

**Investment Office ANRS**

**PROJECT PROFILE ON THE ESTABLISHMENT  
OF CORN FLAKES PRODUCING PLANT**

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## **1. Executive Summary**

This project profile deals with corn flakes producing plant in Amhara National Regional State. The following presents the main findings of the study.

There is ample demand for corn flakes if prices are set at a reasonable point and the envisaged plant is set to produce 1,000 tons of corn flakes annually. The total investment cost of the project including working capital is estimated at Birr 8.01 million. Relatedly, The envisaged plant will creates 35 jobs and Birr 458.64 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 19.2% of capacity utilization and it will payback fully the initial investment less working capital in 2 years. The result further shows that the calculated IRR of the project is 34.5% and with NPV discounted at 18% of Birr 4,870,535.69

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 import substitution.

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**

Corn flakes are food made by combining corn with sugar, vitamins and minerals to make them as nutritious as possible. For producing the fancy flakes specially designed flaker will be used. At present, corn flakes are popularly known as breakfast food in the world at large and generally taken with milk. Maize is the major raw material used for the manufacture of corn flakes.

### 3. Market Study, Plant Capacity and Production Program

#### 3.1 Market Study

##### 3.1.1 Present Supply and Demand

Currently, there is only one recently established private company in the country engaged in the manufacture of corn flakes. The planned annual production capacity of this new company is 288 tons. The ingredients of the product of this company are corn flour, chocolate powder and chocolate color. Data on actual production of this plant could not be obtained. Moreover, corn flakes are also imported from abroad. Assuming that the domestic plant produces at its full capacity, the total effective demand of corn flakes in the country is presented in table 1 below

**Table 1: Domestic Production and Import of Cornflakes (in tons)**

Year	Domestic Production	Import	Effective Demand
1997/98	0	29	29
1998/99	0	31	31
1999/00	0	24	24
2000/01	0	69	69
2001/02	0	71	71
2002/03	0	75	75
2003/04	0	72	72
2004/05	0	78	78
2005/06	288	84	372
2006/07	288	112	400

Source: Customs Authority (various years)

The above table reveals that in 2006/07 alone a little less than half of the total demand is met through import. A report by UNIDO in 2003 pointed out that there is a worthwhile demand of corn flakes in the capital city, Addis Ababa alone mainly by the international community, but also to a great extent by the affluent population due to its ease and fast preparation. However, the fact that the price of imported corn flakes is relatively high, being 50 times the price of maize utilized to produce it, the demand for the product is likely to increase substantially if production takes place locally at a reasonable price.

### 3.1.2 Projected Demand

Currently corn flakes is consumed by the international community, and a portion of middle and upper income groups of the urban population. The effective demand could increase to a greater extent if the price of the product is reduced together with proper promotional activities.

The 2006 statistical abstract confirm that there are 12.2 million people living in the urban places of Ethiopia. With average family size of 5, this represents roughly 2.5 million families. If we conservatively assume that only 2.5 percent of these families are able to demand the product, the number of families with potential demand will be 62,500 families. With further conservative assumption of 1 kilogram of cornflakes consumed per a family per week with the reduced price, the annual demand would be 3000 tons of corn flakes. This demand analysis increases when the international community and demand of hotels, restaurants and cafes is added in the computation. Moreover, the advancement of modernization in the urban places is likely to boost the demand for the product under study. Thus, taking a conservative consideration of 4 percent growth of urbanization per annum, the future demand of corn flakes with reasonable price is indicated in the following table.

**Table 2: Projected Demand for Corn Flakes (in ton)**

<b>Year</b>	<b>Projected Demand</b>
2007/08	3,120
2008/09	3,245
2009/10	3,375
2010/11	3,510
2011/12	3,650
2012/13	3,796
2013/14	3,948
2014/15	4,106
2015/16	4,270
2016/17	4,441
2017/18	4,618
2018/19	4,803

According to table 2, forecasted demand reaches 3,375 tons by 2009/10 and increases by 42.3% within 10 years (2018/19)

### 3.1.3 Pricing and Distribution

Market research conducted in various super markets in Addis Ababa revealed the following average retail price of imported cornflakes.

**Table 3: Retail Price of Imported Corn Flakes**

Weight (in gram)	Price (in Birr)
300	36
350	40
500	55
700	67

In other words the retail price of corn flakes on average is about Birr 100 per kilogram. This is very expensive judged by any standard. The product is sold through wholesalers and retailers. Based on the market research result and the capacity of the envisaged plant, the selling price of corn flakes has been estimated at 10,000 Birr/ton (i.e. Birr 10 per kg). In relation to the import price, the price set for the envisaged plant is substantially lower mainly due to the availability of maize and sugar locally at reasonable price. The product has got ample shelf life and thus, the existing retail and wholesale network shall be used by the envisaged plant.

