

Investment Office ANRS

**PROJECT PROFILE ON THE ESTABLISHMENT
OF MEAT PROCESSING PLANT**

Development Studies Associates (DSA)

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1. Executive Summary

This project profile deals with the establishment of meat processing plant in Amhara National Regional State. The following presents the main findings of the study

Demand projection divulges that the domestic demand for canned processed meat is substantial and is increasing with time. Accordingly, the planned plant is set to produce 300 tons annually. The total investment cost of the project including working capital is estimated at Birr 7.96 million and creates 36 jobs and Birr 480.24 thousand of income.

The financial result indicates that the project will generate profit beginning from the first year of operation. Moreover, the project will break even at 15.4% of capacity utilization and it will payback fully the initial investment less working capital in 2 years and 9 months. The result further shows that the calculated IRR of the project is 35.7% and NPV discounted at 18% of Birr 6,304,527.20

In addition to this, the proposed project possesses wide range of economic and social benefits such as increasing the level of investment, tax revenue, employment creation and rural income.

Generally, the project is technically feasible, financially and commercially viable as well as socially and economically acceptable. Hence the project is worth implementing.

2. Product Description and Application

Animal products, specifically the red meats of cattle are essential to the human diet. Meat is significantly high in zinc, iron, protein, and vitamins of the B group, particularly B₁₂, and also has a full complement of the essential amino acids. Coming from animals, these micronutrients can also be easily absorbed by the human body.

Although there are different meats processing types, this project profile deals with the establishment of canned foods from meat dedicated to urban consumers. Within this activity, raw materials (meat and other ingredients) are complemented by value added product obtained from the processing. For the consumer, the interest lies both in preparation and storage easiness

as well as hygienic security. The middle and upper income urban dwellers remain the most favorable market since it combines both the need of saving time and the purchasing power to get this kind of product.

3. Market Study, Plant Capacity and Production Program

3.1 Market Study

3.1.1 Present Demand and Supply

With the largest livestock population in Africa, Ethiopia has an ample supply base for the export of live animals and meat. Livestock husbandry is mostly carried out under natural grazing, making the meat and meat products obtained from the animals very tasty and nutritionally healthy for human consumption. Currently there are 5 meat processing plants of which 2 (in Gonder and Combolcha) are located in ANRS, and the rest 3 are located in SNNPR, Dire Dawa and Addis Ababa. These plants supply their product for domestic market as well as for export. Reports in this connection inform that the major consumers of processed meat in our country are members of the armed forces. The report further reveal that these supplying factories are very old.

On the other hand, Ethiopia exports live animal and semi processed meat to abroad. The main items exported include live animals and meat products, steers and yearlings; lowland sheep and goats; fresh and chilled lamb and mutton carcass; fresh and chilled goat carcass; fresh and chilled veal carcass and beef four quarter; fresh and chilled boneless veal and beef; frozen lamb, mutton and goat carcass and veal and beef special cuts. The major meat trade partner countries with Ethiopia include Saudi Arabia, Dubai, Egypt, Yemen, Congo Brazzaville, Cote d'Ivoire and South Africa while major destinations for live animals from Ethiopia are Saudi Arabia, Dubai, Yemen and Egypt. Canned (processed) meat is also imported from abroad and it is available in supermarkets. However, the import data obtained from Customs Authority aggregates the canned meat with other related products such as tuna and the like so that exact data on import could not be documented. Table 1, therefore, shows only the annual domestic production of meat by the meat processing plants

Table 1: Domestic Production of Meat (in ton)

Year	Domestic Production
1997/98	96
1998/99	615
1999/00	526
2000/01	555
2001/02	1194
2002/03	849
2003/04	224
2004/05	208
2005/06	212

Source: Customs authority, (various yeas)

The above table shows that production of processed meat has shown a declining trend in recent years under consideration. The highest level of production has been registered in 2001/02 which then continuously decreased up to 2004/05 which then marginally rises in the following period. The reduction in production partly is low capacity of operation as many of the plants are old and use obsolete machineries. However, the consumption of meat in general is showing a substantial increase in the country as a whole. For instance, research study by Abbey Avery sponsored by International Livestock Research Institute (entitled “Red Meat and Poultry Production and Consumption in Ethiopia and Distribution in Addis Ababa” - 2004) confirmed that about 2.1 million cattle had been slaughtered in 1993. This number has increased to about 2.8 million cattle in the year 2003. Roughly speaking this is about 350 thousand tons of meat and represents the presence of huge demand in the country.

The country has immense livestock resource. According to CSA, Annual Abstract (2006), the number of cattle in 2003/04 was 38.1 million and increased to 40.3 million in 2005/06. From this the share of Amhara National Regional State has been about 25%. Such huge number suggests the presence of sustainable supply for firms engaged in meat processing. If we compare the number of cattle slaughtered in 2003 (which is 2.8 million) with the cattle number registered in 2003/04 (which is 38.1 million) we learn that the consumption level has been 7.35%. If we

apply the same ratio to the 2005/06 cattle size, the consumption level of cattle will be 2.96 million or roughly 370.2 thousand ton of cattle meat. This can be taken as the present demand for cattle meat in the country where the share of Amhara is estimated to be 92.5 thousand tons.

