

**151. PROFILE ON THE PRODUCTION OF  
AGRICULTURAL IMPLEMENTS –HAND,  
ANIMAL AND TRACTOR DRAWN**

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## I. SUMMARY

This profile envisages the establishment of a plant for the production of 200,000 units of farm implements per annum (150,000 hand implants and 50,000 animal and tractor drawn implements). Agricultural implements are used for agriculture work to improve the efficiency and reduce the labour.

The demand for agricultural implements is met through import and domestic production. The present (2012) demand for hand implements and for animal and tractor drawn implements is estimated at 1,509 tons and 9,661 pieces, respectively. The demand for animal and tractor drawn implements is projected to reach 2,117 tons and 13,550 pieces by the year 2017 and 2,969 tons and 19,005 by the year 2022, respectively.

The principal raw materials required are steel and plates rivet which have to be imported.

The total investment cost of the project including working capital is estimated at Birr 38.22 million. From the total investment cost the highest share (Birr 18.22 million or 47.68%) is accounted by initial working capital followed by fixed investment cost (Birr 16.77 million or 43.88%) and pre operation cost (Birr 3.22 million or 8.45%). From the total investment cost Birr 11.55 million or 30.21% is required in foreign currency.

The project is financially viable with an internal rate of return (IRR) of 21.40% and a net present value (NPV) of Birr 24.17 million discounted at 10%.

The project can create employment for 26 persons. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports. The project will also create backward linkage with the packaging and chemical manufacturing subsectors and forward linkage with the agricultural sector and also generates income for the Government in terms of tax revenue and payroll tax.

## II. PRODUCT DESCRIPTION AND APPLICATION

Agricultural implements are used for agriculture work to improve the efficiency and reduce the labour. A large variety of agricultural hand, animal and tractor drawn are used. Among others the category of agricultural implements includes: Spade ,Shovel, Fork, Mattock, Pick, Hose, Rake, Axe and Bill hook on the hand implements side while Plough, Disc harrow, Cultivator, Weedier, Harvester, and Thrasher on the animal and tractor drawn side.

## III. MARKET STUDY AND MANUFACTURING CAPACITY

### A. MARKET STUDY

#### 1. Past Supply and Present Demand

For the purpose of this profile the following implements are selected;

- |   |  |
|---|--|
| <input type="checkbox"/> <b>Hand implements</b> | <input type="checkbox"/> <b>Animal and tractor drawn</b> |
| <input type="checkbox"/> Spade                  | <input type="checkbox"/> Plough                          |
| <input type="checkbox"/> Shovel                 | <input type="checkbox"/> Disc harrow                     |
| <input type="checkbox"/> Fork                   | <input type="checkbox"/> Cultivator                      |
| <input type="checkbox"/> Mattock                | <input type="checkbox"/> Weeder                          |
| <input type="checkbox"/> Pick                   | <input type="checkbox"/> Harvester                       |
| <input type="checkbox"/> Hose                   | <input type="checkbox"/> Thrasher                        |
| <input type="checkbox"/> Rake                   |  |
| <input type="checkbox"/> Axe                    |  |
| <input type="checkbox"/> Bill hook              |  |

Some of the hand and animal and tractor drawn agricultural implements are manufactured by few of the existing metal industries locally. However, there is no available that that indicates the level of local production. Moreover, since the bulk of the products supply comes through import the demand for the product is estimated based on the trend in import. Accordingly, import of hand

and animal and tractor drawn agricultural implements during the period 2002 – 2011 are shown in Table 3.1.

**Table 3.1**  
**IMPORT OF HAND AND ANIMAL AND TRACTOR DRAWN AGRICULTURAL**  
**IMPLEMENTES**

<b>Year</b>	<b>Hand implements (tons)</b>	<b>Animal and tractor drawn implements (pcs)</b>
2002	558	2,681
2003	984	3,459
2004	1,766	5,807
2005	1,919	3,803
2006	1,313	3,365
2007	1,816	3,290
2008	936	20,647
2009	1,867	3,392
2010	1,231	4,765
2011	1,695	16,212