### 3.2 *Plant Capacity*

The demand projection obtained in the previous section indicates the presence of ample demand for the product when prices are relatively reasonable and proper promotion is performed. Accordingly, given this demand and the planned technology, the envisaged plant is set to produce 1,000 tons of corn flakes annually.

### 3.3 *Production Program*

The program is scheduled based on the consideration that the envisaged plant will work 275 days in a year in 2 shifts, where the remaining days will be holidays and for plant and machinery maintenance. During the first year of operation the plant will operate at 70 percent capacity and

then at 80 percent in the 2<sup>nd</sup> year and at 90 percent in the 3<sup>rd</sup> year. The capacity will grow to 100 percent starting from the 4<sup>th</sup> year. This consideration is developed based on the assumption that market and logistics barriers would take place for the first two to three years of operation.

## **4. Raw Materials and Utilities**

### **4.1 Availability and Source of Raw Materials**

The major raw material used for the manufacture of corn flakes is maize (hybrid yellow and white cobs). In Ethiopia, maize is widely produced in all parts of the country where in 2005/06, alone 33.4 million quintals were produced throughout the country. In the same year Amhara region produced 35% of the total cereal production in the country which roughly implies that 11.7 million quintals of maize is the share of the region. The varieties grown are mixtures of white, yellow and purple seeds where it is largely produced by the private farms. The fact that corn does not constitute one of the staple foods in the Amhara Region points the presence of ample maize (corn) for the envisaged plant.

Sugar is another raw material used for the manufacture of corn flakes. There are three large-scale sugar establishments in the country. These establishments have a production capacity 280,000 tons of sugar annually. White sugar, which is used in the manufacture of corn flakes, is mainly exported to the neighboring countries such as Djibouti, Kenya and Yemen in quantities ranging between 30,000 to 50,000 tons per annum.

In addition to the existing cane sugar establishments, new sugar projects are currently under construction. After the completion of these new sugar projects, the annual production of cane sugar in the country may reach about 1.4 million tons. This exhibits the presence of ample raw material. Other ingredients including cocoa powder and flavors are imported from abroad.

### **4.2 Annual Requirement and Cost of Raw Materials and Utilities**

The annual requirement of raw materials and utilities at full capacity of production is presented in table 4 below.

**Table 4: Annual Requirement and Cost of Materials and Utilities**

Material and Input	Quantity	Total Cost	
		L.C.	F.C.
Corn	800 ton	2,000,000	
Sugar	110 ton	880,000	
Cocoa Powder	30 ton		600,000
Flavors	5 ton		650,000
Packing Material	300 rolls		250,000
<b>Total Material Cost</b>		<b>2,800,000</b>	<b>1,500,000</b>
Utility			
Electricity	356,000 kwh	195,800	
Furnace Oil	100,000 lit	700,000	
Water	10,000m <sup>3</sup>	25,500	
<b>Total Utility Cost</b>		<b>921,300</b>	
<b>Total Material and Utility</b>		<b>3,721,300</b>	<b>1,500,000</b>

\* LC = local cost and FC = foreign cost

The annual total raw material and utility requirement at full capacity of operation is estimated to be Birr 5,221,300.

## **5. Location and Site**

The appropriate locations for the envisaged project are any of the urban centers near major corn growing areas. This mainly refers to Bahir Dar.

## **6. Technology and Engineering**

### **6.1 Production Process**

The milling process removes the corn kernels from the cobs and turns them into flaking sized 'grits'. Malted barley can be added to enhance the flavor of the Corn Flakes. The corn grits are cooked in steam pressure cookers, at temperatures exceeding 100C. This cooking process lasts for an hour and softens the hard grits. During cooking additional water is incorporated in the form of steam which condenses and the water content in the batch rises to 30-35%. Then the hot



grits are transported from the cookers to large driers via the network of pipes. The grits spend several hours in the hot-air driers in order to reduce their moisture content. The corn grits are milled using rollers, which squeeze the grits flat.

The flakes are then tumble toasted in huge cylindrical ovens. The air in the ovens is heated by 600C<sup>0</sup> gas flames and the flakes are tossed around in a rotating drum. The drum is angled so that the flakes whirl around and pass through it quite quickly, and stops them spending too long in the fierce heat. The flakes are then coated with chocolate on demand and also sprayed with flavors, minerals to make them as nutritious as possible. The Corn flakes are then bagged up with the help of a bagging machine, which uses rolls of polythene.