3.1.2 Projected Demand

As presented earlier the annual demand for meat is substantial. Thus, with proper marketing, quality as well as demand based production; it is possible to attract a portion of the consumers to the consumption of processed meat. If we conservatively assume that only 2.5% of annual consumption will be attracted by modern meat processing plant, the present annual demand for such product would be about 9,255 ton processed meat. Based on this figure we can forecast the future demand for the product. That is if we further assume that demand grows by 3% (parallel with the population growth), the future demand for the processed meat will be as indicated in table 2 below.

Table 2: Projected Demand for Processed Meat (in ton)

Year	Projected Demand
2007/08	9,533
2008/09	9,819
2009/10	10,113
2010/11	10,417
2011/12	10,729
2012/13	11,051
2013/14	11,383
2014/15	11,724
2015/16	12,076
2016/17	12,438
2017/18	12,811
2018/19	13,196

As shown in the above table there is huge untapped potential demand for the product. This demand reaches 10 thousand ton in 2009/10 and increases by about 30% within 10 years (2018/19). Such figure suggests the relevance of establishing meat processing plant.

3.1.3 Pricing and Distribution

Based on the market research result and the capacity of the envisaged plant, the wholesale price of a 500 gram canned processed meat is set to be Birr 17 per piece while Birr 9.60 is set for a 250 gm product. Moreover, the firm will sell the by-products (bones, etc) and skin at Birr 150 per slaughtered cattle. In distributing the product the envisaged plant shall make use of the available retail and wholesale network.

3.2 Plant Capacity

In light of the expected demand for the product as presented in the previous section, and the planned technology, the envisaged plant is set to produce 300 tons of processed canned food annually. Of this total production, 200 tons of processed meat shall be packed in a 250 gram capacity container while the remaining 100 tons shall be packed in a 500 gram container.

3.3 Production Program

The program is scheduled based on the consideration that the envisaged plant will work 300 days in a year in 1 shift, where the remaining days will be holidays and for maintenance. During the first year of operation the plant will operate at 35 percent capacity and then it grows to 55 percent in the 2nd year 75 percent in the 3rd year and 95 percent in the 4th year. The capacity will grow to 100 percent starting from the 5th year. This consideration is developed based on the assumption that market and logistics barriers would be removed step by step.

4. Raw Materials and Utilities

4.1 Availability and Source of Raw Materials

The main raw materials used in the production of canned meat cooked in a sauce are meat, sauce making ingredients such as edible oil, onion, salt, pepper and spices.

4.2 Annual Requirement and Cost of Raw Materials and Utilities

The annual raw material and utility requirement and the associated cost for the envisaged plant (i.e. 300 ton per annum) is listed in table 3 here under.

Table 3: Material and Utility Requirement

Material and Input	Quantity	Total Cost	
		L.C.	F.C.
Cattle	1,440 Cattle (180 ton meat)	3,600,000	
Edible Oil	36,000 lit	720,000	
Onion	60 ton	120,000	
Salt, Pepper, Spices, etc (lump sum)		222,000	
Packaging (250gm & 500gm capacity)	1,000, 000 pcs	220,000	
Total Material Cost		4,882,000	
Utility			
Electricity	120,000 kwh	66,000	
Water	6,000 m ³	15,900	
Total Utility Cost		81,900	

According to the above table the annual material and utility cost at full capacity of operation is estimated to be Birr 4,963,900.

5 Location and Site

The appropriate locations for the envisaged project in view of the availability of input and infrastructure are Gonder and Combolcha towns. A study conducted by DSA and SCI (2006) pointed out that Gonder and South Wollo constitute about 33% and 20% respectively of the total cattle available in the region. Thus, the two towns mentioned above are ideal places to set up the envisaged meat processing plant.

6 Technology and Engineering

6.1 *Production Process*

The first stage of the meat processing operation is the slaughtering of the cattle, skinning the carcass, trimming and separating the different parts of the body. Then the meat is sterilized to avoid the bacteria that may exist in the meat. The treatment duration for sterilization will depend on the bacteriological quality of the meat which in turn depends on the nature of the meat where the presence of high degree of fat in the meat will affect the sterilization process. Other factors include slaughtering conditions and sanitary conditions after the slaughtering. Then the meat is cooked in sauce together with other ingredients and canned at the end.

An alternative processing technology that has recently expanded in some rich countries is to use pasteurization method instead of sterilization of meat. This is because sterilization processes compromise the retention of compounds that are heat-sensitive in the foods, and alter the organoleptic characteristics of the raw meat. Vitamins, for example, may be destroyed by high temperatures and/or their long duration. With the aim of remedying this problem, a process has been developed in recent years in which prepared foods may be heat treated at a temperature at which their organoleptic properties are less affected than in sterilization processes. This alternative, however, is very expensive where it costs more than double of the technology proposed in this profile.

