

**18. PROFILE ON THE PRODUCTION OF PEANUT
BUTTER**

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I. SUMMARY

This profile envisages the establishment of a plant for the production of peanut butter with a capacity of 100 tons per annum. Peanut butter is an important nutritive food which contains, among others, proteins, fats and carbohydrates as major constituents.

The country's requirement of peanut butter is met through local production and import. The present (2012) local and export demand for peanut butter is estimated at 1,048 tons. The local and export demand for the product is projected to reach 1,356 tons and 1,755 tons by the year 2017 and year 2022, respectively.

The principal raw materials required are ground nut, salt, sugar, emulsifier, preservatives, antioxidants and other additives. Preservatives and additives have to be imported while the other raw materials are locally available.

The total investment cost of the project including working capital is estimated at Birr 5.32 million. From the total investment cost the highest share (Birr 4.04 million or 75.96%) is accounted by fixed investment cost followed by pre operation cost (763.11 thousand or 14.34%) and initial working capital (Birr 516.05 thousand or 9.70%). From the total investment cost Birr 1.84 million or 30.28% is required in foreign currency.

The project is financially viable with an internal rate of return (IRR) of 30.39% and a net present value (NPV) of Birr 5.06 million, discounted at 10%.

The project can create employment for 31 persons. The establishment of such factory will have a foreign exchange saving and earning effect to the country by substituting the current imports and exporting its products to the international market. The project will also create backward linkage with the agricultural sector and sugar and salt industries and also generates income for the Government in terms of tax revenue and payroll tax.

II. PRODUCT DESCRIPTION AND APPLICATION

Peanut products comprise peanut butter, oil and others as well. However, the most important on today's market is the peanut butter. It is yellowish- brown color product made from ground nuts or peanuts.

Peanut butter is an important nutritive food which contains, among others, proteins, fats and carbohydrates as major constituents. It is easily spreadable and has a flavor of fresh roasted peanut and good taste. It is most used in a hurried meal style for the purpose of having a balanced diet.. This product is also used for making sandwiches, candy and bakery products as well.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Past Supply and Present Demand

The country's requirement of industrially processed butter is mainly met through local production. There is also a small amount of import and export to and from Ethiopia. The domestic production, import and export of butter for the period covering 2002--2011 is shown in Table 3.1.

Table 3.1**LOCAL PRODUCTION, IMPORT AND EXPORT OF BUTTER (TONS)**

Year	Local production¹	Import²	Export²
2002	384	7.0	5.6
2003	180	1.8	6.8
2004	339	9.1	5.9
2005	394	2.2	3.5
2006	588	26.0	4.2
2007	354	16.3	3.4
2008	365	14.2	2.9
2009	611	32.7	2.8
2010	982	4.6	10.5
2011	982 ¹	12.8	15.6

Source: - 1. CSA, Report on Large & Medium Scale Manufacturing and Electricity Industries Survey.

2. Ethiopian Revenues and Customs Authority.

Domestic production of industrially processed butter in the past ten years has been fluctuating although it shows a general increasing trend especially in the recent years of the data set. During the period 2002--2005, the production level ranged from the lowest 180 tons (2003) to the highest 394 tons (2005), with a mean figure of about 324 tons. By the year 2006 production level has suddenly increased to 588 tones, which is higher by 81% compared to the previous years` average. However, it again plummeted to about 360 tons during the years of 2007 and 2008. A substantial growth of domestic production is registered during the recent three years. Production has increased to 611 tons and 982 tones during the years 2009 and 2010/11, respectively. In

¹ Domestic production data for the year 2011 is not published. Hence, it is assumed to be same as year 2010

general, domestic production of industrially processed butter was satisfying more than 98% of the demand.

Imported quantity of butter is also characterized by fluctuations although it shows a general increasing trend. The yearly average level of import during the period 2002--2005 was only 5 tones but it increased to annual average of about 18 tons during the period 2006--2011.