The alternative technology is related to the volume of production. That is, for a large quantity of production (such as 600-800kg/hr) the alternative option is more appropriate. This choice requires a fully automated system at all steps-in production, packaging and boxing. It is suitable to the largest volume markets that may require exporting to neighboring countries. Nonetheless, for a capacity of production envisaged by the plant under study, such choice of technology is not feasible.

## **6.2 Machinery and Equipment**

The machineries and equipment required for producing corn flakes is detailed in table 5 below.

**Table 5: Required Machineries and Equipment**

<b>Machinery and Equipment</b>	<b>Quantity</b>
Storage (Silo)	2
Mixer	1
Extruder Cooker	1
Coating Machine	1
Storage Bin	1
Packaging Machine	1
Fuel Storage tank	1
Laboratory Equipment	1 set

The total cost of machinery and equipment including freight insurance and bank cost is estimated to be about Birr 3,000,000.

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

**Jinan Saibainuo Technology Development Co., Ltd**

No.18 Central Street Tianqiao Industrial Garden Jinan China,

Jinan, Shandong, China 250032

Tel: 86-134-6593-5419

Fax: 0086-531-8576-2891

**Jinan Shan Extrusion Machinery Co, Ltd**

Post Code 250021, China

Tel: +86-531-88269073

Email: foodextruder@gmail.com

Website: <http://www.semachinery.net>

### **6.3 Civil Engineering Cost**

The total site area for the envisaged plant is estimated to be 1,200m<sup>2</sup> of which 600m<sup>2</sup> is allocated to the production area and the remaining space is left for stores (350m<sup>2</sup>), office buildings and facilities (250m<sup>2</sup>).

## **7. Human Resource and Training Requirement**

### **7.1 Human Resource**

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

**Table 6: Human Resource Required and Compensation**

Position	No. Required	Monthly Salary	Total Annual Salary
Manager	1	5,000	60000
Administrator/Finance Head	1	3000	36000
Accountant	1	1200	14400
Secretary	1	850	10200
Sales clerk	2	800	19200
supervisor	2	1500	36000
Technician	2	1000	24000
Operator	10	800	96000
Laborers	4	400	19200
Store keeper	2	800	19200
Driver	1	800	9600
Cleaner	3	400	14400
Messenger	1	400	4800
Guards	4	400	19200
20% Benefit			76440
<b>Grand Total</b>	<b>35</b>		<b>458640</b>

The envisaged plant therefore, creates 35 jobs and about Birr 458.64 of income. The professionals for the envisaged plant shall be recruited from the Amhara region.

## **7.2 Training Requirement**

Training of key personnel 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 50,000 will be allocated as training expense.

## **8. Financial Analysis**

### **8.1 Underlying Assumption**

The financial analysis of corn flakes producing plant 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	1% 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 8.01 million as detailed in table 7 below.

**Table 7: Total initial investment**

<b>Items</b>	<b>L.C</b>	<b>F.C</b>	<b>Total</b>
1. Land	3,600		3,600
2. Building and civil works	2,400,000		2,400,000
3. Office equipment	50,000		50,000
4. Vehicles	600,000		600,000
5. Plant machinery & equipment	500,000	2,500,000	3,000,000
<b>Total fixed investment cost</b>	<b>3,553,600</b>	<b>2,500,000</b>	<b>6,053,600</b>
6. Pre production capital expenditure*	302,680		302,680
<b>Total Initial Investment</b>	<b>3,856,280</b>	<b>2,500,000</b>	<b>6,356,280</b>
7. Working capital at full capacity	1,001,947	654,545	1,656,493
<b>Total</b>	<b>4,858,227</b>	<b>3,154,545</b>	<b>8,012,773</b>

\*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 39.4% of the total investment cost.

### **8.3 Production Costs**

The total production cost at full capacity operation is estimated at Birr 6.92 million as detailed in table 8 hereunder.

**Table 8: Production Cost**

<b>Items</b>	<b>Cost</b>
1. Raw materials	4,300,000
2. Utilities	921,300
3. Wages and Salaries	458,640
4. Spares and Maintenance	60,536
<b>Factory costs</b>	<b>5,740,476</b>
5. Depreciation	605,536
6. Financial costs	576,920
<b>Total Production Cost</b>	<b>6,922,932</b>

## **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 first year of operation. Relevant ratios such as the percentage of net profit to total sales, return on equity and return on total investment are 15%, 33% and 31% respectively in the first year and are gradually rising. 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 19.2% 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 time.

### *IV. Simple Rate of Return*

For the envisaged plant this equals to 32.4%.

### *V. Internal Rate of Return and Net Present Value*

Based on cash flow statement attached in the annex, the calculated IRR of the project is 34.5% and the net present value at 18% discount is Birr 4,870,535.69

### *VI. Sensitivity Analysis*

The project is attractively profitable even with 10% increase in the cost of production considered in the analysis. That is, the envisaged plant earns profit starting from the first year and pays back within 2 years and four months.