6.2 *Machinery and Equipment*

The machineries and equipment required for producing canned meat cooked in a sauce is detailed in table 4 below

Table 4: Machinery and Equipment

Machinery and Equipment	Quantity
Slaughtering Equipments	8 set
Weighing Device	4
Pallet Trucks	2
Ashing Tanks	2
Sterilizer (control Equipment)	1
High Sided Frying Pans	25
Cutters and Grinders	10
Ovens	4
Air Extractor	1
Seamers	2
Retorts and annexes	2
Boilers	4
Tables and Shelves	As Required

The total cost of machinery and equipment including freight insurance and bank cost is estimated to be about Birr 4,519,500

The following are some of the machineries suppliers' address for the envisaged project

The Biro Manufacturing Co.

1114 W., Main Street, Lakeside Marblehead - 43440-209, USA

Phone: +(1)-(419)-7984451

Fax: +(1)-(419)-7989106

Euro-Dan Sko A/S

Krogsagervej-50, Post Box-748, Fredericia - DK7 000, Denmark

Phone: +(45)-(0)-75941920

Fax: +(45)-(0)-75941233

Amec Amtex

Gran Via De Les Corts, Catalanes, 684, Barcelona - 8010, Spain

Phone: +(34)-(93)-4150422

Fax: +(34)-(93)-4160980

6.3 Civil Engineering Cost

The total site area for the envisaged plant is estimated to be 800m² where 550m² is allocated to the production place and the remaining space is left for stores (150m²), office buildings and facilities (100m²).

7 Human Resource and Training Requirement

7.1 Human Resource

The list of required manpower for the envisaged plant is stated in table 6 below

Table 5: Human Resource Requirement

Position	No. Required	Monthly Salary	Total Annual Salary
Manager	1	5000	60000
Production Manager	1	4000	48000
Administrator/Finance Head	1	3000	36000
Accountant	1	1200	14400
Secretary	1	850	10200
Sales Clerk	1	800	9600
Store Keeper	1	800	9600
Technician	1	1000	12000
Quality Inspector	1	1200	14400
Supervisor	1	1500	18000
Operators	8	800	76800
Laborers	9	400	43200
Cleaners	3	400	14400
Messengers	1	400	4800
Driver	1	800	9600
Guards	4	400	19200
Benefit (20%)			80040
Total	36		480240

The envisaged plant therefore, creates 36 jobs and about Birr 480.24 thousand of income. The professionals and support staffs for the envisaged plant shall be recruited from Amhara region.

7.2 Training Requirement

Training of key personnel is very essential and shall be conducted in collaboration with the suppliers of the plant machineries. The training should primarily focus on the production technology and machinery maintenance and trouble shooting. Birr 150,000 will be allocated as training expense.

8 Financial Analysis

8.1 Underlying Assumption

The financial analysis of meat processing plant (canned meat cooked in a sauce) is based on the data provided in the preceding sections and the following assumptions.

A. Construction and Finance

Construction period	2 years
Source of finance	40% equity and 60% loan
Tax holidays	2 years
Bank interest rate	12%
Discount for cash flow	18%
Value of land	Based on lease rate of ANRS
Spare Parts, Repair & Maintenance	3% of fixed investment

B. Depreciation

Building	5%
Machinery and equipment	10%
Office furniture	10%
Vehicles	20%
Pre-production (amortization)	20%

C. Working Capital (Minimum Days of Coverage)

Raw Material-Local	30
Raw Material-Foreign	120
Factory Supplies in Stock	30
Spare Parts in Stock and Maintenance	30
Work in Progress	10
Finished Products	15
Accounts Receivable	30
Cash in Hand	30
Accounts Payable	30

8.2 Investment

The total investment cost of the project including working capital is estimated at Birr 7.847 million as shown in table 6 below. The Owner shall contribute 40% of the finance in the form of equity while the remaining 60% is to be financed by bank loan.

Table 6: Total Initial Investment

Items	L.C	F.C	Total
Land	2,400		2,400
Building and civil works	1,600,000		1,600,000
Office equipment	75,000		75,000
Vehicles	300,000		300,000
Plant machinery & equipment	519,500	4,000,000	4,519,500
<i>Total fixed investment cost</i>	<i>2,496,900</i>	<i>4,000,000</i>	<i>6,496,900</i>
Pre production capital expenditure*	324,845		324,845
<i>Total initial investment</i>	<i>2,821,745</i>	<i>4,000,000</i>	<i>6,821,745</i>
Working capital at full capacity	1,137,783		1,137,783
Total	3,959,528	4,000,000	7,959,528

*Pre-production capital expenditure includes - all expenses for pre-investment studies, consultancy fee during construction and expenses for company's establishment, project administration expenses, commission expenses, preproduction marketing and interest expenses during construction.

