

Investment Office ANRS

**PROJECT PROFILE ON THE ESTABLISHMENT
OF ELECTRIC WATER HEATER MAKING
PLANT**

Development Studies Associates (DSA)

**October 2008
Addis Ababa**

Table of Contents

1. Executive Summary.....	1
2. Product Description and Application.....	1
3. Market Study, Plant Capacity and Production Program.....	1
3.1 Market Study.....	1
3.1.1 Present Demand and Supply	1
3.1.2 Projected Demand.....	2
3.1.3 Pricing and Distribution.....	3
3.2 Plant Capacity	3
3.3 Production Program	4
4. Raw Materials and Utilities	4
4.1 Availability and Source of Raw Materials.....	4
4.2 Annual Requirement and Cost of Raw Materials and Utilities.....	4
5. Location and Site	5
6. Technology and Engineering.....	5
6.1 Production Process.....	5
6.2 Machinery and Equipment.....	5
6.3 Civil Engineering Cost.....	7
7. Human Resource and Training Requirement	7
7.1 Human Resource.....	7
7.2 Training Requirement	8
8. Financial Analysis.....	8
8.1 Underlying Assumption.....	8
8.2 Investment.....	9
8.3 Production Costs	10
8.4 Financial Evaluation	10
9. Economic and Social Benefit and Justification.....	11
ANNEXES	13

1. Executive Summary

This project envisages production of 6000 pieces of electric water heaters having different size per annum. The total investment requirement of the project including the working capital is estimated at about Birr 5.6 million; of which more than Birr 2 million is the cost of machinery and equipments while the working capital is estimated to be 1.6 million. Based on the cash flow statement, the calculated internal rate of return (IRR) and simple rate of return (SRR) of the project are 24.5 % and 24.7 %, respectively. The net present value (NPV) at 18 % discounting rate is about Birr 1,411 thousand. The plant is expected to create employment opportunities for about 81 persons.

2. Product Description and Application

Electric water heaters provide a ready supply of hot water at not more than 85 °C temperature. The water heaters have two sections: the internal water tank which stores the water to be heated electrically, and the external cover. A thermal insulation material is placed in the space between the two sections. Water is electrically heated and the temperature is thermostatically controlled. The normal capacity of electrical water heaters is between 25 to 200 liters. Electrical water heaters are installed in home, hotels, hospitals, restaurants and in other places where there is need of hot water for washing and cleaning.

3. Market Study, Plant Capacity and Production Program

3.1 *Market Study*

3.1.1 Present Demand and Supply

With the expansion of urbanization, the urban population of the country increases every year. This increases the need of washing and cleaning facilities; which, in turn, stimulates the demand for water heating apparatuses. As electric energy is getting available in almost all urban centers of the country, the most common water heating apparatus is the electric water heater.

The market for electric water heater is assessed based on the application listed earlier. The demand assessment is analyzed using the trend of supplies of the product, which are composed of only imports.

Table3.1 shows the yearly supplies of electric water heaters during the period 1990 E.C to 1999 E.C.

TABLE 3.1
IMPORT OF ELECTRIC WATER HEATERS

YEAR E.C	Imports(In Kg)	Imports(In Pieces)
1990	167,479	11,165
1991	54,483	3,632
1992	220,222	14,681
1993	172,070	11,471
1994	316,249	21,083
1995	278,433	18,562
1996	353,404	23,560
1997	433,690	28,913
1998	533,470	35,565
1999	482,970	32,198
Total	3,012,470	200,831
Average	301,247	20,083

In the past ten years, a total of 200,831 pieces of electric heaters were imported. This implies, on average, 20,083 electric heaters were imported per annum. In the past five years, however, the trend in electric heaters import has been showing a significant increase; during the period, average import surges to more than 30 thousands per annum.

3.1.2 Projected Demand

The basis of demand projection is the trend in growth of past supplies or, when that trend proves inadequate, the anticipated growth in GDP, particularly growth in the modern residential housing construction sector. In this regard, the past trend seems inadequate because the growth in the supply of the product is much higher in the recent years than the preceding years. On the other hand, according to Ministry of Finance and Economic Development, the average growth rate in real GDP for the past few years is around 10 % per annum and that of the construction sector is more than that. Therefore, this project conservatively assumes that the demand for electric heaters will increase at 10 % per annum for the coming ten years.

Based on this, the projected demand for electric heaters for the following ten years is given in Table 3.2.