## **9. Economic and Social Benefits and Justification**

The envisaged project possesses wide range of benefits that 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 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 a profit of Birr 22.6 million within the project life. Such result induces the project promoters to reinvest the profit which, therefore, increases the investment magnitude in the region. At the same time, the commencement of the plant stimulates production of corn and increases income of corn farmers, while introducing new diet to the region.

### ***B. Tax Revenue***

With an increase in profit, both tax revenue and the tax base of the region improves. Accordingly, the region will collect about Birr 8.32 million from corporate tax payment alone (i.e. excluding income tax, sales tax and VAT) within the project life used in the analysis. Such result creates additional fund for the regional government that will be used in expanding social and other basic services in the regional state.

### ***C. Import Substitution and Foreign Exchange Saving***

Based on the current demand and price of imported corn flakes, we learn that in the project life an estimated amount of US Dollar 9.4 million will be saved as a result of the proposed project. This will create room for the saved hard currency to be used in other vital and strategic sectors.

***D. Employment and Income Generation***

The proposed project is expected to create employment opportunity for 35 professionals as well as support stuffs. Consequently the project creates income of Birr 458.64 thousand 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
<b>Capacity Utilization (%)</b>	0	0	70%	80%	90%	100%
<b>1. Total Inventory</b>	0.00	0.00	1726167.71	1972763.09	2219358.48	2465953.87
<b>Raw Materials in Stock- Total</b>	0.00	0.00	672000.00	768000.00	864000.00	960000.00
<b>Raw Material-Local</b>	0.00	0.00	213818.18	244363.64	274909.09	305454.55
<b>Raw Material-Foreign</b>	0.00	0.00	458181.82	523636.36	589090.91	654545.45
<b>Factory Supplies in Stock</b>	0.00	0.00	4846.05	5538.34	6230.63	6922.92
<b>Spare Parts in Stock and Maintenance</b>	0.00	0.00	13868.25	15849.43	17830.60	19811.78
<b>Work in Progress</b>	0.00	0.00	121151.14	138458.44	155765.75	173073.05
<b>Finished Products</b>	0.00	0.00	242302.28	276916.89	311531.50	346146.11
<b>2. Accounts Receivable</b>	0.00	0.00	763636.36	872727.27	981818.18	1090909.09
<b>3. Cash in Hand</b>	0.00	0.00	105377.24	120431.13	135485.02	150538.91
<b>CURRENT ASSETS</b>	0.00	0.00	1923181.31	2197921.49	2472661.68	2747401.87
<b>4. Current Liabilities</b>	0.00	0.00	763636.36	872727.27	981818.18	1090909.09
<b>Accounts Payable</b>	0.00	0.00	763636.36	872727.27	981818.18	1090909.09
<b>TOTAL NET WORKING CAPITAL REQUIREMENTS</b>	0.00	0.00	1159544.94	1325194.22	1490843.50	1656492.78
<b>INCREASE IN NET WORKING CAPITAL</b>	0.00	0.00	1159544.94	165649.28	165649.28	165649.28

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

	PRODUCTION					
	5	6	7	8	9	10
<b>Capacity Utilization (%)</b>	100%	100%	100%	100%	100%	100%
<b>1. Total Inventory</b>	2465953.87	2465953.87	2465953.87	2465953.87	2465953.87	2465953.87
<b>Raw Materials in Stock-Total</b>	960000.00	960000.00	960000.00	960000.00	960000.00	960000.00
<b>Raw Material-Local</b>	305454.55	305454.55	305454.55	305454.55	305454.55	305454.55
<b>Raw Material-Foreign</b>	654545.45	654545.45	654545.45	654545.45	654545.45	654545.45
<b>Factory Supplies in Stock</b>	6922.92	6922.92	6922.92	6922.92	6922.92	6922.92
<b>Spare Parts in Stock and Maintenance</b>	19811.78	19811.78	19811.78	19811.78	19811.78	19811.78
<b>Work in Progress</b>	173073.05	173073.05	173073.05	173073.05	173073.05	173073.05
<b>Finished Products</b>	346146.11	346146.11	346146.11	346146.11	346146.11	346146.11
<b>2. Accounts Receivable</b>	1090909.09	1090909.09	1090909.09	1090909.09	1090909.09	1090909.09
<b>3. Cash in Hand</b>	150538.91	150538.91	150538.91	150538.91	150538.91	150538.91
<b>CURRENT ASSETS</b>	2747401.87	2747401.87	2747401.87	2747401.87	2747401.87	2747401.87
<b>4. Current Liabilities</b>	1090909.09	1090909.09	1090909.09	1090909.09	1090909.09	1090909.09
<b>Accounts Payable</b>	1090909.09	1090909.09	1090909.09	1090909.09	1090909.09	1090909.09
<b>TOTAL NET WORKING CAPITAL REQUIREMENTS</b>	1656492.78	1656492.78	1656492.78	1656492.78	1656492.78	1656492.78
<b>INCREASE IN NET WORKING CAPITAL</b>	0.00	0.00	0.00	0.00	0.00	0.00