Exported quantity of butter during the period 2002--2009 was fluctuating between 3 to 7 tones, with a yearly average of about 4.4 tones. A modest growth in export of butter is observed during the recent two years of 2010 and 2011. The exported quantity has reached 10.5 tones and 15.6 tones by the year 2010 and year 2011, respectively.

In estimating the present demand for domestic consumption and export, the following assumptions are utilized.

- Year 2011 domestic production plus import and minus export is assumed to reflect the effective demand for year 2011;
- Annual growth of local demand for industrially processed butter is assumed to be 5%, taking urban population growth and income rise in to account; and
- Export demand is assumed to increase by 25% per annum.

Based on the above assumptions, the current effective local demand and export demand is calculated at 1,028 tones and 20 tons, respectively.

2. Demand Projection

The local demand for industrially processed butter depends on the growth of urban population and disposable income. Hence, the domestic consumption of industrially processed butter is conservatively forecasted to increase by 5% per annum. For the export market a 15% growth is applied since the base figure is at a very low level. The projected demand (local and export), the existing production and the unsatisfied demand is presented in Table 3.2.

Table 3.2
PROJECTED DEMAND FOR BUTTER (TONS)

Year	Local Demand	Export Demand	Total Demand	Existing Production	Unsatisfied Demand
2013	1,079	23	1,102	982	120
2014	1,133	26	1,159	982	177
2015	1,190	30	1,220	982	238
2016	1,250	35	1,285	982	303
2017	1,312	40	1,356	982	374
2018	1,378	46	1,424	982	442
2019	1,146	53	1,199	982	217
2020	1,519	61	1,580	982	598
2021	1,595	70	1,665	982	683
2022	1,674	81	1,755	982	773

The local unsatisfied demand for industrially processed butter will increase from 1,079 tons in the year 2013 to 1,378 tons and 1,674 tons by the year 2018 and 2022, respectively. On the other hand, the export market will increase from 23 tons in the year 2013 to 81 tons by the year 2022.

3. Pricing and Distribution:

Current average retail price of peanut butter is about Birr 56 per kilogram. Allowing 30% profit margin for distributors and retailers the recommended factory gate price is Birr 43 per kilogram. Butter is a consumer product which is demanded by the middle and higher income group of the urban population. Hence, to reach the end consumer the plant has to appoint distributors in selected towns of the country. Then, the product will reach the end users through the existing supermarkets and general merchandise shops.

B. PLANT CAPACITY AND PRODUCTION PROGRAM

1. Plant Capacity

On the basis of the forecasted demand for peanut butter in the market study and considering the minimum economic scale of production, the envisaged project will have a production capacity of

100 tons of peanut butter per annum. This production capacity is proposed on the basis of single shift of 8 hours per day and 300 working days per annum. Annual production can be increased by operating the plant in two or three shifts as required.

2. Production Program

It is planned that the envisaged plant will start production at 90% of its installed capacity which will grow to 100% in the second year and onwards. Details of annual production program are shown in Table 3.3.

Table 3.3
ANNUAL PRODUCTION PROGRAM

Sr. No.	Description	Unit of Measure	Production Year	
			1st	2 nd & Onwards
1	Peanut butter	ton	90	100
2	Capacity utilization rate	%	90	100

IV. MATERIAL AND INPUTS

A. RAW MATERIALS

The major raw materials required for production of peanut butter is include ground nut, salt, sugar, emulsifier, preservatives, antioxidants, and other additives. Most of the raw materials are available locally. The preservatives and additives have to be imported. The annual requirement for raw materials at full capacity production of the envisaged plant and the estimated costs are given in Table 4.1.

Table 4.1**ANNUAL RAW MATERIALS REQUIREMENT AND ESTIMATED COST**

Sr. No.	Description	Unit of Measure	Required Qty	Unit Price	Cost ('000 Birr)		
					F. C.	L. C.	Total
1	Ground nut	ton	142.0	8,500.00		1,207.000	1,207.000
2	Common salt	ton	1.5	2,500.00		3.750	3.750
3	Sugar	ton	3.0	14,000.00		42.000	42.000
4	Emulsifier	ton	1.5	85.00		0.128	0.128
5	Preservatives	kg	100.0	204.00	16.320	4.080	20.400
6	Antioxidants	kg	10.0	1,520.00	12.160	3.040	15.200
7	Other additives	kg	26.7	2531.00	54.062	13.516	67.578
Total					82.542	1,273.51	1,356.056

The auxiliary material required for the envisaged plant is packing material, aluminum foil. The annual requirement for the auxiliary material at full capacity production of the plant amounts to 27 kg of aluminum foil and the total cost is estimated Birr 212,625, of which Birr 170,100 will be required in foreign currency.