TABLE 3.3
DEMAND PROJECTION FOR ELECTRIC HEATERS

Year E.C	In Pieces
2000	35,418
2001	38,960
2002	42,856
2003	47,141
2004	51,855
2005	57,041
2006	62,745
2007	69,019
2008	75,921
2009	83,513
2010	91,865

As it is seen in the above projection, the demand for electric heater is expected to reach at 57,041 by the year 2005 E.C while demand for the product is projected to be nearly 92 thousand by the end of the decade.

3.1.3 Pricing and Distribution

Although selling prices vary from time to time as a result of fluctuations in supplies, currently the selling prices of electric baking ovens rang from 1000 up to 1800 per piece depending on the size and origin. The envisage project plans to sell the 25 liter at Birr 800 and the 50 liter at Birr 1200 per piece. There are different possible modalities of sales and distribution. In this particular case, it is suggested that producer-retailers-consumer be the option.

3.2 Plant Capacity

The envisaged plant will have a production capacity of 6000 units of various sizes (3000 pieces of 25 liter capacity and 3000 pieces of 50 liter capacity) electric water heaters per annum. The plant will operate two shifts per day and 275 working days per annum. This is set by deducting all Sundays and public holidays in a given year, and by setting aside 25 days for annual maintenance period and unexpected work interruptions.

3.3 Production Program

The production program follows gradual capacity utilization due to technological and market reasons. In the beginning, in order to produce the product with the desired degree of accuracy, operators relatively require longer time than the standard. The market problem refers to the time required to penetrate the market. Accordingly, the 1st year of production is estimated to be 50 % of the total capacity. In the second and third years the production will be 65 % and 80 % of the production capacity, respectively. The fourth year onwards the plant will operate at full capacity.

4. Raw Materials and Utilities

4.1 Availability and Source of Raw Materials

Except the materials for the packaging, all raw materials are imported from abroad.

4.2 Annual Requirement and Cost of Raw Materials and Utilities

The annual consumption of raw materials and inputs is listed in Table 4.1.

TABLE 4.1
RAW MATERIAL AND INPUT REQUIREMENT

	Quantity	Value
Zinc Plated Steel Sheet, Steel Rods and Clamps	183 tons	1287405
Heating Elements	6000 pcs	405000
Thermostatic Control	6000 pcs	48600
Thermometer	6000 pcs	40500
Indicator Lamps	6000 pcs	16200
Non-Return Valve	6000 pcs	97200
15mm Pipe (Brass or Copper)		360000
Glass Wool or Similar Thermal Insulation Material		337500
Packaging Material and Others		180000
Total Annual Cost of Raw Materials and Inputs		2,772,405

TABLE 4.2
UTILITIES REQUIREMENT

No.	Utility	Requirement (Annual)	Unit Price	Cost (Birr)
1.	Electricity	162,000 KWH	Birr 0.55 /KWH	89,100
2.	Water	2400 m ³	Birr 2.65 /m ³	6,360
	Total			95,460

The total cost of utility which includes cost of electric power consumption and that of water supply is estimated to reach at Birr 95,460.

5. Location and Site

For its convenience for distribution to different parts of the country, Debre-Birhan is an appropriate choice for the electric water heater making plant in the region.

6. Technology and Engineering

6.1 Production Process

The inner and outer casings are rolled to form the cylindrical shape of the required size. The tank is welded and drilled to allow the insertion of pipes and heating element. The inlet and outlet pipes are welded. The heating element is fitted in position. Painting and assembly of various parts is carried out. After electrical connections are made, the tank is tested and packed for dispatch.

Currently, there is no alternative technology in fabricating electric water heater of the above time.

6.2 Machinery and Equipment

The required machinery and equipment and the costs involved are shown in Table 6.1

TABLE 6.1
MACHINERY AND EQUIPMENT REQUIREMENTS

No.	Item	Quantity
1	Bench Lathe Diameter 500 mm	1
2	Guillotine Shearing Machine 1200mm Wide and Up To 1.5mm Thickness Cutting Capacity	1
3	30 Tons Power Press	1
4	Bending with Flanging mcn	1
5	Bench Drilling mcn	1
6	Bench Grinder	1
7	Power Hack Saw	1
8	Hand Shear	1
9	Arc Welding Set	1
10	Compressor with Spray Painting Equipment	1
	Gas Welding Set	1
F.O.B		1,757,638
	Testing Equipment	1
1	High Voltage Tester 2.5 Kg	1
2	500 V Muggger	1
3	Volt Meter	1
4	Watt Hour Meter	1
5	Thermometer Ammeters Etc.	1set
F.O.B Price		30,000
Total FOB of Machinery and Equipment		Birr 1,787,648
	Insurance and Freight 5% FOB	89,382
	Bank Charge 15 CIF	18,770
	Port Handling = 2% CIF	37,540
	Erection Cost	100,000
Total Machinery and Equipment		2,033,330