<b>Annex 2: Cash Flow Statement (in Birr)</b>						
	<b>CONSTRUCTION</b>		<b>PRODUCTION</b>			
	<b>Year 1</b>	<b>Year 2</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>TOTAL CASH INFLOW</b>	3178140.00	4834632.78	7763636.36	8109090.91	9109090.91	10109090.91
<b>1. Inflow Funds</b>	3178140.00	4834632.78	763636.36	109090.91	109090.91	109090.91
<b>Total Equity</b>	1271256.00	1933853.11	0.00	0.00	0.00	0.00
<b>Total Long Term Loan</b>	1906884.00	2900779.67	0.00	0.00	0.00	0.00
<b>Total Short Term Finances</b>	0.00	0.00	763636.36	109090.91	109090.91	109090.91
<b>2. Inflow Operation</b>	0.00	0.00	7000000.00	8000000.00	9000000.00	10000000.00
<b>Sales Revenue</b>	0.00	0.00	7000000.00	8000000.00	9000000.00	10000000.00
<b>Interest on Securities</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>3. Other Income</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>TOTAL CASH OUTFLOW</b>	3178140.00	3178140.00	7267619.23	6309903.20	7592807.40	8227538.11
<b>4. Increase In Fixed Assets</b>	3178140.00	3178140.00	0.00	0.00	0.00	0.00
<b>Fixed Investments</b>	3026800.00	3026800.00	0.00	0.00	0.00	0.00
<b>Pre-production Expenditures</b>	151340.00	151340.00	0.00	0.00	0.00	0.00
<b>5. Increase in Current Assets</b>	0.00	0.00	1923181.31	274740.19	274740.19	274740.19
<b>6. Operating Costs</b>	0.00	0.00	4082626.08	4656966.10	5231306.11	5805646.12
<b>7. Corporate Tax Paid</b>	0.00	0.00	0.00	0.00	804717.46	961261.44
<b>8. Interest Paid</b>	0.00	0.00	1261811.84	576919.64	480766.37	384613.09
<b>9. Loan Repayments</b>	0.00	0.00	0.00	801277.28	801277.28	801277.28
<b>10. Dividends Paid</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>Surplus(Deficit)</b>	0.00	1656492.78	496017.13	1799187.71	1516283.51	1881552.80
<b>Cumulative Cash Balance</b>	0.00	1656492.78	2152509.91	3951697.62	5467981.13	7349533.93

<b>Annex 2: Cash Flow Statement (in Birr): Continued</b>						
	<b>PRODUCTION</b>					
	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>TOTAL CASH INFLOW</b>	10000000.00	10000000.00	10000000.00	10000000.00	10000000.00	10000000.00
<b>1. Inflow Funds</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total Equity</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total Long Term Loan</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total Short Term Finances</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>2. Inflow Operation</b>	10000000.00	10000000.00	10000000.00	10000000.00	10000000.00	10000000.00
<b>Sales Revenue</b>	10000000.00	10000000.00	10000000.00	10000000.00	10000000.00	10000000.00
<b>Interest on Securities</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>3. Other Income</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>TOTAL CASH OUTFLOW</b>	7885490.64	7872344.14	7805036.85	6936452.28	6936452.28	6936452.28
<b>4. Increase In Fixed Assets</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fixed Investments</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>Pre-production Expenditures</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>5. Increase in Current Assets</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>6. Operating Costs</b>	5805646.12	5805646.12	5805646.12	5805646.12	5805646.12	5805646.12
<b>7. Corporate Tax Paid</b>	990107.42	1073114.20	1101960.18	1130806.16	1130806.16	1130806.16
<b>8. Interest Paid</b>	288459.82	192306.55	96153.27	0.00	0.00	0.00
<b>9. Loan Repayments</b>	801277.28	801277.28	801277.28	0.00	0.00	0.00
<b>10.Dividends Paid</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>Surplus(Deficit)</b>	2114509.36	2127655.86	2194963.15	3063547.72	3063547.72	3063547.72
<b>Cumulative Cash Balance</b>	9464043.29	11591699.15	13786662.29	16850210.01	19913757.73	22977305.44