The foreign component of the project accounts for 50.3% of the total investment cost.

8.3 Production Costs

The total production cost at full capacity operation is estimated at Birr 6.78 million as detailed in table 7 below.

Table 7: Production Cost

Items	Cost
1. Raw materials	4,882,000
2. Utilities	81,900
3. Wages and Salaries	480,240
4. Spares and Maintenance	194,907
<i>Factory costs</i>	<i>5,639,047</i>
5. Depreciation	664,419
6. Financial costs	477,572
<i>Total Production Cost</i>	<i>6,781,038</i>

8.4 Financial Evaluation

I. Profitability

According to the projected income statement attached in the annex part (see annex 4) the project will generate profit beginning from the second year of operation. Ratios such as the percentage of net profit to total sales, return on equity and return on total investment are 1%, 1% and 18% in the first year and considerably rises in the subsequent years. Furthermore, the income statement and other profitability indicators show that the project is viable.

II. Breakeven Analysis

The breakeven point of the project is estimated by using income statement projection. Accordingly, the project will break even at 15.4% of capacity utilization.

III. Payback Period

Investment cost and income statement projection are used in estimating the project payback period. The projects will payback fully the initial investment less working capital in 2 years and 9 months.

IV. Simple Rate of Return

For the envisaged plant the simple rate of return equals to 45.6%

V. Internal Rate of Return and Net Present Value

Based on cash flow statement described in the annex part, the calculated IRR of the project is 35.7% and the net present value at 18 % discount is Birr 6,304,527.20

VI. Sensitivity Analysis

The envisaged plant incurs loss (only for the first year of operation) of Birr 158,047.98 when the assumed cost of production increases by 10%. Such result is likely to take place as the start up capacity of the envisaged plant is set at a very low level (35%) due to the market barrier problem that is expected to take place in the first few years of operation. Nonetheless, the plant maintains to earn profit starting from the second year of operation.

9 Economic and Social Benefit and Justification

The envisaged project possesses wide range of benefits that help promote the socio-economic goals and objectives stated in the strategic plan of the Amhara National Regional State. It boosts inter sectorial linkage between the agricultural (livestock) and industrial sector. At the same time, therefore, it helps diversify the economic activity of the region. The other major benefits are listed as follows:

A. Profit Generation

The project is found to be financially viable and earns on average a profit of Birr 2.84 million per year and Birr 28.45 million within the project life. Such result induces the project promoters to reinvest the profit which, therefore, increases the investment magnitude in the region.

B. Tax Revenue

In the project life under consideration, the region will collect about Birr 11.37 million from corporate tax payment alone (i.e. excluding income tax, sales tax and VAT). Such result creates additional fund for the regional government that will be used in expanding social and other basic services in the region.

C. Employment and Income Generation

The proposed project is expected to create employment opportunity to several citizens of the region. That is, it will provide permanent employment to 36 professionals as well as support staff. Consequently the project creates income of Birr 480.24 thousand per year. Moreover, the envisaged plant benefits rural income from the sale of cattle, onions and the like. This would be one of the commendable accomplishments of the project.

ANNEXES

Annex 1: Total Net Working Capital Requirements (in Birr)

	CONSTRUCTION		PRODUCTION			
	Year 1	Year 2	1	2	3	4
Capacity Utilization (%)	0.00	0.00	35%	55%	75%	95%
1. Total Inventory	0.00	0.00	563164.30	884972.47	1206780.64	1528588.81
Raw Materials in Stock- Total	0.00	0.00	186403.64	292920.00	399436.36	505952.73
Raw Material-Local	0.00	0.00	186403.64	292920.00	399436.36	505952.73
Raw Material-Foreign	0.00	0.00	0.00	0.00	0.00	0.00
Factory Supplies in Stock	0.00	0.00	2406.78	3782.08	5157.38	6532.68
Spare Parts in Stock and Maintenance	0.00	0.00	7441.90	11694.42	15946.94	20199.45
Work in Progress	0.00	0.00	60169.45	94551.99	128934.53	163317.07
Finished Products	0.00	0.00	120338.90	189103.98	257869.06	326634.15
2. Accounts Receivable	0.00	0.00	431301.82	677760.00	924218.18	1170676.36
3. Cash in Hand	0.00	0.00	21463.53	33728.40	45993.27	58258.15
CURRENT ASSETS	0.00	0.00	829526.01	1303540.87	1777555.73	2251570.59
4. Current Liabilities	0.00	0.00	431301.82	677760.00	924218.18	1170676.36
Accounts Payable	0.00	0.00	431301.82	677760.00	924218.18	1170676.36
TOTAL NET WORKING CAPITAL REQUIREMENTS	0.00	0.00	398224.19	625780.87	853337.55	1080894.23
INCREASE IN NET WORKING CAPITAL	0.00	0.00	398224.19	227556.68	227556.68	227556.68