*Source: Ethiopian Revenues & Customs Authority*

Scrutiny of Table 3.1 reveals that imports of hand implements during the period under consideration (2002-2011) ranged from 558 tons (2002) to 1,919 tons (2005) with a mean import of 1,409 tons. Similarly, during the same period, import of animal and tractor drawn implements ranges from 2,681 pieces in 2012 to 20,647 pieces in 2008 averaging at 6,742 pieces. However, a general increase in the import of the products can be observed. For example the average import during the initial five years (2002-2006) was 1,308 tons for hand implements and 3,823 pieces for animal and tractor drawn implements. However during the recent five years (2007-2011) the

average import has increased to 1,509 tons for hand implements and 9,661 pieces for animal and tractor drawn implements.

Accordingly, considering the trend in import of the products the recent five years (2007-2011) average import i.e., 1,509 tons for hand implements and 9,661 pieces for animal and tractor drawn implements is considered to approximate current (2012) demand for the products.

## **2. Demand Projection**

The demand for hand and animal and tractor drawn agricultural implements depends on the performance of the agriculture sector. According to the GTP, during the period 2010/11 – 2014/15 the agriculture sector of the country (at a base case scenario) is expected to grow at an average annual growth rate of 8.6%.

However, in order to be conservative a growth rate of 7% which is slightly lower than the anticipated growth rate of the agriculture sector during the GTP period is used to project the demand for the products.

Accordingly, using the estimated present demand as a base and applying a growth rate of 7% the projected demand for hand and animal and tractor drawn agricultural implements is shown in Table 3.2.

**Table 3.2**  
**PROJECTED DEMAND FOR HAND AND ANIMAL AND TRACTOR DRAWN**  
**AGRICULTURAL IMPLEMENTS**

<b>Year</b>	<b>Hand implements (tons)</b>	<b>Animal and tractor drawn implants (pcs)</b>
2013	1,615	10,338
2014	1,728	11,061
2015	1,849	11,835
2016	1,978	12,664
2017	2,117	13,550

<b>Year</b>	<b>Hand implements (tons)</b>	<b>Animal and tractor drawn implants (pcs)</b>
2018	2,265	14,499
2019	2,423	15,514
2020	2,593	16,600
2021	2,775	17,762
2022	2,969	19,005
2023	3,177	20,336
2024	3,399	21,759
2025	3,637	23,282

### **3. Pricing and distribution**

The price of the envisaged products widely reneges on type, capacity and origin. Hence for the purpose of financial analyses an average factory gate price of Birr 175 per pieces for hand implements and Birr 1,000 pieces for animal and tractor drawn implements are considered.

The plant can sell its product either directly to government agencies or NGOs involved in development of the agriculture sector or through agents that distribute similar products throughout the country.

## **B. PLANT CAPACITY AND PRODUCTION PROGRAMME**

### **1. Plant capacity**

The capacity of the proposed plant is in the range of 200,000 units of farm implements (150,000 hand implants and 50,000 animal and tractor drawn implements). Being a multi purposed light engineering workshop, the plant is flexible to switch from one type of product to the other depending on the market. The capacity is estimated on the basis of single shift operation and 300 annual working days. Assuming that about a month will be needed for annual over-haul, net annual working days of 300 appear realistic.

## 2. Production programme

Full capacity production will be attained in the third year of operation with 85% and 90 % capacity utilization attained during the first and second year of operation. Being an engineering industry, it will take relatively long time to reach full capacity production, and hence full capacity utilization will be attained in the third year of production.

## IV. RAW MATERIALS AND INPUTS

### A. MATERIALS

The main raw materials required are angle iron, steel tubes, MSS, and springs. Some products like sickles also require wooden handles. Annual cost of these materials at full production capacity of the plant is estimated at Birr 1.0 million. Table 4.1 below shows the details of major raw materials and related costs.