B. UTILITIES

The utilities required for the envisaged project include electric power and water. The annual requirement for utilities at full capacity production of the plant and the estimated costs are shown in Table 4.2.

Table 4.2**ANNUAL UTILITIES REQUIREMENT AND ESTIMATED COSTS**

Sr. No.	Description	Unit of Measure	Required Qty	Unit Price, Birr/Unit	Cost, ('000 Birr)		
					F.C.	L.C.	Total
1	Electric power	kWh	90,000	0.58		52.2	52.2
2	Water	m ³	1,250	10.00		12.5	12.5
Total						64.7	64.7

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

The peanut butter production technology involves operations such as decorticating, roasting, blanking, grinding, paste forming, and packing. As mentioned above, the production process starts with removing of the shells from the incoming peanuts by using the decorticating machine. The shelled peanuts are then heated to a temperature of about 145 0 C to obtain the proper roasted flavor. Then the influence of roasting time on sensory attributes and chemical measurements of flavor components are examined. The roasted peanuts undergo blanching to remove the peanut skin. Then, a course or medium grinding is carried out, the ingredients are added and blended. The oil level is controlled at 3% by keeping the mix at low temperature.

The final grinding is prepared at an appropriate temperature to produce the desired texture of smooth creamy paste. Air is removed by vacuum and the mixture is cooled, and finally the peanut butter is packed by using a vacuum fill type packing unit. The premises under which peanut butter is manufactured, packed, stored and distributed, and the equipment used during processing shall be maintained under strict hygienic conditions.

2. Environmental Impact

The unit operations involved in production of peanut butter do not have any toxicant or pollutant emitted to the environment. Thus the envisaged project is environment friendly.

B. ENGINEERING

1. Machinery and Equipment

The machinery and equipment required for the envisaged plant comprise mainly decorticator, roasting and blanching equipment, grinding and mixing machine, packing machine, etc. The list of plant machinery and equipment and the estimated costs are indicated in Table 5.1.

Table 5.1**LIST OF PLANT MACHINERY AND EQUIPMENT AND THE ESTIMATED COST**

Sr. No.	Description	Unit of Measure	Required Qty	Cost, ('000 Birr)		
				F.C.	L.C.	Total
1	Decorticating machine	set	1	276.0	69.0	345.0
2	Roasting equipment with thermostat	set	1	276.0	69.0	345.0
3	Blanching equipment	set	1	239.2	59.8	299.0
4	Coarse grinding machine	set	1	276.0	69.0	345.0
5	Paste grinding and mixing machine	set	1	257.6	64.4	322.0
6	Packing unit, vacuum fill type	set	1	276.0	69.0	345.0
7	Miscellaneous equipment, testing units, tools, etc	set	1	239.2	59.8	299.0
Total				1,840.0	460.0	2,300.0

2. Land, Buildings and Civil Works

The total area of land required for the envisaged project is 450 m², out of which 240 m² is built – up area. The construction cost of buildings and civil works at a rate of Birr 4,500 per square meter is estimated at Birr 1.08 million.

According to the Federal Legislation on the Lease Holding of Urban Land (Proclamation No 721/2004) in principle, urban land permit by lease is on auction or negotiation basis, however, the time and condition of applying the proclamation shall be determined by the concerned regional or city government depending on the level of development.

The legislation has also set the maximum on lease period and the payment of lease prices. The lease period ranges from 99 years for education, cultural research health, sport, NGO , religious

and residential area to 80 years for industry and 70 years for trade while the lease payment period ranges from 10 years to 60 years based on the towns grade and type of investment.