<b>Annex 3: DISCOUNTED CASH FLOW-TOTAL CAPITAL INVESTED</b>						
	<b>CONSTRUCTION</b>		<b>PRODUCTION</b>			
	<b>Year 1</b>	<b>Year 2</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>TOTAL CASH INFLOW</b>	0.00	0.00	7000000.00	8000000.00	9000000.00	10000000.00
<b>1. Inflow Operation</b>	0.00	0.00	7000000.00	8000000.00	9000000.00	10000000.00
<b>Sales Revenue</b>	0.00	0.00	7000000.00	8000000.00	9000000.00	10000000.00
<b>Interest on Securities</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>2. Other Income</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>TOTAL CASH OUTFLOW</b>	3178140.00	3178140.00	5242171.03	4822615.37	6201672.84	6932556.83
<b>3. Increase in Fixed Assets</b>	3178140.00	3178140.00	0.00	0.00	0.00	0.00
<b>Fixed Investments</b>	3026800.00	3026800.00	0.00	0.00	0.00	0.00
<b>Pre-production Expenditures</b>	151340.00	151340.00	0.00	0.00	0.00	0.00
<b>4. Increase in Net Working Capital</b>	0.00	0.00	1159544.94	165649.28	165649.28	165649.28
<b>5. Operating Costs</b>	0.00	0.00	4082626.08	4656966.10	5231306.11	5805646.12
<b>6. Corporate Tax Paid</b>	0.00	0.00	0.00	0.00	804717.46	961261.44
<b>NET CASH FLOW</b>	-3178140.00	-3178140.00	1757828.97	3177384.63	2798327.16	3067443.17
<b>CUMMULATIVE NET CASH FLOW</b>	-3178140.00	-6356280.00	-4598451.03	-1421066.40	1377260.76	4444703.92
<b>Net Present Value (at 18%)</b>	-3178140.00	-2693338.98	1262445.40	1933854.38	1443346.02	1340807.68
<b>Cumulative Net present Value</b>	-3178140.00	-5871478.98	-4609033.58	-2675179.21	-1231833.19	108974.49

<b>Annex 3: DISCOUNTED CASH FLOW-TOTAL CAPITAL INVESTED (Continued)</b>						
	<b>PRODUCTION</b>					
	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>TOTAL CASH INFLOW</b>	10000000.00	10000000.00	10000000.00	10000000.00	10000000.00	10000000.00
<b>1. Inflow Operation</b>	10000000.00	10000000.00	10000000.00	10000000.00	10000000.00	10000000.00
<b>Sales Revenue</b>	10000000.00	10000000.00	10000000.00	10000000.00	10000000.00	10000000.00
<b>Interest on Securities</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>2. Other Income</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>TOTAL CASH OUTFLOW</b>	6795753.54	6878760.32	6907606.30	6936452.28	6936452.28	6936452.28
<b>3. Increase in Fixed Assets</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fixed Investments</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>Pre-production Expenditures</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>4. Increase in Net Working Capital</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>5. Operating Costs</b>	5805646.12	5805646.12	5805646.12	5805646.12	5805646.12	5805646.12
<b>6. Corporate Tax Paid</b>	990107.42	1073114.20	1101960.18	1130806.16	1130806.16	1130806.16
<b>NET CASH FLOW</b>	3204246.46	3121239.68	3092393.70	3063547.72	3063547.72	3063547.72
<b>CUMMULATIVE NET CASH FLOW</b>	7648950.38	10770190.06	13862583.76	16926131.48	19989679.19	23053226.91
<b>Net Present Value (at 18%)</b>	1186953.95	979835.27	822694.74	690695.43	585335.11	496046.70
<b>Cumulative Net present Value</b>	1295928.44	2275763.71	3098458.45	3789153.88	4374488.99	4870535.69
<b>Net Present Value (at 18%)</b>	<b>4,870,535.69</b>					
<b>Internal Rate of Return</b>	<b>34.5%</b>					