The total cost of machinery/equipment is estimated at Birr 2 million of which nearly Birr 1.8 million is in foreign currency.

Machinery Supplier's Address:
Weldor Engineering Private Limited
Dhebarbhai Road (South),
Rajkot – 360002, Gujarat,
India

6.3 Civil Engineering Cost

The building area required by the plant is estimated to be 600 m², and it costs Birr 1,200,000. This would include cost of land preparation and associated civil works. The total land area of the plant, including the open space, is 1000 m², and its lease cost equals Birr 54,500. The cost of the land lease is as per ANRS land lease rate for Debre-Birhan which is equal to Birr 54.50 per square meter for industrial purpose. Of the total cost of the lease, 5 % is paid in the beginning while the rest will be paid in 40 years.

7. Human Resource and Training Requirement

7.1 Human Resource

Details of the manpower requirement of the plant is shown in Table 7.1

TABLE 7.1
MANPOWER REQUIREMENT

Description	No	Monthly Salary (Birr)	Annual Salary (Birr)
A. Administration			
1. Manager	1	3000	36000
2. Engineer	1	2000	24000
2. Supervisors	2	1000	24000
3. Technicians	6	1000	72000
5. Personnel Officer	1	1000	12000
6. Accountant	1	1000	12000
7. Seretary	1	800	9600
8. Slaesman	2	800	19200
9. Cashier	1	600	7200
10. Storekeeper	1	600	7200
11. Guards	4	300	14400
Sub-Total	21		237,600
B. Production			
1. Skilled workers (Welders and Machine Operators)	30	800	288000
2. Unskilled Workers (Assistants)	30	300	108000
Benefits (20%)			126720
Total	81		760,320

The total annual wages and salary, including 20 % benefits, amount to Birr **760,320**.

7.2 Training Requirement

One month on job training is required for the technical personnel. And this can be managed by hiring one expert in the area from the technology suppliers.

8. Financial Analysis

8.1 Underlying Assumption

The financial analysis of *Electric Water Heater* making plant is based on the data provided in the preceding chapters and the following assumptions.

A. Construction and Finance

Construction Period	2 Years
Source Of Finance	40 % Equity and 60% Loan
Tax Holidays	2Years
Bank Interest Rate	12%
Discount For Cash Flow	18%
Value Of Land	Based on Lease Rate of ANRS
Spare Parts, Repair & Maintenance	3% of the 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 Days
Raw Material-Foreign	120 Days
Factory Supplies In Stock	30 Days
Spare Parts In Stock And Maintenance	30 Days
Work In Progress	10 Days
Finished Products	15 Days
Accounts Receivable	30 Days
Cash In Hand	30 Days
Accounts Payable	30 Days

8.2 Investment

The total investment cost of the project including working capital is estimated at Birr 5.6 million as shown in Table 8.1 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 8.1
TOTAL INITIAL INVESTMENT

Items	L.C	F.C	Total
Land	2,725		2,725
Building And Civil Works	1,200,000		1,200,000
Office Equipment	50,000		50,000
Vehicles	500,000		500,000
Plant Machinery & Equipment	233,330	1,800,000	2,033,330
Total Fixed Investment Cost	1,986,055	1,800,000	3,786,055
Pre Production Capital Expenditure*	99,303		189,303
Total Initial Investment	2,085,358	1,800,000	3,975,358
Working Capital at Full Capacity	469,289	1,131,231	1,600,520
Total	2,554,646	2,931,231	5,575,878

*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 Birr 2 million or 36.5 % of the total investment cost.

8.3 Production Costs

The total production cost at full capacity operation is estimated at Birr 5 million (See Table 8.2).