**Table 4.1**  
**RAW MATERIAL REQUIREMENTS AND COST**

Sr. No.	Description	Qty.	Cost (´000 Birr)		
			LC	FC	TC
1	Angle iron	500 ton	2,200	11,000	13,200
2	Steel tube	350 ton	1,540	7,700	9,240
3	Mild steel sheet	750 ton	3,750	18,750	22,500
4	Bushes	150 ton	360	1,800	2,160
6	Leaf spring and shackles	200 ton	1,200	6,000	7,200
7	Mild steel bar	100 ton	580	2,900	3,480
8	Wooden bars	1,5000 m	45	225	270
9	Wooden slates	8,000 m	18	88	106
10	Paint and varnish	150 gal	4,500		4,500
11	Packing materials	50 ton	1,250		1,250
	<b>Grand Total</b>		<b>15,443</b>	<b>48,463</b>	<b>63,906</b>



## B. UTILITIES

Electricity and water are utilities required for the envisaged plant. The total annual expenditure on utilities will be Birr 447,130. The details are shown in table 4.2.

**Table 4.2**  
**ANNUAL UTILITIES REQUIREMENTS**

No.	Description	Annual consumption	Unit	Unit Cost ( Birr)	Total Cost ( `000 Birr )
1	Electricity	660,000	kwh	0.65	429
2	Water	1,813	m <sup>3</sup>	10	18.13
<b>Total Annual cost</b>					<b>447.13</b>

## V. TECHNOLOGY AND ENGINEERING

### A. TECHNOLOGY

#### 1. Production process

The plant is a multi- purposed mechanical workshop with conventional sheet metal (plate) working facilities. The production process for manufacturing of products under consideration involves cutting, punching, forging, forming/bending, grinding/sharpening, heat treatment and painting.

#### 2. Environmental Impact

The production process basically involves cutting, punching, forging, forming/bending, grinding/sharpening, heat treatment and painting which does not have any negative impact on the environment.

## B. ENGINEERING

### 1. Machinery and Equipment

The total F.O.B cost of machineries, is estimated at Birr 10.5 million. Total landed cost is Birr 12.6 million. The foreign and local cost components are Birr 11,550,000 and Birr 1,050,000 respectively. The machinery and equipment required are presented in Table 5.1

**Table 5.1**

**MACHINERY AND EQUIPMENT REQUIREMENT AND COST**

<b>Machinery and Equipment</b>	<b>Number Required</b>
Power shear for 6mm steel plate	<b>1</b>
Eccentric press(125T)	<b>1</b>
Fuel –Fired furnace ( 60cm X 60 cm X 75 cm)	<b>1</b>
Friction screw press (160T)	<b>1</b>
Eccentric press (60 T)	<b>1</b>
Double –ended pedestal grinder(30 cm wheel)	<b>1</b>
Quenching Tank( 1 cubic meter)	<b>1</b>
Manual tube bending machine (for tube diameter of upto 4cm)	<b>1</b>
Tumbler	<b>1 set</b>
Black smith’s tool	<b>1</b>
Painting equipment	<b>1</b>
Wooden handle making equipment	<b>1</b>

## **2. Building and Civil work**

The total area required for plant site is estimated to be 800 m<sup>2</sup>; of this the built-up area of the factory will be 600 m<sup>2</sup>. Building cost is estimated to be Birr 5,000 per m<sup>2</sup>, and the total building cost will, then, be Birr 3 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<sup>2</sup>, 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<sup>2</sup>, 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<sup>2</sup>. 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<sup>2</sup>. 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<sup>2</sup> (see Table 5.2).

**Table 5.2****NEW LAND LEASE FLOOR PRICE FOR PLOTS IN ADDIS ABABA**

<b>Zone</b>	<b>Level</b>	<b>Floor price/m<sup>2</sup></b>
Central Market District	1 <sup>st</sup>	1686
	2 <sup>nd</sup>	1535
	3 <sup>rd</sup>	1323
	4 <sup>th</sup>	1085
	5 <sup>th</sup>	894
Transitional zone	1 <sup>st</sup>	1035
	2 <sup>nd</sup>	935
	3 <sup>rd</sup>	809
	4 <sup>th</sup>	685
	5 <sup>th</sup>	555
Expansion zone	1 <sup>st</sup>	355
	2 <sup>nd</sup>	299
	3 <sup>rd</sup>	217
	4 <sup>th</sup>	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<sup>2</sup> which is equivalent to the average floor price of plots located in expansion zone is adopted.