Annex 1: Total Net Working Capital Requirements (in Birr) (continued)

	PRODUCTION					
	5	6	7	8	9	10
Capacity Utilization (%)	100%	100%	100%	100%	100%	100%
1. Total Inventory	1609040.85	1609040.85	1609040.85	1609040.85	1609040.85	1609040.85
Raw Materials in Stock-Total	532581.82	532581.82	532581.82	532581.82	532581.82	532581.82
Raw Material-Local	532581.82	532581.82	532581.82	532581.82	532581.82	532581.82
Raw Material-Foreign	0.00	0.00	0.00	0.00	0.00	0.00
Factory Supplies in Stock	6876.51	6876.51	6876.51	6876.51	6876.51	6876.51
Spare Parts in Stock and Maintenance	21262.58	21262.58	21262.58	21262.58	21262.58	21262.58
Work in Progress	171912.71	171912.71	171912.71	171912.71	171912.71	171912.71
Finished Products	343825.42	343825.42	343825.42	343825.42	343825.42	343825.42
2. Accounts Receivable	1232290.91	1232290.91	1232290.91	1232290.91	1232290.91	1232290.91
3. Cash in Hand	61324.36	61324.36	61324.36	61324.36	61324.36	61324.36
CURRENT ASSETS	2370074.31	2370074.31	2370074.31	2370074.31	2370074.31	2370074.31
4. Current Liabilities	1232290.91	1232290.91	1232290.91	1232290.91	1232290.91	1232290.91
Accounts Payable	1232290.91	1232290.91	1232290.91	1232290.91	1232290.91	1232290.91
TOTAL NET WORKING CAPITAL REQUIREMENTS	1137783.40	1137783.40	1137783.40	1137783.40	1137783.40	1137783.40
INCREASE IN NET WORKING CAPITAL	56889.17	0.00	0.00	0.00	0.00	0.00

Annex 2: Cash Flow Statement (in Birr)						
	CONSTRUCTION		PRODUCTION			
	Year 1	Year 2	1	2	3	4
TOTAL CASH INFLOW	3410872.50	4548655.90	4384901.82	6459258.18	8718458.18	10977658.18
1. Inflow Funds	3410872.50	4548655.90	431301.82	246458.18	246458.18	246458.18
Total Equity	1364349.00	1819462.36	0.00	0.00	0.00	0.00
Total Long Term Loan	2046523.50	2729193.54	0.00	0.00	0.00	0.00
Total Short Term Finances	0.00	0.00	431301.82	246458.18	246458.18	246458.18
2. Inflow Operation	0.00	0.00	3953600.00	6212800.00	8472000.00	10731200.00
Sales Revenue	0.00	0.00	3953600.00	6212800.00	8472000.00	10731200.00
Interest on Securities	0.00	0.00	0.00	0.00	0.00	0.00
3. Other Income	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CASH OUTFLOW	3410872.50	3410872.50	4090727.24	4938108.81	6884085.19	8265989.60
4. Increase In Fixed Assets	3410872.50	3410872.50	0.00	0.00	0.00	0.00
Fixed Investments	3248450.00	3248450.00	0.00	0.00	0.00	0.00
Pre-production Expenditures	162422.50	162422.50	0.00	0.00	0.00	0.00
5. Increase in Current Assets	0.00	0.00	829526.01	474014.86	474014.86	474014.86
6. Operating Costs	0.00	0.00	1993620.13	3095055.06	4196490.00	5297924.93
7. Corporate Tax Paid	0.00	0.00	0.00	0.00	940055.79	1316039.61
8. Interest Paid	0.00	0.00	1267581.10	573086.04	477571.70	382057.36
9. Loan Repayments	0.00	0.00	0.00	795952.84	795952.84	795952.84
10. Dividends Paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus(Deficit)	0.00	1137783.40	294174.58	1521149.37	1834372.99	2711668.58
Cumulative Cash Balance	0.00	1137783.40	1431957.98	2953107.35	4787480.34	7499148.92