Raw materials and utilities account for 64.9 %

TABLE 8.2
PRODUCTION COST AT FULL CAPACITY

Raw Material Requirement	Cost
1. Local Raw Materials	180,000
2. Foreign Raw Materials	2,592,405

Total Production Cost at full Capacity	
Items	Cost
1. Raw materials	2,772,405
2. Utilities	95,460
3. Wages and Salaries	760,320
4. Spares and Maintenance	113,582
<i>Factory Costs</i>	<i>3,741,767</i>
5. Depreciation	406,194
6. Financial Costs	267,642
<i>Total Production Cost</i>	<i>4,415,602</i>

8.4 Financial Evaluation

I. Profitability

According to the projected income statement (See Anne 4) the project will generate profit beginning from the second year of operation and increases on wards. The income statement and other profitability indicators also show that the project is viable.

II. Breakeven Analysis

The breakeven point of the projects is given by the formula:

$$\text{BEP} = \frac{\text{Fixed Cost}}{\text{Sale} - \text{Variable Cost}} \quad \text{at full capacity.}$$

The project will break even at 28.4 % of capacity utilization

III. Payback Period

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

IV. Simple Rate of Return

The project's simple rate of return (SRR) is given by the formula:

$$\text{SRR} = (\text{Net Profit} + \text{Interest}) / (\text{Total Investment Outlay}) \quad \text{at full capacity utilization.}$$

The SRR would be 24.7 % at full capacity utilization.

V. Internal Rate of Return and Net Present Value

Based on cash flow statement (See Annex 2) the calculated internal rate of return (IRR) of the project is 25.4 % and the net present value (NPV) at 18 % discount is Birr 1,411 thousands.

VI. Sensitivity Analysis

The sensitivity test result which undertaken by increasing the cost of production by 10 % still indicates that the project would be viable.

9. Economic and Social Benefit and Justification

Based on the foregoing presentation and analysis, we can learn that the proposed project possesses wide range of benefits that complement the financial feasibility obtained earlier. In

general, the envisaged project promotes the socio-economic goals and objectives stated in the strategic plan of the Amhara National Regional State. These benefits are listed as follows:

A. Profit Generation

The project is found to be financially viable and earns on average a profit of Birr 1.1 million per year and Birr 10.5 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 4.3 million from corporate tax payment alone (i.e. excluding income tax, sales tax and VAT). Such result create additional fund for the regional government that will be used in expanding social and other basic services in the region

C. Import Substitution and Foreign Exchange Saving

As there is electric water heater making plant in the country, the commencement of this project relieves a portion of the import burden. That is, based on the projected figure we learn that in the project life an estimated amount of US Dollar 5.4 million will be saved as a result of the proposed project. This will create room for the saved hard currency to be allocated on other vital and strategic sectors

D. Employment and Income Generation

The proposed project is expected to create employment opportunity to several citizens of the country. That is, it will provide permanent employment to 81 professionals as well as support stuffs. Consequently the project creates income of Birr 760 thousands per year. This would be one of the commendable accomplishments of the project.

E. Pro Environment Project

The proposed production process is environment friendly.

ANNEXES

Annex 1: Total Net Working Capital Requirements (in Birr)						
	CONSTRUCTION		PRODUCTION			
	Year 1	Year 2	1	2	3	4
Capacity Utilization (%)	0	0	50%	65%	80%	100%
1. Total Inventory	0.00	0.00	1329014.80	1727719.24	2126423.69	2658029.61
Raw Materials in Stock- Total	0.00	0.00	575433.82	748063.96	920694.11	1150867.64
Raw Material-Local	0.00	0.00	9818.18	12763.64	15709.09	19636.36
Raw Material-Foreign	0.00	0.00	565615.64	735300.33	904985.02	1131231.27
Factory Supplies in Stock	0.00	0.00	2262.52	2941.28	3620.04	4525.05
Spare Parts in Stock and Maintenance	0.00	0.00	6195.36	8053.97	9912.58	12390.73
Work in Progress	0.00	0.00	56563.09	73532.02	90500.95	113126.19
Finished Products	0.00	0.00	113126.19	147064.04	181001.90	226252.37
2. Accounts Receivable	0.00	0.00	327272.73	425454.55	523636.36	654545.45
3. Cash in Hand	0.00	0.00	46678.91	60682.58	74686.25	93357.82
CURRENT ASSETS	0.00	0.00	1127532.62	1465792.41	1804052.20	2255065.24
4. Current Liabilities	0.00	0.00	327272.73	425454.55	523636.36	654545.45
Accounts Payable	0.00	0.00	327272.73	425454.55	523636.36	654545.45
TOTAL NET WORKING CAPITAL REQUIRMENTS	0.00	0.00	800259.89	1040337.86	1280415.83	1600519.79
INCREASE IN NET WORKING CAPITAL	0.00	0.00	800259.89	240077.97	240077.97	320103.96

