PROFILE ON THE PRODUCTION OF ANIMAL FEED

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I. SUMMARY

This profile envisages the establishment of a plant for the production of animal feed with a capacity of 15,000 tons per annum. Animal feed is prepared for consumption by livestock. It contains protein, minerals and other nutrients which are useful for beef and milk production as well as survival and growth of the animals.

The country`s requirement of animal feed is met through local production. The present (2012) demand for animal feed is estimated at 3.70 million tons. The demand for the product is projected to reach 4.72 million tons and 6.02 million tons by the years 2017 and 2022, respectively.

The principal raw materials required are oil cake, molasses, bone meal, bran of cereals, maize, salt and limestone which are all available locally.

The total investment cost of the project is estimated at Birr 33.43 million. From the total investment cost the highest share (Birr 16.17 million or 48.38%) is accounted by fixed investment cost followed by initial working capital (Birr 14.15 million or 42.34%) and pre operation cost (Birr 3.09 million or 9.27%). From the total investment cost Birr 9.80 million or 29.31% is required in foreign currency.

The project is financially viable with an internal rate of return (IRR) of 28.90% and a net present value (NPV) of Birr 33.54 million discounted at 10%.

The project can create employment for 31 persons. The project will create backward linkage with the agriculture and agro processing sectors and forward linkage with the livestock sector and also generates income for the Government in terms of tax revenue and payroll tax.

II. PRODUCT DESCRIPTION AND APPLICATION

Animal feed is a kind of feed prepared for oxen, cows, sheep, goat, etc. reared for their milk and meat. It contains protein, minerals and other nutrients which are useful for beef and milk production as well as survival and growth of the animals. Animal feed can be prepared from oil cakes, agro - residues, flour mill by - products, cereals, molasses, etc. The major animal feed consumers are large and small scale cattle raising and fattening farms.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Supply and Demand

Ethiopia has a significant number of cattle. However, the production of cattle feed is not sufficient to support the development of this activity. Livestock feed includes natural pastures, crop residues, cultivated forages and agro-industrial by-products. But, the importance of natural pasture is gradually declining because of the expansion of crop production into grazing lands, redistribution of communal lands to the landless and land degradation. Commercial fattening and animal breeding enterprises have also grown significantly since recently. The establishment of these kind enterprises would increase the demand for cattle feed. Moreover, many animal feeds have alternative uses either for human consumption or for industrial use. There is also direct competition between human and livestock for cereal grains. The country faces severe feed shortage due to either the seasonality in the availability thereof and the poorly developed animal feed conservation method for use during lean years. The current national animal feed demand is estimated at 95.8 million tons of DM, whereas the supply thereof amounts only to 65.6 million tons of DM (ITAB 2010)—leaving an unsatisfied huge gap

Report on Medium Scale Manufacturing and Electricity Industries Survey shows that in the period 2001/02-2009/10 on average about 10,104 tons of animal feed has been produced. Current production by existing firms is assumed to be the maximum recorded amount from available data of CSA i.e., 19,392 tons.

To estimate the present demand for cattle feed the cattle population, the recommended average feed consumption and constraints such as awareness and income of potential users as well as products adaptability are considered. Accordingly, the total cattle population for the country is estimated to be about 52.13 million (CSA 2012) and the recommended rate is 2 kg/head a day. If the total population was to be fed with improved feed, 37.5 million tons would be needed. However, considering the constraints mentioned earlier, conservatively only 10% of the population are assumed to be relevant. Hence, the national present effective demand is estimated at 3.7 million tons which show that there is large scope to increase production of industrially processed feed. Furthermore, the enterprises in Addis Ababa are assumed to capture 10% of the market (considering Addis Ababa's advantage; central location, availability of better infrastructure and other facilities). Accordingly, the present effective demand is 370,000 tons.

2. Demand Projection

The demand for industrially processed animal feed will ultimately depend on the awareness of farmers on the importance of the product, size of animal population and development of modern animal farms. The government's livestock policy objectives in the GTP are to increase livestock productivity through increases in improved breed's provision, animal health and increase forage production. Naturally, there are things that can be done to improve natural feed sources. However, there will be limitations due to factors enumerated above. Moreover, forage production alone is unlikely to satisfy the existing demand. One of the possible ways of overcoming these limitations is through increased production and supply of industrially processed feed. By considering the extension program being implemented by the Ministry of Agriculture as well as other NGOs which is likely to impact demand for manufactured feeds positively (through awareness creation) and declining importance of natural pasture and the competing demands, as well as development of market oriented livestock production, an annual growth rate of 5% is applied in projecting the demand for the product.