Annex 2: Cash Flow Statement (in Birr): Continued						
	PRODUCTION					
	5	6	7	8	9	10
TOTAL CASH INFLOW	11357614.55	11296000.00	11296000.00	11296000.00	11296000.00	11296000.00
1. Inflow Funds	61614.55	0.00	0.00	0.00	0.00	0.00
Total Equity	0.00	0.00	0.00	0.00	0.00	0.00
Total Long Term Loan	0.00	0.00	0.00	0.00	0.00	0.00
Total Short Term Finances	61614.55	0.00	0.00	0.00	0.00	0.00
2. Inflow Operation	11296000.00	11296000.00	11296000.00	11296000.00	11296000.00	11296000.00
Sales Revenue	11296000.00	11296000.00	11296000.00	11296000.00	11296000.00	11296000.00
Interest on Securities	0.00	0.00	0.00	0.00	0.00	0.00
3. Other Income	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CASH OUTFLOW	8205809.53	8057936.48	7991076.44	7128263.56	7128263.56	7128263.56
4. Increase In Fixed Assets	0.00	0.00	0.00	0.00	0.00	0.00
Fixed Investments	0.00	0.00	0.00	0.00	0.00	0.00
Pre-production Expenditures	0.00	0.00	0.00	0.00	0.00	0.00
5. Increase in Current Assets	118503.72	0.00	0.00	0.00	0.00	0.00
6. Operating Costs	5573283.66	5573283.66	5573283.66	5573283.66	5573283.66	5573283.66
7. Corporate Tax Paid	1431526.30	1497671.30	1526325.60	1554979.90	1554979.90	1554979.90
8. Interest Paid	286543.02	191028.68	95514.34	0.00	0.00	0.00
9. Loan Repayments	795952.84	795952.84	795952.84	0.00	0.00	0.00
10.Dividends Paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus(Deficit)	3151805.01	3238063.52	3304923.56	4167736.44	4167736.44	4167736.44
Cumulative Cash Balance	10650953.93	13889017.45	17193941.01	21361677.45	25529413.89	29697150.33

Annex 3: DISCOUNTED CASH FLOW-TOTAL CAPITAL INVESTED						
	CONSTRUCTION		PRODUCTION			
	Year 1	Year 2	1	2	3	4
TOTAL CASH INFLOW	0.00	0.00	3953600.00	6212800.00	8472000.00	10731200.00
1. Inflow Operation	0.00	0.00	3953600.00	6212800.00	8472000.00	10731200.00
Sales Revenue	0.00	0.00	3953600.00	6212800.00	8472000.00	10731200.00
Interest on Securities	0.00	0.00	0.00	0.00	0.00	0.00
2. Other Income	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CASH OUTFLOW	3410872.50	3410872.50	2391844.32	3322611.74	5364102.47	6841521.22
3. Increase in Fixed Assets	3410872.50	3410872.50	0.00	0.00	0.00	0.00
Fixed Investments	3248450.00	3248450.00	0.00	0.00	0.00	0.00
Pre-production Expenditures	162422.50	162422.50	0.00	0.00	0.00	0.00
4. Increase in Net Working Capital	0.00	0.00	398224.19	227556.68	227556.68	227556.68
5. Operating Costs	0.00	0.00	1993620.13	3095055.06	4196490.00	5297924.93
6. Corporate Tax Paid	0.00	0.00	0.00	0.00	940055.79	1316039.61
NET CASH FLOW	-3410872.50	-3410872.50	1561755.68	2890188.26	3107897.53	3889678.78
CUMMULATIVE NET CASH FLOW	-3410872.50	-6821745.00	-5259989.32	-2369801.06	738096.47	4627775.25
Net Present Value (at 18%)	-3410872.50	-2890569.92	1121628.61	1759057.80	1603018.97	1700214.44
Cumulative Net present Value	-3410872.50	-6301442.42	-5179813.80	-3420756.00	-1817737.03	-117522.59

Annex 3: DISCOUNTED CASH FLOW-TOTAL CAPITAL INVESTED (Continued)						
	PRODUCTION					
	5	6	7	8	9	10
TOTAL CASH INFLOW	11296000.00	11296000.00	11296000.00	11296000.00	11296000.00	11296000.00
1. Inflow Operation	11296000.00	11296000.00	11296000.00	11296000.00	11296000.00	11296000.00
Sales Revenue	11296000.00	11296000.00	11296000.00	11296000.00	11296000.00	11296000.00
Interest on Securities	0.00	0.00	0.00	0.00	0.00	0.00
2. Other Income	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL CASH OUTFLOW	7061699.13	7070954.96	7099609.26	7128263.56	7128263.56	7128263.56
3. Increase in Fixed Assets	0.00	0.00	0.00	0.00	0.00	0.00
Fixed Investments	0.00	0.00	0.00	0.00	0.00	0.00
Pre-production Expenditures	0.00	0.00	0.00	0.00	0.00	0.00
4. Increase in Net Working Capital	56889.17	0.00	0.00	0.00	0.00	0.00
5. Operating Costs	5573283.66	5573283.66	5573283.66	5573283.66	5573283.66	5573283.66
6. Corporate Tax Paid	1431526.30	1497671.30	1526325.60	1554979.90	1554979.90	1554979.90
NET CASH FLOW	4234300.87	4225045.04	4196390.74	4167736.44	4167736.44	4167736.44
CUMMULATIVE NET CASH FLOW	8862076.13	13087121.17	17283511.91	21451248.35	25618984.78	29786721.22
Net Present Value (at 18%)	1568518.59	1326347.41	1116400.09	939641.48	796306.34	674835.88
Cumulative Net present Value	1450996.00	2777343.41	3893743.50	4833384.98	5629691.32	6304527.20
Net Present Value (at 18%)	6,304,527.20					
Internal Rate of Return	35.7%					