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	2658029.61	2658029.61	2658029.61	2658029.61	2658029.61	2658029.61
Raw Materials in Stock-Total	1150867.64	1150867.64	1150867.64	1150867.64	1150867.64	1150867.64
Raw Material-Local	19636.36	19636.36	19636.36	19636.36	19636.36	19636.36
Raw Material-Foreign	1131231.27	1131231.27	1131231.27	1131231.27	1131231.27	1131231.27
Factory Supplies in Stock	4525.05	4525.05	4525.05	4525.05	4525.05	4525.05
Spare Parts in Stock and Maintenance	12390.73	12390.73	12390.73	12390.73	12390.73	12390.73
Work in Progress	113126.19	113126.19	113126.19	113126.19	113126.19	113126.19
Finished Products	226252.37	226252.37	226252.37	226252.37	226252.37	226252.37
2. Accounts Receivable	654545.45	654545.45	654545.45	654545.45	654545.45	654545.45
3. Cash in Hand	93357.82	93357.82	93357.82	93357.82	93357.82	93357.82
CURRENT ASSETS	2255065.24	2255065.24	2255065.24	2255065.24	2255065.24	2255065.24
4. Current Liabilities	654545.45	654545.45	654545.45	654545.45	654545.45	654545.45
Accounts Payable	654545.45	654545.45	654545.45	654545.45	654545.45	654545.45
TOTAL NET WORKING CAPITAL REQUIRMENTS	1600519.79	1600519.79	1600519.79	1600519.79	1600519.79	1600519.79
INCREASE IN NET WORKING CAPITAL	0.00	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	1987678.88	3588198.66	3327272.73	3998181.82	4898181.82	6130909.09
1. Inflow Funds	1987678.88	3588198.66	327272.73	98181.82	98181.82	130909.09
Total Equity	795071.55	1435279.47	0.00	0.00	0.00	0.00
Total Long Term Loan	1192607.33	2152919.20	0.00	0.00	0.00	0.00
Total Short Term Finances	0.00	0.00	327272.73	98181.82	98181.82	130909.09
2. Inflow Operation	0.00	0.00	3000000.00	3900000.00	4800000.00	6000000.00
Sales Revenue	0.00	0.00	3000000.00	3900000.00	4800000.00	6000000.00
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	1987678.88	1987678.88	3867097.25	3721747.64	4530596.96	5470265.89
4. Increase In Fixed Assets	1987678.88	1987678.88	0.00	0.00	0.00	0.00
Fixed Investments	1893027.50	1893027.50	0.00	0.00	0.00	0.00
Pre-production Expenditures	94651.38	94651.38	0.00	0.00	0.00	0.00
5. Increase in Current Assets	0.00	0.00	1127532.62	338259.79	338259.79	451013.05
6. Operating Costs	0.00	0.00	1873987.23	2424436.92	2974886.61	3708819.53
7. Corporate Tax Paid	0.00	0.00	0.00	0.00	325310.16	485203.44
8. Interest Paid	0.00	0.00	865577.40	401463.18	334552.65	267642.12
9.Loan Repayments	0.00	0.00	0.00	557587.75	557587.75	557587.75
10.Dividends Paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus(Deficit)	0.00	1600519.79	-539824.52	276434.18	367584.86	660643.20
Cumulative Cash Balance	0.00	1600519.79	1060695.27	1337129.45	1704714.31	2365357.51