Moreover, during the projection period the enterprise to be established in Addis Ababa is assumed to capture 10% of the market (considering Addis Ababa's advantage i.e. central location, availability of better infrastructure and other facilities).

Accordingly, Table 3.1 depicts the projected demand for manufactured animal feed at national level, unsatisfied demand and market share for Addis Ababa based enterprise(s).

Table 3.1

PROJECTED DEMAND FOR MANUFACTURE ANIMAL FEED (TONS)

Year	Projected Demand	Existing Production Capacity	Demand Supply Gap	Addis Ababa's Market Share
2013	3,885,000	19,392	3,865,608	386,561
2014	4,079,250	19,392	4,059,858	405,986
2015	4,283,213	19,392	4,263,821	426,382
2016	4,497,373	19,392	4,477,981	447,798
2017	4,722,242	19,392	4,702,850	470,285
2018	4,958,354	19,392	4,938,962	493,896
2019	5,206,272	19,392	5,186,880	518,688
2020	5,466,585	19,392	5,447,193	544,719
2021	5,739,914	19,392	5,720,522	572,052
2022	6,026,910	19,392	6,007,518	600,752

3. Pricing and Distribution

Prices of animal feed depend upon the composition of the mix and the nutrients. The Current average price is Birr 426/quintal. This has been taken as ex-factory price for the envisaged project.

Current practice of feed product distribution involves sales at factory gate and to supply to major towns by opening sales store. The project can use both distribution mechanisms to expand its market outlets.

B. PLANT CAPACITY AND PRODUCTION PROGRAM

1. Plant Capacity

Based on the projected demand for animal feed shown in the market study and considering the minimum economic scale of production, the envisaged plant is planned to have a capacity of

15,000 tons of animal feed per annum. This capacity is proposed on the basis of a single shift of 8 hours per day and 300 working days per annum.

2. Production Program

The envisaged plant will start operation at 85% of its rated capacity which will grow to 95% in the second year. Full capacity production will be attained in the third year and onwards. Details of annual production program are shown in Table 3.2.

Table 3.2

ANNUAL PRODUCTION PROGRAM AT FULL CAPACITY OPERATION

Item No.	Description	Unit of Measure	Production Year		
			1st	2nd	3rd & Onwards
1	Animal feed	ton	12,750	14,250	15,000
2	Capacity utilization rate	%	85	95	100

IV. MATERIALS AND INPUTS

A. RAW MATERIALS

The basic raw materials required for the production of animal feed include oil cake, molasses, bone meal, bran of cereals, maize, salt and limestone. All of the raw materials can be available locally. The annual requirement for raw materials at full capacity production and the estimated costs are given in Table 4.1.

Table 4.1

ANNUAL RAW MATERIALS REQUIREMENT AT FULL CAPACITY AND ESTIMATED COSTS

Item No.	Raw Materials	Unit of Measure	Required Qty	Unit Price, Birr/Unit	Cost (000 Birr)		
					F. C.	L.C.	Total
1	Oil cake	ton	3,450	2,875	-	9,918.8	9,918.8
2	Bran of cereals	ton	3,705	2,300	-	8,521.5	8,521.5
3	Molasses	ton	750	200	-	150.0	150.0
4	Maize	ton	6,000	4,000	-	24,000.0	24,000.0
5	Salt	ton	21	3,000	-	63.0	63.0
6	Limestone (ground)	ton	24	450	-	10.8	10.8
7	Other grains (wheat, barely, etc)	ton	450	10,000	-	4,500.0	4,500.0
8	Meal (bone or flesh or blood)	ton	600	750	-	450.0	450.0
Total						**47,614.1**	**47,614.1**

The only auxiliary materials required for the operation of the envisaged plant are 50 kg plastic sacks and twine rope that are also available locally. The annual requirement for auxiliary materials at full capacity production of the plant and the estimated costs are given in Table 4.2.