Annex 4: NET INCOME STATEMENT (in Birr)					
	PRODUCTION				
	1	2	3	4	5
Capacity Utilization (%)	35%	55%	75%	95%	100%
1. Total Income	3953600.00	6212800.00	8472000.00	10731200.00	11296000.00
Sales Revenue	3953600.00	6212800.00	8472000.00	10731200.00	11296000.00
Other Income	0.00	0.00	0.00	0.00	0.00
2. Less Variable Cost	1860277.53	2923293.26	3986309.00	5049324.73	5315078.66
VARIABLE MARGIN	2093322.47	3289506.74	4485691.01	5681875.27	5980921.34
(In % of Total Income)	52.95	52.95	52.95	52.95	52.95
3. Less Fixed Costs	797761.60	836180.80	874600.00	913019.20	922624.00
OPERATIONAL MARGIN	1295560.87	2453325.94	3611091.01	4768856.07	5058297.34
(In % of Total Income)	33	39	43	44	45
4. Less Cost of Finance	1267581.10	573086.04	477571.70	382057.36	286543.02
5. GROSS PROFIT	27979.77	1880239.89	3133519.30	4386798.71	4771754.32
6. Income (Corporate) Tax	0.00	0.00	940055.79	1316039.61	1431526.30
7. NET PROFIT	27979.77	1880239.89	2193463.51	3070759.10	3340228.02
RATIOS (%)					
Gross Profit/Sales	1%	30%	37%	41%	42%
Net Profit After Tax/Sales	1%	30%	26%	29%	30%
Return on Investment	18%	33%	35%	44%	46%
Return on Equity	1%	59%	69%	96%	105%

Annex 4: NET INCOME STATEMENT (in Birr):Continued					
	PRODUCTION				
	6	7	8	9	10
Capacity Utilization (%)	100%	100%	100%	100%	100%
1. Total Income	11296000.00	11296000.00	11296000.00	11296000.00	11296000.00
Sales Revenue	11296000.00	11296000.00	11296000.00	11296000.00	11296000.00
Other Income	0.00	0.00	0.00	0.00	0.00
2. Less Variable Cost	5315078.66	5315078.66	5315078.66	5315078.66	5315078.66
VARIABLE MARGIN	5980921.34	5980921.34	5980921.34	5980921.34	5980921.34
(In % of Total Income)	53	53	53	53	53
3. Less Fixed Costs	797655.00	797655.00	797655.00	797655.00	797655.00
OPERATIONAL MARGIN	5183266.34	5183266.34	5183266.34	5183266.34	5183266.34
(In % of Total Income)	46	46	46	46	46
4. Less Cost of Finance	191028.68	95514.34	0.00	0.00	0.00
5. GROSS PROFIT	4992237.66	5087752.00	5183266.34	5183266.34	5183266.34
6. Income (Corporate) Tax	1497671.30	1526325.60	1554979.90	1554979.90	1554979.90
7. NET PROFIT	3494566.36	3561426.40	3628286.44	3628286.44	3628286.44
RATIOS (%)					
Gross Profit/Sales	44%	45%	46%	46%	46%
Net Profit After Tax/Sales	31%	32%	32%	32%	32%
Return on Investment	46%	46%	46%	46%	46%
Return on Equity	110%	112%	114%	114%	114%

Annex 5: Projected Balance Sheet (in Birr)