Annex 2: Cash Flow Statement (in Birr): Continued						
	PRODUCTION					
	5	6	7	8	9	10
TOTAL CASH INFLOW	6000000.00	6000000.00	6000000.00	6000000.00	6000000.00	6000000.00
1. Inflow Funds	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00
2. Inflow Operation	6000000.00	6000000.00	6000000.00	6000000.00	6000000.00	6000000.00
Sales Revenue	6000000.00	6000000.00	6000000.00	6000000.00	6000000.00	6000000.00
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	4972415.47	4966936.27	4920098.89	4315673.77	4315673.77	4315673.77
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	0.00	0.00	0.00	0.00	0.00	0.00
6. Operating Costs	3708819.53	3708819.53	3708819.53	3708819.53	3708819.53	3708819.53
7. Corporate Tax Paid	505276.60	566707.92	586781.08	606854.24	606854.24	606854.24
8. Interest Paid	200731.59	133821.06	66910.53	0.00	0.00	0.00
9. Loan Repayments	557587.75	557587.75	557587.75	0.00	0.00	0.00
10.Dividends Paid	0.00	0.00	0.00	0.00	0.00	0.00
Surplus(Deficit)	1027584.53	1033063.73	1079901.11	1684326.23	1684326.23	1684326.23
Cumulative Cash Balance	3392942.04	4426005.77	5505906.88	7190233.11	8874559.34	10558885.57

Annex 2: DISCOUNTED CASH FLOW-TOTAL CAPITAL INVESTED						
	CONSTRUCTION		PRODUCTION			
	Year 1	Year 2	1	2	3	4
TOTAL CASH INFLOW	0.00	0.00	3000000.00	3900000.00	4800000.00	6000000.00
1. Inflow Operation	0.00	0.00	3000000.00	3900000.00	4800000.00	6000000.00
Sales Revenue	0.00	0.00	3000000.00	3900000.00	4800000.00	6000000.00
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	1987678.88	1987678.88	2674247.12	2664514.88	3214964.57	4514126.93
3. Increase in Fixed Assets	1987678.88	1987678.88	0.00	0.00	0.00	0.00
Fixed Investments	1893027.50	1893027.50	0.00	0.00	0.00	0.00
Pre-production Expenditures	94651.38	94651.38	0.00	0.00	0.00	0.00
4. Increase in Net Working Capital	0.00	0.00	800259.89	240077.97	240077.97	320103.96
5. Operating Costs	0.00	0.00	1873987.23	2424436.92	2974886.61	3708819.53
6. Corporate Tax Paid	0.00	0.00	0.00	0.00	0.00	485203.44
NET CASH FLOW	-1987678.88	-1987678.88	325752.88	1235485.12	1585035.43	1485873.07
CUMMULATIVE NET CASH FLOW	-1987678.88	-3975357.75	-3649604.87	-2414119.76	-829084.33	656788.74
Net Present Value (at 18%)	-1987678.88	-1684473.62	233950.65	751954.38	817543.64	649488.82
Cumulative Net present Value	-1987678.88	-3672152.50	-3438201.85	-2686247.47	-1868703.83	-1219215.01

Annex 2: DISCOUNTED CASH FLOW-TOTAL CAPITAL INVESTED (Continued)						
	PRODUCTION					
	5	6	7	8	9	10
TOTAL CASH INFLOW	6000000.00	6000000.00	6000000.00	6000000.00	6000000.00	6000000.00
1. Inflow Operation	6000000.00	6000000.00	6000000.00	6000000.00	6000000.00	6000000.00
Sales Revenue	6000000.00	6000000.00	6000000.00	6000000.00	6000000.00	6000000.00
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	4214096.13	4275527.45	4295600.61	4315673.77	4315673.77	4315673.77
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	0.00	0.00	0.00	0.00	0.00	0.00
5. Operating Costs	3708819.53	3708819.53	3708819.53	3708819.53	3708819.53	3708819.53
6. Corporate Tax Paid	505276.60	566707.92	586781.08	606854.24	606854.24	606854.24
NET CASH FLOW	1785903.87	1724472.55	1704399.39	1684326.23	1684326.23	1684326.23
CUMMULATIVE NET CASH FLOW	2442692.62	4167165.17	5871564.56	7555890.79	9240217.02	10924543.25
Net Present Value (at 18%)	661555.12	541355.10	453435.28	379741.57	321814.89	272724.49
Cumulative Net present Value	-557659.89	-16304.79	437130.49	816872.07	1138686.96	1411411.45
Net Present Value (at 18%)	1,411,411.45					
Internal Rate of Return	25.4%					