On the other hand, some of the investment incentives arranged by the Addis Ababa City Administration on lease payment for industrial projects are granting longer grace period and extending the lease payment period. The criteria are creation of job opportunity, foreign exchange saving, investment capital and land utilization tendency etc. Accordingly, Table 5.3 shows incentives for lease payment.

**Table 5.3****INCENTIVES FOR LEASE PAYMENT OF INDUSTRIAL PROJECTS**

<b>Scored point</b>	<b>Grace period</b>	<b>Payment Completion Period</b>	<b>Down Payment</b>
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<sup>2</sup> is estimated at Birr 212,800 of which 10% or Birr 21,280 will be paid in advance. The remaining Birr 191,520 will be paid in equal installments with in 28 years i.e. Birr 6,840 annually.

**VI. HUMAN RESOURCE AND TRAINING REQUIREMENT****A. HUMAN RESOURCE REQUIREMENT**

The envisaged project's human resource requirement is 26 persons. The list of required manpower & annual labour cost including fringe benefits is shown in Table 6.1

**B. TRAINING REQUIREMENT**

As the type of technology is locally developed and technical personnel with the basic technical skill are readily available in the labour market. No training has been envisaged for this project.

**Table 6.1****MANPOWER REQUIREMENT & ANNUAL LABOUR COST**

Sr. No.	Description	Req. No.	Salary, Birr	
			Monthly	Annual
1	General manager	1	8,000	96,000
2	Production head	1	6,000	72,000
3	Welders	3	6,000	72,000
4	Fitters	3	6,000	72,000
5	Helpers	5	5,000	60,000
6	Machinists	4	10,000	120,000
7	Secretary	1	2,000	24,000
8	Store-keeper	1	2,500	30,000
9	Cashier	1	1,750	21,000
10	Clerk	1	1,200	14,400
11	General services (inc. Guards)	5	5,000	60,000
	<b>Sub-total</b>	<b>26</b>		<b>641,400</b>
	Employees Benefit (25% of basic salary)			128,280
	<b>Total</b>			<b>769,680</b>

**VII. FINANCIAL ANALYSIS**

The financial analysis of the agricultural implements –hand, animal and tractor drawn project is based on the data presented in the previous chapters and the following assumptions:-

Construction period	1 year
Source of finance	30 % equity & 70 loan
Tax holidays	5 years
Bank interest	10%
Discount cash flow	10%
Accounts receivable	30 days
Raw material local	30 days
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 38.22 million (See Table 7.1). From the total investment cost the highest share (Birr 18.22 million or 47.68%) is accounted by initial working capital followed by fixed investment cost (Birr 16.77 million or 43.88%) and pre operation cost (Birr 3.22 million or 8.45%). From the total investment cost Birr 11.55 million or 30.21% is required in foreign currency.

**Table 7.1**  
**INITIAL INVESTMENT COST ( '000 Birr)**

Sr. No	Cost Items	Local Cost	Foreign Cost	Total Cost	% Share
<b>1</b>	<b>Fixed investment</b>				
1.1	Land Lease	21.28		21.28	0.06
1.2	Building and civil work	3,000.00		3,000.00	7.85
1.3	Machinery and equipment	1,050.00	11,550.00	12,600.00	32.96
1.4	Vehicles	900.00		900.00	2.35
1.5	Office furniture and equipment	250.00		250.00	0.65
	<b>Sub total</b>	<b>5,221.28</b>	<b>11,550.00</b>	<b>16,771.28</b>	<b>43.88</b>
<b>2</b>	<b>Pre operating cost *</b>				
2.1	Pre operating cost	728.00		728.00	1.90
2.2	Interest during construction	2,500.58		2,500.58	6.54
	<b>Sub total</b>	<b>3,228.58</b>		<b>3,228.58</b>	<b>8.45</b>
<b>3</b>	<b>Working capital **</b>	<b>18,223.30</b>		<b>18,223.30</b>	<b>47.68</b>
	<b>Grand Total</b>	<b>26,673.16</b>	<b>11,550.00</b>	<b>38,223.16</b>	<b>100</b>

\* *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 21.43 million. However, only the initial working capital of Birr 18.22 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 71.64 million (see Table 7.2). The cost of raw material account for 89.20% of the production cost. The other major components of the production cost are depreciation, financial cost and direct labour which account for 4.17%, 3.36% and 0.89% respectively. The remaining 2.38% is the share of utility, repair and maintenance, labour overhead, cost of marketing and distribution and administration cost. For detail production cost see Appendix 7.A.2.

