also be made for two people ride and also to carry goods. A carrier is added to the assembly for goods and people In case of options, the bicycle being free from any fuel input it is cheap to use and preferred by many people of all ages and income. Bicycles are very popular in many cities of our country where the landscape of the city is level and free from steep roads.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Past Supply and Present Demand

Bicycles are widely used in developing countries particularly in well developed cities, moderately developed urban centers as well as in semi-urban areas for personal transport as well as movement of light goods. In Ethiopia bicycles are used in most of the urban areas where the topography is suitable for riding a bicycle.

As there is no a plant which manufactures or assemble bicycles in the country the entire demand for the product is met through import. According to the data obtained from Ethiopian Revenues & Customs Authority the bulk of import originated from China and India. Import of bicycles during the period 2002 – 2011 is shown in Table 3.1.

Table 3.1

IMPORT OF BICYCLES (UNITS)

Year	Quantity
2002	19,840
2003	30,314
2004	72,496
2005	51,699
2006	60,269
2007	76,521
2008	60,328
2009	24,407
2010	37,867
2011	45,629

Source: - *Ethiopian Revenue & Customs Authority.*

As can be seen from Table 3.1, import of bicycles is characterized by fluctuations from year to year with out a clear trend. During the period 2002--2011 the maximum import registered was 76,521 units in 2007 while the minimum (19,840 units) was imported in year 2002. However, during the period under consideration, the average annual import of bicycles was about 47,937 units.

In the absence of a clear trend in the import or apparent consumption of bicycles, the average of the recent five years (2007--2011) is assumed to approximate the current effective demand. Accordingly, the present (2012) demand is estimated at 48,950 bicycles per annum.

2. Projected Demand

The demand for bicycles is related with urbanization, population growth as well as income rise. According to the National Bank of Ethiopia (NBE) the gross domestic product (GDP) of the country has registered an average annual growth rate of 11 % during the period 2004- 2010. The positive performance of the Ethiopian economy is expected to continue in the future. According

to the government's "Growth and Transformation Plan" during the period 2010 – 2015 the GDP of the country is expected to grow at a minimum average annual growth rate of 11.4%. Moreover, urban population growth is estimated at 4%.

Hence, to project the future demand for bicycles a 7% annual growth rate (the average of expected GDP growth rate and urban population growth rate) is considered. Accordingly, the projected demand for bicycles using the estimated present demand as a base and applying a growth rate of 7% is depicted in Table 3.2.

Table 3.2

PROJECTED DEMAND FOR BICYCLES (UNITS)

Year	Projected Demand
2013	52,377
2014	56,043
2015	59,966
2016	64,164
2017	68,655
2018	73,461
2019	78,604
2020	84,106
2021	89,993
2022	96,293
2023	103,033
2024	110,246
2025	117,963

3. Pricing and Distribution

The current price of bicycles differs widely due to difference in models, origin country, quality and the like. For the purpose of financial analysis an average price of Birr 2,500 per bicycle is adopted.

The plant can use the existing bicycle distributing /retailing enterprises as its distribution outlet.

B. PLANT CAPACITY AND PRODUCTION PROGRAM

1. Plant Capacity

The envisaged plant will have a capacity to assemble 30,000 units of bicycles per annum, working 300 days and in one shift (8 hours) per day. The remaining days are provided for annual maintenance and unexpected down times.

2. Production Program

Since bicycle assembly is a new plant in the country it will take some time to develop the skill and penetrate the market. Considering the time required for skill development and market penetration the plant is assumed to operate at 75% of its installed capacity in the first year operation. It will gradually increase to 85% during the second year of operation. Full capacity operation (100%) will be achieved in the third year and then after (see Table 3.3).

Table 3.3

ANNUAL PRODUCTION PROGRAM

	Year 1	**Year 2**	**Year 3-10**
Annual Production (units)	**22 ,500**	**25,500**	**30,000**
Capacity %	75	85	100

IV. RAW MATERIAL AND INPUTS

A. RAW AND AUXILIARY MATERIALS

The various parts are imported as raw materials sub assembled in nine different units. The total annual raw material cost is Birr 70.34 million. The raw materials required and the associated cost is shown in Table 4.1.