Table 4.2

ANNUAL AUXILIARY MATERIALS REQUIREMENT AT FULL CAPACITY AND COSTS

Item No.	Description	Unit of Measure	Required Qty	Unit Price (Birr)	Cost,('000 Birr)		
					F.C.	L.C.	Total
1	Plastic sack, 50 kg	pc	300,000	6.00	-	1,800.0	1,800.0
2	Twine rope	kg	2,000	1.50	-	3.0	3.0
Total					**-**	**1,803.0**	**1,803.0**

B. UTILITIES

The utilities required for the envisaged plant comprise electric power, water and fuel oil. Electric power is required to run the production machinery and to provide lighting for the plant. Water is required for general purpose and for the boiler which generates hot water to be supplied to the molasses tank. Fuel oil is required for the boiler. The annual requirement for utilities at full capacity production and the estimated costs are shown in Table 4.3.

Table 4.3

ANNUAL UTILITIES REQUIREMENT AND ESTIMATED COSTS

Item No.	Description	Unit of Measure	Required Qty	Unit Price (Birr)	Cost, ('000 Birr)		
					F.C.	L.C.	Total
1	Electric power	kWh	450,000	0.579		260.55	260.55
2	Water	m3	10,000	10.00		100.00	100.00
3	Furnace oil	liter	50,000	14.88		744.00	744.00
Total						**1,104.55**	**1,104.55**

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

The major operations involved in the production of animal feed are: raw materials preparation, primary crushing, assorting and measuring, molasses mixing, fine crushing, pellet making, and packing.

Raw and auxiliary materials are first charged into silos and tanks where they are made ready for further processing. They are then processed by primary crusher. Crushed materials are further separated by means of a sifter, and then stored in the assorting tanks according to the kind of raw materials.

In assorting and measuring operations, small amounts of additives are charged into the bins containing different assortments of raw materials. The raw materials stored in the assorting tanks are measured in accordance with the desired proportion.

The raw materials are then mixed by means of a mixer. In this process, fatty ingredients are added to the materials in order to raise the nutritional value of the feed. The feed obtained from the mixer is blended with molasses.

After the feed is blended with molasses, it is further crushed by means of the second crusher. Sometimes, second crushing is undesirable and can be avoided.

Assorted animal feed that is crushed into fine particles is further formed into pellets of cylindrical shape, 6 mm in diameter and 2 mm in length. The pellets are then dried and stored in the product tanks. Finally, the product is weighed and packed in plastic or jute bag.

2. Environmental Impact

The envisaged plant does not have any adverse impact on the environment. Thus, the project is environment friendly.

B. ENGINEERING

1. Machinery and equipment

Plant machinery and equipment required for the envisaged project comprise raw materials tanks, screen shakers, hammer mill, blender, bagging machine, pellet making machine, boiler, etc. The total cost of machinery and equipment is estimated at Birr 12.25 million, out of which Birr 9.8 million is required in foreign currency. List of plant machinery and equipment and the estimated costs are shown in Table 5.1.

Table 5.1

MACHINERY AND EQUIPMENT REQUIREMENT AND ESTIMATED COSTS

Item No.	Description	Unit of Measure	Required Qty	Cost, ('000 Birr)		
				F.C.	L.C.	Total
1	Tank and silo for raw and auxiliary materials	set	2	784.0	196.0	980.0
2	Metal screen and shaker	set	1	882.0	220.5	1,102.5
3	Mixer	set	1	784.0	196.0	980.0
4	Hammer mill (crusher)	set	1	882.0	220.5	1,102.5
5	Blender	set	1	784.0	196.0	980.0
6	Weighing scale (5 tons)	set	1	882.0	220.5	1,102.5
7	Bagging machine	set	1	882.0	220.5	1,102.5
8	Dust collector	set	1	490.0	122.5	612.5
9	Product tank	set	1	588.0	147.0	735.0
10	Pellet producing machine	set	1	686.0	171.5	857.5
11	Tanks for oil cakes and molasses	set	2	686.0	171.5	857.5
12	Boiler	set	1	784.0	196.0	980.0
13	Other accessories	set	1	686.0	171.5	857.5
Total				**9,800.0**	**2,450.0**	**12,250.0**