Annex 4: NET INCOME STATEMENT (in Birr)					
	PRODUCTION				
	1	2	3	4	5
Capacity Utilization (%)	50%	65%	80%	100%	100%
1. Total Income	3000000.00	3900000.00	4800000.00	6000000.00	6000000.00
Sales Revenue	3000000.00	3900000.00	4800000.00	6000000.00	6000000.00
Other Income	0.00	0.00	0.00	0.00	0.00
2. Less Variable Cost	1682768.30	2187598.79	2692429.28	3365536.60	3365536.60
VARIABLE MARGIN	1317231.70	1712401.21	2107570.72	2634463.40	2634463.40
(In % of Total Income)	43.91	43.91	43.91	43.91	43.91
3. Less Fixed Costs	597412.48	643031.68	688650.88	749476.48	749476.48
OPERATIONAL MARGIN	719819.22	1069369.53	1418919.84	1884986.92	1884986.92
(In % of Total Income)	23.99	27.42	29.56	31.42	31.42
4. Less Cost of Finance	865577.40	401463.18	334552.65	267642.12	200731.59
5. GROSS PROFIT	-145758.17	667906.35	1084367.19	1617344.80	1684255.33
6. Income (Corporate) Tax	0.00	0.00	325310.16	485203.44	505276.60
7. NET PROFIT	-145758.17	667906.35	759057.03	1132141.36	1178978.73
RATIOS (%)					
Gross Profit/Sales	-4.86%	17.13%	22.59%	26.96%	28.07%
Net Profit After Tax/Sales	-4.86%	17.13%	15.81%	18.87%	19.65%
Return on Investment	15.07%	21.32%	20.81%	25.10%	24.74%
Return on Equity	-6.54%	29.95%	34.03%	50.76%	52.86%

Annex 4: NET INCOME STATEMENT (in Birr):Continued					
	PRODUCTION				
	6	7	8	9	10
Capacity Utilization (%)	100%	100%	100%	100%	100%
1. Total Income	6000000.00	6000000.00	6000000.00	6000000.00	6000000.00
Sales Revenue	6000000.00	6000000.00	6000000.00	6000000.00	6000000.00
Other Income	0.00	0.00	0.00	0.00	0.00
2. Less Variable Cost	3365536.60	3365536.60	3365536.60	3365536.60	3365536.60
VARIABLE MARGIN	2634463.40	2634463.40	2634463.40	2634463.40	2634463.40
(In % of Total Income)	43.91	43.91	43.91	43.91	43.91
3. Less Fixed Costs	611615.93	611615.93	611615.93	611615.93	611615.93
OPERATIONAL MARGIN	2022847.47	2022847.47	2022847.47	2022847.47	2022847.47
(In % of Total Income)	33.71	33.71	33.71	33.71	33.71
4. Less Cost of Finance	133821.06	66910.53	0.00	0.00	0.00
5. GROSS PROFIT	1889026.41	1955936.94	2022847.47	2022847.47	2022847.47
6. Income (Corporate) Tax	566707.92	586781.08	606854.24	606854.24	606854.24
7. NET PROFIT	1322318.49	1369155.86	1415993.23	1415993.23	1415993.23
RATIOS (%)					
Gross Profit/Sales	31.48%	32.60%	33.71%	33.71%	33.71%
Net Profit After Tax/Sales	22.04%	22.82%	23.60%	23.60%	23.60%
Return on Investment	26.11%	25.75%	25.39%	25.39%	25.39%
Return on Equity	59.29%	61.39%	63.49%	63.49%	63.49%

Annex 5: Projected Balance Sheet (in Birr)