**Table 7.2**

### **ANNUAL PRODUCTION COST AT FULL CAPACITY (year three)**

<b>Items</b>	<b>Cost ( 000 Birr)</b>	<b>%</b>
Raw Material and Inputs	63,906.00	89.20
Utilities	447.00	0.62
Maintenance and repair	378.00	0.53
Labour direct	641.00	0.89
Labour overheads	128.00	0.18
Administration Costs	250.00	0.35
Land lease cost	-	-
Cost of marketing and distribution	500.00	0.70
<b>Total Operating Costs</b>	<b>66,250.00</b>	<b>92.47</b>
Depreciation	2,990.60	4.17
Cost of Finance	2,406.81	3.36
<b>Total Production Cost</b>	<b>71,647.41</b>	<b>100</b>

## C. FINANCIAL EVALUATION

### 1. Profitability

Based on the projected profit and loss statement, the project will generate a profit through out its operation life. Annual net profit after tax will grow from Birr 5.43 million to Birr 6.89 million during the life of the project. Moreover, at the end of the project life the accumulated net cash flow amounts to Birr 66.25 million. For profit and loss statement and cash flow projection see Appendix 7.A.3 and 7.A.4, respectively.

### 2. Ratios

In financial analysis financial ratios and efficiency ratios are used as an index or yardstick for evaluating the financial position of a firm. It is also an indicator for the strength and weakness of the firm or a project. Using the year-end balance sheet figures and other relevant data, the most important ratios such as return on sales which is computed by dividing net income by revenue, return on assets (operating income divided by assets), return on equity (net profit divided by equity) and return on total investment (net profit plus interest divided by total investment) has been carried out over the period of the project life and all the results are found to be satisfactory.

### 3. Break-even Analysis

The break-even analysis establishes a relationship between operation costs and revenues. It indicates the level at which costs and revenue are in equilibrium. To this end, the break-even point for capacity utilization and sales value estimated by using income statement projection are computed as followed.

$$\text{Break Even Sales Value} = \frac{\text{Fixed Cost} + \text{Financial Cost}}{\text{Variable Margin ratio (\%)}} = \text{Birr } 25,348,405$$

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

### 4. Pay-back Period

The pay-back period, also called pay – off period is defined as the period required for recovering the original investment outlay through the accumulated net cash flows earned by the project.

Accordingly, based on the projected cash flow it is estimated that the project's initial investment will be fully recovered within 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 21.40% indicating the viability of the project.

## **6. Net Present Value**

Net present value (NPV) is defined as the total present (discounted) value of a time series of cash flows. NPV aggregates cash flows that occur during different periods of time during the life of a project in to a common measuring unit i.e. present value. It is a standard method for using the time value of money to appraise long-term projects. NPV is an indicator of how much value an investment or project adds to the capital invested. In principal a project is accepted if the NPV is non-negative.

Accordingly, the net present value of the project at 10% discount rate is found to be Birr 24.17 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 26 persons. The project will generate Birr 13.74 million in terms of tax revenue. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports. The project will also create backward linkage with the packaging and chemical manufacturing subsectors and forward linkage with the agricultural sector generate other income for the government.