2. Land, Buildings and Civil Works

The total land area required for the plant is 1,000 $m^{2,}$ out of which 600 m^2 is built – up area. The construction cost of buildings and civil works at the rate of Birr 4,500 per m^2 is estimated at Birr 2.7 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 5000 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
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 required for the envisaged plant 31 persons. The human resource required and the estimated annual labor cost including the fringe benefits is shown in Table 6.1

Table 6.1

HUMAN RESOURCE REQUIREMENT AND ESTIMATED COST

Item No.	Job Title	Required No. of Persons	Salary, Birr	
			Monthly	Annual
1	Plant manager	1	4,500	54,000
2	Secretary	1	800	9,600
3	Accountant - clerk	2	1,600	19,200
4	Personnel	1	850	10,200
5	Salesperson	1	800	9,600
6	Cashier	1	800	9,600
7	Store keeper	1	800	9,600
8	Production supervisor	1	1,500	18,000
9	Quality controller	1	1,200	14,400
10	Mechanic	1	1,000	12,000
11	Electrician	1	1,000	12,000
12	Operator	6	3,600	43,200
13	Laborer	6	2,400	28,800
14	Cleaner	3	1,200	14,400
15	Driver	1	750	9,000
16	Guard	3	1,200	14,400
Sub - total		**31**	**24,000**	**288,000**
Employees benefit, 20% of basic salary			**4,800**	**57,600**
Grand - total			**28,800**	**345,600**

B. TRAINING REQUIREMENT

Two weeks on – the – job training should be given for production supervisor, 6 operators, quality controller, a mechanic and an electrician by the advanced technician of the machinery supplier on operation, quality control and maintenance of machinery and equipment. The cost of training is estimated at Birr 180,000.

VII. FINANCIAL ANALYSIS

The financial analysis of the animal feed project is based on the data presented in the previous chapters and the following assumptions:-

Construction period	1 year
Source of finance	30 % equity
	70 % loan
Tax holidays	3 years
Bank interest	10%
Discount cash flow	10%
Accounts receivable	30 days
Raw material local	30 days
Work in progress	1 day
Finished products	30 days
Cash in hand	5 days
Accounts payable	30 days
Repair and maintenance	5% of machinery cost

A. TOTAL INITIAL INVESTMENT COST

The total investment cost of the project including working capital is estimated at Birr 33.43 million (See Table 7.1). From the total investment cost the highest share (Birr 16.17 million or 48.38%) is accounted by fixed investment cost followed by initial working capital (Birr 14.15 million or 42.32%) and pre operation cost (Birr 3.09 million or 9.27%). From the total investment cost Birr 9.80 million or 29.31% 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	2,700.00		2,700.00	8.08
1.3	Machinery and equipment	2,450.00	9,800.00	12,250.00	36.64
1.4	Vehicles	900.00		900.00	2.69
1.5	Office furniture and equipment	300.00		300.00	0.90
	Sub total	**6,376.60**	**9,800.00**	**16,176.60**	**48.38**
2	**Pre operating cost ***				
2.1	Pre operating cost	912.50		912.50	2.73
2.2	Interest during construction	2,187.26		2,187.26	6.54
	Sub total	**3,099.76**		**3,099.76**	**9.27**
3	**Working capital ****	**14,157.47**		**14,157.47**	**42.34**
	Grand Total	**23,633.83**	**9,800.00**	**33,433.83**	**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 16.64 million. However, only the initial working capital of Birr 14.15 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 57.28 million (see Table 7.2). The cost of raw material account for 86.21% of the production cost. The other major components of the production cost are depreciation, financial cost and utility, which

account for 5.15%, 3.67% and 1.93% respectively. The remaining 2.98 % is the share of Labor, 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 Two)

Items	Cost (000 Birr)	%
Raw Material and Inputs	49,417.10	86.26
Utilities	1,104.55	1.93
Maintenance and repair	612.50	1.07
Labor direct	288.00	0.50
Labor overheads	57.60	0.10
Administration Costs	250.00	0.44
Land lease cost	-	-
Cost of marketing and distribution	500.00	0.87
Total Operating Costs	**52,229.75**	**91.17**
Depreciation	2,950.50	5.15
Cost of Finance	2,105.24	3.67
Total Production Cost	**57,285.49**	**100**