Table 4.1

RAW MATERIALS PARTS IN ASSEMBLED UNITS AND COST

Sr.No	Raw Materials	Total Cost (000 Birr)		
		FC	LC	Total
1	Front wheel assembled	7,215	1,299	8,514
2	Rear wheel assembled	7,215	1,299	8,514
3	Crank, Pedal, Chain & Sprocket assembled	7,770	1,399	9,169
4	Steering Fork assembled	5,550	999	6,549
5	Saddle assembled	2,220	400	2,620
6	Carrier assembled	4,440	799	5,239
7	Frame Assembled	11,100	1,998	13,098
8	Brake units	3,885	699	4,584
9	Electrical Units	3,330	599	3,929
10	Other components	2,775	500	3,275
	Total	**55,500**	**9,990**	**65,490**

B. UTILITIES

Electricity and water are the major utilities required by the bicycle assembly plant. Annual cost of utilities is Birr 91,010. The utility requirement of the plant at full capacity operation is indicated in Table 4.2

Table 4.2

ANNUAL UTILITIES REQUIREMENTS AND COST

No	Utility	Unit	Quantity	Cost (birr)
1	Electricity	kWh	84,500	49,010
2	Water	Mt.Cube	4200	42,000
	Total			**91,010**

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Process Description

The main production process is assembly of finished and semi assembled parts into complete Bicycle. The raw material will be imported in semi assembled parts in nine main units. Each Unit will be assembled on the frame. From the raw material input to the final finished product there will be six sub assembly lines and three main assembly lines. There will be five men on each main assembly line.

2. Environmental Impact

The process of production involves only assembly of manufactured parts. This does not affect the environment. Hence the plant does not have negative impact on the environment.

B. ENGINEERING

1. Machinery and Equipment

Total cost of machinery and equipment is estimated at Birr 1.9 million of which Birr 1.58 million is required in foreign currency. The list of the required machinery and equipment is presented in Table 5.1.

Table 5.1

LIST OF MACHINERY & EQUIPMENTS AND COST

No.	Type of Machine	No.
1	Portable Electric Drill	5
2	Portable Angle Grinder	5
3	Pillar Drill	2
4	Pedestal Grinder	2
5	Compressor	2
6	Paint spray booth with	2
7	Screw driver set	35set
8	Screw driver set	35set
9	Open end Spanner set	35set
9	Metal hammer set	35set
10	Rubber hammer	35
11	Drilling tool bits	35set
12	Electrical measuring & testing set	5set
13	Tyre maintenance Equipment	5set
14	Jigs and Fixtures	35set

2. Land, Building and Civil Works

The envisaged plant requires a total land area of 1,000 $m^{2,}$ of which 750 m^2 would be built-up area. Building construction cost at a rate of Birr 5,000/m^2 is estimated to be Birr 3.75 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.

VI. HUMAN RESOURCE AND TRAINING REQUIREMENT

A. HUMAN RESOURCE REQUIREMENT

The plant requires a total of 52 workers of whom 15 are administrative and 37 technical workers. Annual cost of labor, including employees benefit, is Birr 456,120. The list of human resource requirements by type of job and monthly salary is shown in Table 6.1.

Table 6.1

HUMAN RESOURCE REQUIREMENT AND LABOR COST

No	Type of Job	No	Monthly Salary (Birr)	Annual Salary (Birr)
1	Manager	1	5,000	5,000
2	Quality Control	1	4,000	4,000
3	Foreman	1	3,500	3,500
4	Technician	30	1,500	75,000
5	Technician /Helper	2	1,000	4,000
6	Administrator /D/Manager	1	4,000	4,000
7	Cashier	1	2,000	2,000
8	Secretary	1	2,500	2,500
9	Accountant	1	2,500	2,500
10	Purchaser/ Sales Man	1	2,500	2,500
11	Laborer	5	800	4,000
12	Guards	4	800	32,000
13	Cleaner	3	800	24,000
	Total	**52**	**30,900**	**370,800**
	Annual Benefits			85,320
	Grand Total			**456,120**

B TRAINING REQUIREMENT

The main job to be done in the factory is assembly works which is not complicated to follow. Thus, simple on the job demonstration will be sufficient for the workers. This requires total of Birr 30,000.

VII. FINANCIAL ANALYSIS

The financial analysis of the bicycle assembly 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 imported	120 days
Work in progress	1 day
Finished products	30 days
Cash in hand	5 days
Accounts payable	30 days
Repair and maintenance	5% of machinery cost