	CONSTRUCTION		PRODUCTION			
	Year 1	Year 2	1	2	3	4
TOTAL ASSETS	3410872.50	7959528.40	8418809.99	9749555.22	11393524.07	13914788.51
1. Total Current Assets	0.00	1137783.40	2261483.99	4256648.22	6565036.07	9750719.51
Inventory on Materials and Supplies	0.00	0.00	196252.32	308396.50	420540.68	532684.86
Work in Progress	0.00	0.00	60169.45	94551.99	128934.53	163317.07
Finished Products in Stock	0.00	0.00	120338.90	189103.98	257869.06	326634.15
Accounts Receivable	0.00	0.00	431301.82	677760.00	924218.18	1170676.36
Cash in Hand	0.00	0.00	21463.53	33728.40	45993.27	58258.15
Cash Surplus, Finance Available	0.00	1137783.40	1431957.98	2953107.35	4787480.34	7499148.92
Securities	0.00	0.00	0.00	0.00	0.00	0.00
2. Total Fixed Assets, Net of Depreciation	3410872.50	6821745.00	6157326.00	5492907.00	4828488.00	4164069.00
Fixed Investment	0.00	3248450.00	6496900.00	6496900.00	6496900.00	6496900.00
Construction in Progress	3248450.00	3248450.00	0.00	0.00	0.00	0.00
Pre-Production Expenditure	162422.50	324845.00	324845.00	324845.00	324845.00	324845.00
Less Accumulated Depreciation	0.00	0.00	664419.00	1328838.00	1993257.00	2657676.00
3. Accumulated Losses Brought Forward	0.00	0.00	0.00	0.00	0.00	0.00
4. Loss in Current Year	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL LIABILITIES	3410872.50	7959528.40	8418809.99	9749555.22	11393524.07	13914788.51
5. Total Current Liabilities	0.00	0.00	431301.82	677760.00	924218.18	1170676.36
Accounts Payable	0.00	0.00	431301.82	677760.00	924218.18	1170676.36
Bank Overdraft	0.00	0.00	0.00	0.00	0.00	0.00
6. Total Long-term Debt	2046523.50	4775717.04	4775717.04	3979764.20	3183811.36	2387858.52
Loan A	2046523.50	4775717.04	4775717.04	3979764.20	3183811.36	2387858.52
Loan B	0.00	0.00	0.00	0.00	0.00	0.00
7. Total Equity Capital	1364349.00	3183811.36	3183811.36	3183811.36	3183811.36	3183811.36
Ordinary Capital	1364349.00	3183811.36	3183811.36	3183811.36	3183811.36	3183811.36
Preference Capital	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies	0.00	0.00	0.00	0.00	0.00	0.00
8. Reserves, Retained Profits Brought Forward	0.00	0.00	0.00	27979.77	1908219.66	4101683.17
9. Net Profit After Tax	0.00	0.00	27979.77	1880239.89	2193463.51	3070759.10
Dividends Payable	0.00	0.00	0.00	0.00	0.00	0.00
Retained Profits	0.00	0.00	27979.77	1880239.89	2193463.51	3070759.10

Annex 5: Projected Balance Sheet (in Birr): Continued

	PRODUCTION					
	5	6	7	8	9	10
TOTAL ASSETS	16520678.24	19219291.76	21984765.32	25613051.76	29241338.20	32869624.63
1. Total Current Assets	13021028.24	16259091.76	19564015.32	23731751.76	27899488.20	32067224.63
Inventory on Materials and Supplies	560720.91	560720.91	560720.91	560720.91	560720.91	560720.91
Work in Progress	171912.71	171912.71	171912.71	171912.71	171912.71	171912.71
Finished Products in Stock	343825.42	343825.42	343825.42	343825.42	343825.42	343825.42
Accounts Receivable	1232290.91	1232290.91	1232290.91	1232290.91	1232290.91	1232290.91
Cash in Hand	61324.36	61324.36	61324.36	61324.36	61324.36	61324.36
Cash Surplus, Finance Available	10650953.93	13889017.45	17193941.01	21361677.45	25529413.89	29697150.33
Securities	0.00	0.00	0.00	0.00	0.00	0.00
2. Total Fixed Assets, Net of Depreciation	3499650.00	2960200.00	2420750.00	1881300.00	1341850.00	802400.00
Fixed Investment	6496900.00	6496900.00	6496900.00	6496900.00	6496900.00	6496900.00
Construction in Progress	0.00	0.00	0.00	0.00	0.00	0.00
Pre-Production Expenditure	324845.00	324845.00	324845.00	324845.00	324845.00	324845.00
Less Accumulated Depreciation	3322095.00	3861545.00	4400995.00	4940445.00	5479895.00	6019345.00
3. Accumulated Losses Brought Forward	0.00	0.00	0.00	0.00	0.00	0.00
4. Loss in Current Year	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL LIABILITIES	16520678.24	19219291.76	21984765.32	25613051.76	29241338.20	32869624.63
5. Total Current Liabilities	1232290.91	1232290.91	1232290.91	1232290.91	1232290.91	1232290.91
Accounts Payable	1232290.91	1232290.91	1232290.91	1232290.91	1232290.91	1232290.91
Bank Overdraft	0.00	0.00	0.00	0.00	0.00	0.00
6. Total Long-term Debt	1591905.68	795952.84	0.00	0.00	0.00	0.00
Loan A	1591905.68	795952.84	0.00	0.00	0.00	0.00
Loan B	0.00	0.00	0.00	0.00	0.00	0.00
7. Total Equity Capital	3183811.36	3183811.36	3183811.36	3183811.36	3183811.36	3183811.36
Ordinary Capital	3183811.36	3183811.36	3183811.36	3183811.36	3183811.36	3183811.36
Preference Capital	0.00	0.00	0.00	0.00	0.00	0.00
Subsidies	0.00	0.00	0.00	0.00	0.00	0.00
8. Reserves, Retained Profits Brought Forward	7172442.27	10512670.29	14007236.65	17568663.05	21196949.49	24825235.93
9. Net Profit After Tax	3340228.02	3494566.36	3561426.40	3628286.44	3628286.44	3628286.44
Dividends Payable	0.00	0.00	0.00	0.00	0.00	0.00
Retained Profits	3340228.02	3494566.36	3561426.40	3628286.44	3628286.44	3628286.44