C. FINANCIAL EVALUATION

1. Profitability

Based on the projected profit and loss statement, the project will generate a profit through out its operation life. Annual net profit after tax will grow from Birr 6.89 million to Birr 8.06 million during the life of the project. Moreover, at the end of the project life the accumulated net cash flow amounts to Birr 76.70 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.

$$\text{Break Even Sales Value} = \frac{\text{Fixed Cost + Financial Cost}}{\text{Variable Margin ratio (\%)}} = \text{Birr } 18{,}116{,}879$$

$$\text{Break Even Capacity utilization} = \frac{\text{Break even Sales Value}}{\text{Sales revenue}} \times 100 = 28\%$$

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 28.90% 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 33.54 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 31 persons. The project will generate Birr 20.62 million in terms of tax revenue. The project will create backward linkage with the agriculture and agro processing sectors and forward linkage with the livestock sector 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	10,501.13	11,736.56	12,354.28	12,354.28	12,354.28	12,354.28	12,354.28	12,354.28	12,354.28	12,354.28
Accounts receivable	3,705.86	4,136.94	4,352.48	4,352.48	4,353.19	4,353.19	4,353.19	4,353.19	4,353.19	4,353.19
Cash-in-hand	14.26	15.94	16.78	16.78	16.90	16.90	16.90	16.90	16.90	16.90
CURRENT ASSETS	**14,221.25**	**15,889.44**	**16,723.53**	**16,723.53**	**16,724.36**	**16,724.36**	**16,724.36**	**16,724.36**	**16,724.36**	**16,724.36**
Accounts payable	63.79	71.29	75.04	75.04	75.04	75.04	75.04	75.04	75.04	75.04
CURRENT LIABILITIES	**63.79**	**71.29**	**75.04**	**75.04**	**75.04**	**75.04**	**75.04**	**75.04**	**75.04**	**75.04**
TOTAL WORKING CAPITAL	**14,157.47**	**15,818.15**	**16,648.49**	**16,648.49**	**16,649.32**	**16,649.32**	**16,649.32**	**16,649.32**	**16,649.32**	**16,649.32**

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	42,005	46,946	49,417	49,417	49,417	49,417	49,417	49,417	49,417	49,417
Utilities	939	1,049	1,105	1,105	1,105	1,105	1,105	1,105	1,105	1,105
Maintenance and repair	521	582	613	613	613	613	613	613	613	613
Labor direct	245	274	288	288	288	288	288	288	288	288
Labor overheads	49	55	58	58	58	58	58	58	58	58
Administration Costs	213	238	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	**44,470**	**49,643**	**52,230**	**52,230**	**52,238**	**52,238**	**52,238**	**52,238**	**52,238**	**52,238**
Depreciation	2,951	2,951	2,951	2,951	2,951	138	138	138	138	138
Cost of Finance	0	2,406	2,105	1,804	1,504	1,203	902	601	301	0
Total Production Cost	**47,421**	**55,000**	**57,285**	**56,985**	**56,693**	**53,579**	**53,279**	**52,978**	**52,677**	**52,376**

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	54,315	60,705	63,900	63,900	63,900	63,900	63,900	63,900	63,900	63,900
Less variable costs	43,970	49,143	51,730	51,730	51,730	51,730	51,730	51,730	51,730	51,730
VARIABLE MARGIN	**10,345**	**11,562**	**12,170**	**12,170**	**12,170**	**12,170**	**12,170**	**12,170**	**12,170**	**12,170**
in % of sales revenue	19.05	19.05	19.05	19.05	19.05	19.05	19.05	19.05	19.05	19.05
Less fixed costs	3,451	3,451	3,451	3,451	3,459	647	647	647	647	647
OPERATIONAL MARGIN	**6,894**	**8,111**	**8,720**	**8,720**	**8,711**	**11,524**	**11,524**	**11,524**	**11,524**	**11,524**
in % of sales revenue	12.69	13.36	13.65	13.65	13.63	18.03	18.03	18.03	18.03	18.03
Financial costs		2,406	2,105	1,804	1,504	1,203	902	601	301	0
GROSS PROFIT	**6,894**	**5,705**	**6,615**	**6,915**	**7,207**	**10,321**	**10,621**	**10,922**	**11,223**	**11,524**
in % of sales revenue	12.69	9.40	10.35	10.82	11.28	16.15	16.62	17.09	17.56	18.03
Income (corporate) tax	0	0	0	2,075	2,162	3,096	3,186	3,277	3,367	3,457
NET PROFIT	**6,894**	**5,705**	**6,615**	**4,841**	**5,045**	**7,224**	**7,435**	**7,646**	**7,856**	**8,067**
in % of sales revenue	12.69	9.40	10.35	7.58	7.90	11.31	11.64	11.96	12.29	12.62