A. TOTAL INITIAL INVESTMENT COST

The total investment cost of the project including working capital is estimated at Birr 24.21 million (see Table 7.1. From the total investment cost the highest share (Birr 15.35 million or 63.42%) is accounted by initial working capital followed by fixed investment cost (Birr 6.83 million or 28.20%) and pre operation cost (Birr 2.03 million or 8.38%). From the total investment cost Birr 1.58 million or 6.53% 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	0.11
1.2	Building and civil work	3,750.00		3,750.00	15.49
1.3	Machinery and equipment	320.00	1,580.00	1,900.00	7.85
1.4	Vehicles	900.00		900.00	3.72
1.5	Office furniture and equipment	250.00		250.00	1.03
	Sub total	**5,246.60**	**1,580.00**	**6,826.60**	**28.20**
2	**Pre operating cost ***				
2.1	Pre operating cost	445.00		445.00	1.84
2.2	Interest during construction	1,583.88		1,583.88	6.54
	Sub total	**2,028.88**		**2,028.88**	**8.38**
3	**Working capital ****	**15,355.30**		**15,355.30**	**63.42**
	Grand Total	**22,630.79**	**1,580.00**	**24,210.79**	**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 21.96 million. However, only the initial working capital of Birr 15.35 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 69.23 million (see Table 7.2). The cost of raw material account for 94.60% of the production cost. The other major components of the production cost are depreciation, financial cost, direct labor, and cost of marketing and distribution which account for 1.19%, 2.20%, 0.54%, and 0.72% respectively. The remaining 0.75% 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	65,490	94.60
Utilities	91	0.13
Maintenance and repair	95	0.14
Labor direct	371	0.54
Labor overheads	85	0.12
Administration Costs	250	0.36
Land lease cost	0	0.00
Cost of marketing and distribution	500	0.72
Total Operating Costs	**66,882**	**96.61**
Depreciation	824	1.19
Cost of Finance	1,524	2.20
Total Production Cost	**69,230**	**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 4.19 million to Birr 5.55 million during the life of the project. Moreover, at the end of the project life the accumulated net cash flow amounts to Birr 56.73 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.

$$\text{Break Even Sales Value} = \frac{\text{Fixed Cost + Financial Cost}}{\text{Variable Margin ratio (\%)}} = \text{Birr } 31{,}500{,}000$$

$$\text{Break Even Capacity utilization} = \frac{\text{Break even Sales Value}}{\text{Sales revenue}} \times 100 = 15.36\%$$

4. Pay-back Period

The payback 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 22.50% 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 20.67 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 52 persons. The project will generate Birr 14.90 million in terms of tax revenue. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports. The project will also generate other income for the government.

Appendix 7.A

FINANCIAL ANALYSES SUPPORTING TABLES

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

Items	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Total inventory	11,460.75	14,735.25	16,372.50	16,372.50	16,372.50	16,372.50	16,372.50	16,372.50	16,372.50	16,372.50
Accounts receivable	3,913.95	5,020.32	5,573.50	5,573.50	5,574.21	5,574.21	5,574.21	5,574.21	5,574.21	5,574.21
Cash-in-hand	7.79	10.01	11.13	11.13	11.24	11.24	11.24	11.24	11.24	11.24
CURRENT ASSETS	**15,382.49**	**19,765.58**	**21,957.13**	**21,957.13**	**21,957.96**	**21,957.96**	**21,957.96**	**21,957.96**	**21,957.96**	**21,957.96**
Accounts payable	27.18	34.95	38.83	38.83	38.83	38.83	38.83	38.83	38.83	38.83
CURRENT LIABILITIES	**27.18**	**34.95**	**38.83**	**38.83**	**38.83**	**38.83**	**38.83**	**38.83**	**38.83**	**38.83**
TOTAL WORKING CAPITAL	**15,355.30**	**19,730.63**	**21,918.29**	**21,918.29**	**21,919.12**	**21,919.12**	**21,919.12**	**21,919.12**	**21,919.12**	**21,919.12**

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	45,843	58,941	65,490	65,490	65,490	65,490	65,490	65,490	65,490	65,490
Utilities	64	82	91	91	91	91	91	91	91	91
Maintenance and repair	67	86	95	95	95	95	95	95	95	95
Labour direct	260	334	371	371	371	371	371	371	371	371
Labour overheads	60	77	85	85	85	85	85	85	85	85
Administration Costs	175	225	250	250	250	250	250	250	250	250
Land lease cost	0	0	0	0	9	9	9	9	9	9
Cost of marketing and distribution	500	500	500	500	500	500	500	500	500	500
Total Operating Costs	**46,967**	**60,244**	**66,882**	**66,882**	**66,891**	**66,891**	**66,891**	**66,891**	**66,891**	**66,891**
Depreciation	824	824	824	824	824	175	175	175	175	175
Cost of Finance	0	1,742	1,524	1,307	1,089	871	653	436	218	0
Total Production Cost	**47,791**	**62,810**	**69,230**	**69,013**	**68,803**	**67,937**	**67,719**	**67,501**	**67,283**	**67,066**