<b>Annex 4: NET INCOME STATEMENT ( in Birr)</b>					
	<b>PRODUCTION</b>				
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Capacity Utilization (%)</b>	70%	80%	90%	100%	100%
<b>1. Total Income</b>	7000000.00	8000000.00	9000000.00	10000000.00	10000000.00
<b>Sales Revenue</b>	7000000.00	8000000.00	9000000.00	10000000.00	10000000.00
<b>Other Income</b>	0.00	0.00	0.00	0.00	0.00
<b>2. Less Variable Cost</b>	3891960.88	4447955.30	5003949.71	5559944.12	5559944.12
<b>VARIABLE MARGIN</b>	3108039.12	3552044.70	3996050.29	4440055.88	4440055.88
<b>(In % of Total Income)</b>	44.40	44.40	44.40	44.40	44.40
<b>3. Less Fixed Costs</b>	796201.20	814546.80	832892.40	851238.00	851238.00
<b>OPERATIONAL MARGIN</b>	2311837.92	2737497.90	3163157.89	3588817.88	3588817.88
<b>(In % of Total Income)</b>	33.03	34.22	35.15	35.89	35.89
<b>4. Less Cost of Finance</b>	1261811.84	576919.64	480766.37	384613.09	288459.82
<b>5. GROSS PROFIT</b>	1050026.08	2160578.26	2682391.53	3204204.79	3300358.06
<b>6. Income (Corporate) Tax</b>	0.00	0.00	804717.46	961261.44	990107.42
<b>7. NET PROFIT</b>	1050026.08	2160578.26	1877674.07	2242943.35	2310250.64
<b>RATIOS (%)</b>					
<b>Gross Profit/Sales</b>	15%	27%	30%	32%	33%
<b>Net Profit After Tax/Sales</b>	15%	27%	21%	22%	23%
<b>Return on Investment</b>	31%	36%	30%	33%	32%
<b>Return on Equity</b>	33%	67%	59%	70%	72%



<b>Annex 4: NET INCOME STATEMENT (in Birr):Continued</b>					
	<b>PRODUCTION</b>				
	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
<b>Capacity Utilization (%)</b>	100%	100%	100%	100%	100%
<b>1. Total Income</b>	10000000.00	10000000.00	10000000.00	10000000.00	10000000.00
<b>Sales Revenue</b>	10000000.00	10000000.00	10000000.00	10000000.00	10000000.00
<b>Other Income</b>	0.00	0.00	0.00	0.00	0.00
<b>2. Less Variable Cost</b>	5559944.12	5559944.12	5559944.12	5559944.12	5559944.12
<b>VARIABLE MARGIN</b>	4440055.88	4440055.88	4440055.88	4440055.88	4440055.88
<b>(In % of Total Income)</b>	44.40	44.40	44.40	44.40	44.40
<b>3. Less Fixed Costs</b>	670702.00	670702.00	670702.00	670702.00	670702.00
<b>OPERATIONAL MARGIN</b>	3769353.88	3769353.88	3769353.88	3769353.88	3769353.88
<b>(In % of Total Income)</b>	37.69	37.69	37.69	37.69	37.69
<b>4. Less Cost of Finance</b>	192306.55	96153.27	0.00	0.00	0.00
<b>5. GROSS PROFIT</b>	3577047.33	3673200.61	3769353.88	3769353.88	3769353.88
<b>6. Income (Corporate) Tax</b>	1073114.20	1101960.18	1130806.16	1130806.16	1130806.16
<b>7. NET PROFIT</b>	2503933.13	2571240.42	2638547.72	2638547.72	2638547.72
<b>RATIOS (%)</b>					
<b>Gross Profit/Sales</b>	36%	37%	38%	38%	38%
<b>Net Profit After Tax/Sales</b>	25%	26%	26%	26%	26%
<b>Return on Investment</b>	34%	33%	33%	33%	33%
<b>Return on Equity</b>	78%	80%	82%	82%	82%

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

	CONSTRUCTION		PRODUCTION			
	Year 1	Year 2	1	2	3	4
<b>TOTAL ASSETS</b>	3178140.00	8012772.78	9826435.22	11294827.11	12480314.81	14031071.79
<b>1. Total Current Assets</b>	0.00	1656492.78	4075691.22	6149619.11	7940642.81	10096935.79
Inventory on Materials and Supplies	0.00	0.00	690714.29	789387.76	888061.23	986734.70
Work in Progress	0.00	0.00	121151.14	138458.44	155765.75	173073.05
Finished Products in Stock	0.00	0.00	242302.28	276916.89	311531.50	346146.11
Accounts Receivable	0.00	0.00	763636.36	872727.27	981818.18	1090909.09
Cash in Hand	0.00	0.00	105377.24	120431.13	135485.02	150538.91
Cash Surplus, Finance Available	0.00	1656492.78	2152509.91	3951697.62	5467981.13	7349533.93
Securities	0.00	0.00	0.00	0.00	0.00	0.00
<b>2. Total Fixed Assets, Net of Depreciation</b>	3178140.00	6356280.00	5750744.00	5145208.00	4539672.00	3934136.00
Fixed Investment	0.00	3026800.00	6053600.00	6053600.00	6053600.00	6053600.00
Construction in Progress	3026800.00	3026800.00	0.00	0.00	0.00	0.00
Pre-Production Expenditure	151340.00	302680.00	302680.00	302680.00	302680.00	302680.00
Less Accumulated Depreciation	0.00	0.00	605536.00	1211072.00	1816608.00	2422144.00
<b>3. Accumulated Losses Brought Forward</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>4. Loss in Current Year</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>TOTAL LIABILITIES</b>	3178140.00	8012772.78	9826435.22	11294827.11	12480314.81	14031071.79
<b>5. Total Current Liabilities</b>	0.00	0.00	763636.36	872727.27	981818.18	1090909.09
Accounts Payable	0.00	0.00	763636.36	872727.27	981818.18	1090909.09
Bank Overdraft	0.00	0.00	0.00	0.00	0.00	0.00
<b>6. Total Long-term Debt</b>	1906884.00	4807663.67	4807663.67	4006386.39	3205109.11	2403831.83
Loan A	1906884.00	4807663.67	4807663.67	4006386.39	3205109.11	2403831.83
Loan B	0.00	0.00	0.00	0.00	0.00	0.00
<b>7. Total Equity Capital</b>	1271256.00	3205109.11	3205109.11	3205109.11	3205109.11	3205109.11
Ordinary Capital	1271256.00	3205109.11	3205109.11	3205109.11	3205109.11	3205109.11
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
<b>8. Reserves, Retained Profits Brought Forward</b>	0.00	0.00	0.00	1050026.08	3210604.34	5088278.41
<b>9. Net Profit After Tax</b>	0.00	0.00	1050026.08	2160578.26	1877674.07	2242943.35
Dividends Payable	0.00	0.00	0.00	0.00	0.00	0.00
Retained Profits	0.00	0.00	1050026.08	2160578.26	1877674.07	2242943.35