	CONSTRUCTION		PRODUCTION			
	Year 1	Year 2	1	2	3	4
TOTAL ASSETS	1987678.88	5575877.54	5903150.27	5965892.51	6265543.61	6971006.30
1. Total Current Assets	0.00	1600519.79	2188227.89	2802921.86	3508766.51	4620422.75
Inventory on Materials and Supplies	0.00	0.00	583891.70	759059.22	934226.73	1167783.41
Work in Progress	0.00	0.00	56563.09	73532.02	90500.95	113126.19
Finished Products in Stock	0.00	0.00	113126.19	147064.04	181001.90	226252.37
Accounts Receivable	0.00	0.00	327272.73	425454.55	523636.36	654545.45
Cash in Hand	0.00	0.00	46678.91	60682.58	74686.25	93357.82
Cash Surplus, Finance Available	0.00	1600519.79	1060695.27	1337129.45	1704714.31	2365357.51
Securities	0.00	0.00	0.00	0.00	0.00	0.00
2. Total Fixed Assets, Net of Depreciation	1987678.88	3975357.75	3569164.20	3162970.65	2756777.10	2350583.55
Fixed Investment	0.00	1893027.50	3786055.00	3786055.00	3786055.00	3786055.00
Construction in Progress	1893027.50	1893027.50	0.00	0.00	0.00	0.00
Pre-Production Expenditure	94651.38	189302.75	189302.75	189302.75	189302.75	189302.75
Less Accumulated Depreciation	0.00	0.00	406193.55	812387.10	1218580.65	1624774.20
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	145758.17	0.00	0.00	0.00
TOTAL LIABILITIES	1987678.88	5575877.54	5903150.27	5965892.51	6265543.61	6971006.30
5. Total Current Liabilities	0.00	0.00	327272.73	425454.55	523636.36	654545.45
Accounts Payable	0.00	0.00	327272.73	425454.55	523636.36	654545.45
Bank Overdraft	0.00	0.00	0.00	0.00	0.00	0.00
6. Total Long-term Debt	1192607.33	3345526.52	3345526.52	2787938.77	2230351.02	1672763.26
Loan A	1192607.33	3345526.52	3345526.52	2787938.77	2230351.02	1672763.26
Loan B	0.00	0.00	0.00	0.00	0.00	0.00
7. Total Equity Capital	795071.55	2230351.02	2230351.02	2230351.02	2230351.02	2230351.02
Ordinary Capital	795071.55	2230351.02	2230351.02	2230351.02	2230351.02	2230351.02
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	-145758.17	522148.18	1281205.21
9. Net Profit After Tax	0.00	0.00	0.00	667906.35	759057.03	1132141.36
Dividends Payable	0.00	0.00	0.00	0.00	0.00	0.00
Retained Profits	0.00	0.00	0.00	667906.35	759057.03	1132141.36

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

	PRODUCTION					
	5	6	7	8	9	10
TOTAL ASSETS	7592397.28	8357128.02	9168696.12	10584689.35	12000682.58	13416675.82
1. Total Current Assets	5648007.28	6681071.02	7760972.12	9445298.35	11129624.58	12813950.82
Inventory on Materials and Supplies	1167783.41	1167783.41	1167783.41	1167783.41	1167783.41	1167783.41
Work in Progress	113126.19	113126.19	113126.19	113126.19	113126.19	113126.19
Finished Products in Stock	226252.37	226252.37	226252.37	226252.37	226252.37	226252.37
Accounts Receivable	654545.45	654545.45	654545.45	654545.45	654545.45	654545.45
Cash in Hand	93357.82	93357.82	93357.82	93357.82	93357.82	93357.82
Cash Surplus, Finance Available	3392942.04	4426005.77	5505906.88	7190233.11	8874559.34	10558885.57
Securities	0.00	0.00	0.00	0.00	0.00	0.00
2. Total Fixed Assets, Net of Depreciation	1944390.00	1676057.00	1407724.00	1139391.00	871058.00	602725.00
Fixed Investment	3786055.00	3786055.00	3786055.00	3786055.00	3786055.00	3786055.00
Construction in Progress	0.00	0.00	0.00	0.00	0.00	0.00
Pre-Production Expenditure	189302.75	189302.75	189302.75	189302.75	189302.75	189302.75
Less Accumulated Depreciation	2030967.75	2299300.75	2567633.75	2835966.75	3104299.75	3372632.75
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	7592397.28	8357128.02	9168696.12	10584689.35	12000682.58	13416675.82
5. Total Current Liabilities	654545.45	654545.45	654545.45	654545.45	654545.45	654545.45
Accounts Payable	654545.45	654545.45	654545.45	654545.45	654545.45	654545.45
Bank Overdraft	0.00	0.00	0.00	0.00	0.00	0.00
6. Total Long-term Debt	1115175.51	557587.75	0.00	0.00	0.00	0.00
Loan A	1115175.51	557587.75	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	2230351.02	2230351.02	2230351.02	2230351.02	2230351.02	2230351.02
Ordinary Capital	2230351.02	2230351.02	2230351.02	2230351.02	2230351.02	2230351.02
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	2413346.57	3592325.30	4914643.79	6283799.65	7699792.88	9115786.11
9. Net Profit After Tax	1178978.73	1322318.49	1369155.86	1415993.23	1415993.23	1415993.23
Dividends Payable	0.00	0.00	0.00	0.00	0.00	0.00
Retained Profits	1178978.73	1322318.49	1369155.86	1415993.23	1415993.23	1415993.23