**Appendix 7.A**

**FINANCIAL ANALYSES SUPPORTING TABLES**



**Appendix 7.A.2**  
**PRODUCTION COST ( in 000 Birr)**

Item	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Raw Material and Inputs	54,320	57,515	63,906	63,906	63,906	63,906	63,906	63,906	63,906	63,906
Utilities	380	402	447	447	447	447	447	447	447	447
Maintenance and repair	321	340	378	378	378	378	378	378	378	378
Labour direct	545	577	641	641	641	641	641	641	641	641
Labour overheads	109	115	128	128	128	128	128	128	128	128
Administration Costs	213	225	250	250	250	250	250	250	250	250
Land lease cost	0	0	0	0	7	7	7	7	7	7
Cost of marketing and distribution	500	500	500	500	500	500	500	500	500	500
<b>Total Operating Costs</b>	<b>56,388</b>	<b>59,675</b>	<b>66,250</b>	<b>66,250</b>	<b>66,257</b>	<b>66,257</b>	<b>66,257</b>	<b>66,257</b>	<b>66,257</b>	<b>66,257</b>
Depreciation	2,991	2,991	2,991	2,991	2,991	145	145	145	145	145
Cost of Finance	0	2,751	2,407	2,063	1,719	1,375	1,031	688	344	0
<b>Total Production Cost</b>	<b>59,378</b>	<b>65,416</b>	<b>71,647</b>	<b>71,304</b>	<b>70,967</b>	<b>67,777</b>	<b>67,433</b>	<b>67,089</b>	<b>66,746</b>	<b>66,402</b>

**Appendix 7.A.3**  
**NET INCOME STATEMENT ( in 000 Birr)**

Item	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Sales revenue	64,813	68,625	76,250	76,250	76,250	76,250	76,250	76,250	76,250	76,250
Less variable costs	55,888	59,175	65,750	65,750	65,750	65,750	65,750	65,750	65,750	65,750
<b>VARIABLE MARGIN</b>	<b>8,926</b>	<b>9,450</b>	<b>10,500</b>	<b>10,500</b>	<b>10,500</b>	<b>10,500</b>	<b>10,500</b>	<b>10,500</b>	<b>10,500</b>	<b>10,500</b>
in % of sales revenue	13.77	13.77	13.77	13.77	13.77	13.77	13.77	13.77	13.77	13.77
Less fixed costs	3,491	3,491	3,491	3,491	3,497	652	652	652	652	652
<b>OPERATIONAL MARGIN</b>	<b>5,435</b>	<b>5,959</b>	<b>7,009</b>	<b>7,009</b>	<b>7,003</b>	<b>9,848</b>	<b>9,848</b>	<b>9,848</b>	<b>9,848</b>	<b>9,848</b>
in % of sales revenue	8.39	8.68	9.19	9.19	9.18	12.92	12.92	12.92	12.92	12.92
Financial costs		2,751	2,407	2,063	1,719	1,375	1,031	688	344	0
<b>GROSS PROFIT</b>	<b>5,435</b>	<b>3,209</b>	<b>4,603</b>	<b>4,946</b>	<b>5,283</b>	<b>8,473</b>	<b>8,817</b>	<b>9,161</b>	<b>9,504</b>	<b>9,848</b>
in % of sales revenue	8.39	4.68	6.04	6.49	6.93	11.11	11.56	12.01	12.46	12.92
Income (corporate) tax	0	0	0	0	0	2,542	2,645	2,748	2,851	2,954
<b>NET PROFIT</b>	<b>5,435</b>	<b>3,209</b>	<b>4,603</b>	<b>4,946</b>	<b>5,283</b>	<b>5,931</b>	<b>6,172</b>	<b>6,412</b>	<b>6,653</b>	<b>6,894</b>
in % of sales revenue	8.39	4.68	6.04	6.49	6.93	7.78	8.09	8.41	8.73	9.04