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	52,500	67,500	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000
Less variable costs	46,467	59,744	66,382	66,382	66,382	66,382	66,382	66,382	66,382	66,382
VARIABLE MARGIN	**6,033**	**7,756**	**8,618**	**8,618**	**8,618**	**8,618**	**8,618**	**8,618**	**8,618**	**8,618**
in % of sales revenue	11.49	11.49	11.49	11.49	11.49	11.49	11.49	11.49	11.49	11.49
Less fixed costs	1,324	1,324	1,324	1,324	1,333	684	684	684	684	684
OPERATIONAL MARGIN	**4,709**	**6,432**	**7,294**	**7,294**	**7,285**	**7,934**	**7,934**	**7,934**	**7,934**	**7,934**
in % of sales revenue	8.97	9.53	9.73	9.73	9.71	10.58	10.58	10.58	10.58	10.58
Financial costs		1,742	1,524	1,307	1,089	871	653	436	218	0
GROSS PROFIT	**4,709**	**4,690**	**5,770**	**5,987**	**6,197**	**7,063**	**7,281**	**7,499**	**7,717**	**7,934**
in % of sales revenue	8.97	6.95	7.69	7.98	8.26	9.42	9.71	10.00	10.29	10.58
Income (corporate) tax	0	0	0	1,796	1,859	2,119	2,184	2,250	2,315	2,380
NET PROFIT	**4,709**	**4,690**	**5,770**	**4,191**	**4,338**	**4,944**	**5,097**	**5,249**	**5,402**	**5,554**
in % of sales revenue	8.97	6.95	7.69	5.59	5.78	6.59	6.80	7.00	7.20	7.41

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

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Scrap
TOTAL CASH INFLOW	**7,272**	**69,466**	**67,508**	**75,004**	**75,000**	**75,000**	**75,000**	**75,000**	**75,000**	**75,000**	**75,000**	**25,780**
Inflow funds	7,272	16,966	8	4	0	0	0	0	0	0	0	0
Inflow operation	0	52,500	67,500	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	0
Other income	0	0	0	0	0	0	0	0	0	0	0	25,780
TOTAL CASH OUTFLOW	**7,272**	**63,934**	**68,547**	**72,776**	**72,163**	**72,017**	**72,059**	**71,906**	**71,754**	**71,601**	**69,271**	**0**
Increase in fixed assets	7,272	0	0	0	0	0	0	0	0	0	0	0
Increase in current assets	0	15,382	4,383	2,192	0	1	0	0	0	0	0	0
Operating costs	0	46,467	59,744	66,382	66,382	66,391	66,391	66,391	66,391	66,391	66,391	0
Marketing and Distribution cost	0	500	500	500	500	500	500	500	500	500	500	0
Income tax	0	0	0	0	1,796	1,859	2,119	2,184	2,250	2,315	2,380	0
Financial costs	0	1,584	1,742	1,524	1,307	1,089	871	653	436	218	0	0
Loan repayment	0	0	2,178	2,178	2,178	2,178	2,178	2,178	2,178	2,178	0	0
SURPLUS (DEFICIT)	**0**	**5,533**	**-1,039**	**2,228**	**2,837**	**2,983**	**2,941**	**3,094**	**3,246**	**3,399**	**5,729**	**25,780**
CUMULATIVE CASH BALANCE	**0**	**5,533**	**4,493**	**6,721**	**9,559**	**12,542**	**15,483**	**18,577**	**21,823**	**25,222**	**30,951**	**56,731**

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**	**52,500**	**67,500**	**75,000**	**75,000**	**75,000**	**75,000**	**75,000**	**75,000**	**75,000**	**75,000**	**25,780**
Inflow operation	0	52,500	67,500	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	0
Other income	0	0	0	0	0	0	0	0	0	0	0	25,780
TOTAL CASH OUTFLOW	**22,627**	**51,343**	**62,431**	**66,882**	**68,679**	**68,750**	**69,010**	**69,075**	**69,140**	**69,206**	**69,271**	**0**
Increase in fixed assets	7,272	0	0	0	0	0	0	0	0	0	0	0
Increase in net working capital	15,355	4,375	2,188	0	1	0	0	0	0	0	0	0
Operating costs	0	46,467	59,744	66,382	66,382	66,391	66,391	66,391	66,391	66,391	66,391	0
Marketing and Distribution cost	0	500	500	500	500	500	500	500	500	500	500	0
Income (corporate) tax		0	0	0	1,796	1,859	2,119	2,184	2,250	2,315	2,380	0
NET CASH FLOW	**-22,627**	**1,157**	**5,069**	**8,118**	**6,321**	**6,250**	**5,990**	**5,925**	**5,860**	**5,794**	**5,729**	**25,780**
CUMULATIVE NET CASH FLOW	**-22,627**	**-21,470**	**-16,401**	**-8,283**	**-1,962**	**4,288**	**10,279**	**16,204**	**22,064**	**27,858**	**33,587**	**59,367**
Net present value	-22,627	1,052	4,189	6,099	4,317	3,881	3,381	3,041	2,734	2,457	2,209	9,939
Cumulative net present value	-22,627	-21,575	-17,386	-11,287	-6,969	-3,088	293	3,334	6,067	8,525	10,733	20,673

NET PRESENT VALUE	20,673
INTERNAL RATE OF RETURN	22.50%
NORMAL PAYBACK	5 years