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

	PRODUCTION					
	5	6	7	8	9	10
<b>TOTAL ASSETS</b>	15540045.16	17242701.01	19012664.16	21651211.88	24289759.59	26928307.31
<b>1. Total Current Assets</b>	12211445.16	14339101.01	16534064.16	19597611.88	22661159.59	25724707.31
Inventory on Materials and Supplies	986734.70	986734.70	986734.70	986734.70	986734.70	986734.70
Work in Progress	173073.05	173073.05	173073.05	173073.05	173073.05	173073.05
Finished Products in Stock	346146.11	346146.11	346146.11	346146.11	346146.11	346146.11
Accounts Receivable	1090909.09	1090909.09	1090909.09	1090909.09	1090909.09	1090909.09
Cash in Hand	150538.91	150538.91	150538.91	150538.91	150538.91	150538.91
Cash Surplus, Finance Available	9464043.29	11591699.15	13786662.29	16850210.01	19913757.73	22977305.44
Securities	0.00	0.00	0.00	0.00	0.00	0.00
<b>2. Total Fixed Assets, Net of Depreciation</b>	3328600.00	2903600.00	2478600.00	2053600.00	1628600.00	1203600.00
Fixed Investment	6053600.00	6053600.00	6053600.00	6053600.00	6053600.00	6053600.00
Construction in Progress	0.00	0.00	0.00	0.00	0.00	0.00
Pre-Production Expenditure	302680.00	302680.00	302680.00	302680.00	302680.00	302680.00
Less Accumulated Depreciation	3027680.00	3452680.00	3877680.00	4302680.00	4727680.00	5152680.00
<b>3. Accumulated Losses Brought Forward</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>4. Loss in Current Year</b>	0.00	0.00	0.00	0.00	0.00	0.00
<b>TOTAL LIABILITIES</b>	15540045.16	17242701.01	19012664.16	21651211.88	24289759.59	26928307.31
<b>5. Total Current Liabilities</b>	1090909.09	1090909.09	1090909.09	1090909.09	1090909.09	1090909.09
Accounts Payable	1090909.09	1090909.09	1090909.09	1090909.09	1090909.09	1090909.09
Bank Overdraft	0.00	0.00	0.00	0.00	0.00	0.00
<b>6. Total Long-term Debt</b>	1602554.56	801277.28	0.00	0.00	0.00	0.00
Loan A	1602554.56	801277.28	0.00	0.00	0.00	0.00
Loan B	0.00	0.00	0.00	0.00	0.00	0.00
<b>7. Total Equity Capital</b>	3205109.11	3205109.11	3205109.11	3205109.11	3205109.11	3205109.11
Ordinary Capital	3205109.11	3205109.11	3205109.11	3205109.11	3205109.11	3205109.11
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
<b>8. Reserves, Retained Profits Brought Forward</b>	7331221.76	9641472.40	12145405.53	14716645.96	17355193.68	19993741.39
<b>9. Net Profit After Tax</b>	2310250.64	2503933.13	2571240.42	2638547.72	2638547.72	2638547.72
Dividends Payable	0.00	0.00	0.00	0.00	0.00	0.00
Retained Profits	2310250.64	2503933.13	2571240.42	2638547.72	2638547.72	2638547.72