**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
<b>TOTAL CASH INFLOW</b>	<b>17,499</b>	<b>85,609</b>	<b>68,629</b>	<b>76,258</b>	<b>76,250</b>	<b>76,250</b>	<b>76,250</b>	<b>76,250</b>	<b>76,250</b>	<b>76,250</b>	<b>76,250</b>	<b>25,754</b>
Inflow funds	17,499	20,796	4	8	0	0	0	0	0	0	0	0
Inflow operation	0	64,813	68,625	76,250	76,250	76,250	76,250	76,250	76,250	76,250	76,250	0
Other income	0	0	0	0	0	0	0	0	0	0	0	25,754
<b>TOTAL CASH OUTFLOW</b>	<b>17,499</b>	<b>77,184</b>	<b>66,938</b>	<b>74,243</b>	<b>71,751</b>	<b>71,415</b>	<b>73,612</b>	<b>73,372</b>	<b>73,131</b>	<b>72,890</b>	<b>69,211</b>	<b>0</b>
Increase in fixed assets	17,499	0	0	0	0	0	0	0	0	0	0	0
Increase in current assets	0	18,295	1,074	2,148	0	1	0	0	0	0	0	0
Operating costs	0	55,888	59,175	65,750	65,750	65,757	65,757	65,757	65,757	65,757	65,757	0
Marketing and Distribution cost	0	500	500	500	500	500	500	500	500	500	500	0
Income tax	0	0	0	0	0	0	2,542	2,645	2,748	2,851	2,954	0
Financial costs	0	2,501	2,751	2,407	2,063	1,719	1,375	1,031	688	344	0	0
Loan repayment	0	0	3,438	3,438	3,438	3,438	3,438	3,438	3,438	3,438	0	0
<b>SURPLUS (DEFICIT)</b>	<b>0</b>	<b>8,426</b>	<b>1,692</b>	<b>2,016</b>	<b>4,499</b>	<b>4,835</b>	<b>2,638</b>	<b>2,878</b>	<b>3,119</b>	<b>3,360</b>	<b>7,039</b>	<b>25,754</b>
<b>CUMULATIVE CASH BALANCE</b>	<b>0</b>	<b>8,426</b>	<b>10,117</b>	<b>12,133</b>	<b>16,632</b>	<b>21,467</b>	<b>24,104</b>	<b>26,983</b>	<b>30,102</b>	<b>33,462</b>	<b>40,500</b>	<b>66,255</b>



**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
<b>TOTAL CASH INFLOW</b>	<b>0</b>	<b>64,813</b>	<b>68,625</b>	<b>76,250</b>	<b>76,250</b>	<b>76,250</b>	<b>76,250</b>	<b>76,250</b>	<b>76,250</b>	<b>76,250</b>	<b>76,250</b>	<b>25,754</b>
Inflow operation	0	64,813	68,625	76,250	76,250	76,250	76,250	76,250	76,250	76,250	76,250	0
Other income	0	0	0	0	0	0	0	0	0	0	0	25,754
<b>TOTAL CASH OUTFLOW</b>	<b>35,723</b>	<b>57,457</b>	<b>61,814</b>	<b>66,250</b>	<b>66,251</b>	<b>66,257</b>	<b>68,799</b>	<b>68,902</b>	<b>69,005</b>	<b>69,108</b>	<b>69,211</b>	<b>0</b>
Increase in fixed assets	17,499	0	0	0	0	0	0	0	0	0	0	0
Increase in net working capital	18,223	1,070	2,139	0	1	0	0	0	0	0	0	0
Operating costs	0	55,888	59,175	65,750	65,750	65,757	65,757	65,757	65,757	65,757	65,757	0
Marketing and Distribution cost	0	500	500	500	500	500	500	500	500	500	500	0
Income (corporate) tax		0	0	0	0	0	2,542	2,645	2,748	2,851	2,954	0
<b>NET CASH FLOW</b>	<b>-35,723</b>	<b>7,356</b>	<b>6,811</b>	<b>10,000</b>	<b>9,999</b>	<b>9,993</b>	<b>7,451</b>	<b>7,348</b>	<b>7,245</b>	<b>7,142</b>	<b>7,039</b>	<b>25,754</b>
<b>CUMULATIVE NET CASH FLOW</b>	<b>-35,723</b>	<b>-28,367</b>	<b>-21,556</b>	<b>-11,556</b>	<b>-1,556</b>	<b>8,437</b>	<b>15,888</b>	<b>23,236</b>	<b>30,481</b>	<b>37,623</b>	<b>44,662</b>	<b>70,416</b>
Net present value	-35,723	6,687	5,629	7,513	6,830	6,205	4,206	3,771	3,380	3,029	2,714	9,929
Cumulative net present value	-35,723	-29,035	-23,406	-15,893	-9,064	-2,859	1,347	5,118	8,498	11,527	14,241	24,170

NET PRESENT VALUE           24,170  
INTERNAL RATE OF RETURN   21.40%  
NORMAL PAYBACK               5 years