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	**17,089**	**70,724**	**60,713**	**63,904**	**63,900**	**63,900**	**63,900**	**63,900**	**63,900**	**63,900**	**63,900**	**20,483**
Inflow funds	17,089	16,409	8	4	0	0	0	0	0	0	0	0
Inflow operation	0	54,315	60,705	63,900	63,900	63,900	63,900	63,900	63,900	63,900	63,900	0
Other income	0	0	0	0	0	0	0	0	0	0	0	20,483
TOTAL CASH OUTFLOW	**17,089**	**60,879**	**56,725**	**58,177**	**59,116**	**58,913**	**59,545**	**59,334**	**59,124**	**58,913**	**55,695**	**0**
Increase in fixed assets	17,089	0	0	0	0	0	0	0	0	0	0	0
Increase in current assets	0	14,221	1,668	834	0	1	0	0	0	0	0	0
Operating costs	0	43,970	49,143	51,730	51,730	51,738	51,738	51,738	51,738	51,738	51,738	0
Marketing and Distribution cost	0	500	500	500	500	500	500	500	500	500	500	0
Income tax	0	0	0	0	2,075	2,162	3,096	3,186	3,277	3,367	3,457	0
Financial costs	0	2,187	2,406	2,105	1,804	1,504	1,203	902	601	301	0	0
Loan repayment	0	0	3,007	3,007	3,007	3,007	3,007	3,007	3,007	3,007	0	0
SURPLUS (DEFICIT)	**0**	**9,845**	**3,988**	**5,727**	**4,784**	**4,987**	**4,355**	**4,566**	**4,776**	**4,987**	**8,205**	**20,483**
CUMULATIVE CASH BALANCE	**0**	**9,845**	**13,832**	**19,559**	**24,343**	**29,331**	**33,686**	**38,251**	**43,027**	**48,014**	**56,218**	**76,702**

Appendix 7.A.5
DESCOUNTED CACH 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**	**54,315**	**60,705**	**63,900**	**63,900**	**63,900**	**63,900**	**63,900**	**63,900**	**63,900**	**63,900**	**20,483**
Inflow operation	0	54,315	60,705	63,900	63,900	63,900	63,900	63,900	63,900	63,900	63,900	0
Other income	0	0	0	0	0	0	0	0	0	0	0	20,483
TOTAL CASH OUTFLOW	**31,247**	**46,131**	**50,474**	**52,230**	**54,305**	**54,401**	**55,335**	**55,425**	**55,515**	**55,605**	**55,695**	**0**
Increase in fixed assets	17,089	0	0	0	0	0	0	0	0	0	0	0
Increase in net working capital	14,157	1,661	830	0	1	0	0	0	0	0	0	0
Operating costs	0	43,970	49,143	51,730	51,730	51,738	51,738	51,738	51,738	51,738	51,738	0
Marketing and Distribution cost	0	500	500	500	500	500	500	500	500	500	500	0
Income (corporate) tax		0	0	0	2,075	2,162	3,096	3,186	3,277	3,367	3,457	0
NET CASH FLOW	**-31,247**	**8,184**	**10,231**	**11,670**	**9,595**	**9,499**	**8,565**	**8,475**	**8,385**	**8,295**	**8,205**	**20,483**
CUMULATIVE NET CASH FLOW	**-31,247**	**-23,063**	**-12,831**	**-1,161**	**8,434**	**17,933**	**26,499**	**34,974**	**43,359**	**51,654**	**59,859**	**80,342**
Net present value	-31,247	7,440	8,456	8,768	6,553	5,898	4,835	4,349	3,912	3,518	3,163	7,897
Cumulative net present value	-31,247	-23,807	-15,351	-6,583	-29	5,869	10,704	15,053	18,965	22,483	25,646	33,543

NET PRESENT VALUE	33,543
INTERNAL RATE OF RETURN	28.90%
NORMAL PAYBACK	4 years