Moreover, advance payment of lease based on the type of investment ranges from 5% to 10%. The lease price is payable after the grace period annually. For those that pay the entire amount of the lease will receive 0.5% discount from the total lease value and those that pay in installments will be charged interest based on the prevailing interest rate of banks. Moreover, based on the type of investment, two to seven years grace period shall also be provided.

However, the Federal Legislation on the Lease Holding of Urban Land apart from setting the maximum has conferred on regional and city governments the power to issue regulations on the exact terms based on the development level of each region.

In Addis Ababa, the City's Land Administration and Development Authority is directly responsible in dealing with matters concerning land. However, regarding the manufacturing sector, industrial zone preparation is one of the strategic intervention measures adopted by the City Administration for the promotion of the sector and all manufacturing projects are assumed to be located in the developed industrial zones.

Regarding land allocation of industrial zones if the land requirement of the project is below 5,000 m², the land lease request is evaluated and decided upon by the Industrial Zone Development and Coordination Committee of the City's Investment Authority. However, if the land request is above 5,000 m² the request is evaluated by the City's Investment Authority and passed with recommendation to the Land Development and Administration Authority for decision, while the lease price is the same for both cases.

Moreover, the Addis Ababa City Administration has recently adopted a new land lease floor price for plots in the city. The new prices will be used as a benchmark for plots that are going to be auctioned by the city government or transferred under the new "Urban Lands Lease Holding Proclamation."

The new regulation classified the city into three zones. The first Zone is Central Market District Zone, which is classified in five levels and the floor land lease price ranges from Birr 1,686 to

Birr 894 per m². The rate for Central Market District Zone will be applicable in most areas of the city that are considered to be main business areas that entertain high level of business activities.

The second zone, Transitional Zone, will also have five levels and the floor land lease price ranges from Birr 1,035 to Birr 555 per m². This zone includes places that are surrounding the city and are occupied by mainly residential units and industries.

The last and the third zone, Expansion Zone, is classified into four levels and covers areas that are considered to be in the outskirts of the city, where the city is expected to expand in the future. The floor land lease price in the Expansion Zone ranges from Birr 355 to Birr 191 per m² (see Table 5.2).

Table 5.2

NEW LAND LEASE FLOOR PRICE FOR PLOTS IN ADDIS ABABA

Zone	Level	Floor Price/m²
Central Market District	1 st	1686
	2 nd	1535
	3 rd	1323
	4 th	1085
	5 th	894
Transitional zone	1 st	1035
	2 nd	935
	3 rd	809
	4 th	685
	5 th	555
Expansion zone	1 st	355
	2 nd	299
	3 rd	217
	4 th	191

Accordingly, in order to estimate the land lease cost of the project profiles it is assumed that all new manufacturing projects will be located in industrial zones located in expansion zones. Therefore, for the profile a land lease rate of Birr 266 per m² which is equivalent to the average floor price of plots located in expansion zone is adopted.

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

Table 5.3

INCENTIVES FOR LEASE PAYMENT OF INDUSTRIAL PROJECTS

Scored Point	Grace Period	Payment Completion Period	Down Payment
Above 75%	5 Years	30 Years	10%
From 50 - 75%	5 Years	28 Years	10%
From 25 - 49%	4 Years	25 Years	10%

For the purpose of this project profile, the average i.e. five years grace period, 28 years payment completion period and 10% down payment is used. The land lease period for industry is 60 years.

Accordingly, the total land lease cost at a rate of Birr 266 per m² is estimated at Birr 119,700 of which 10% or Birr 11,970 will be paid in advance. The remaining Birr 107,730 will be paid in equal installments with in 28 years i.e. Birr 3,847 annually.

VI. HUMANRESOURCE AND TRAINING REQUIREMENT

A. HUMANRESOURCE REQUIREMENT

The total human resource required for the envisaged project is 43 persons. Details of the human resource required and the estimated annual labor cost including fringe benefits are indicated in Table 6.1

Table 6.1**HUMAN RESOURCE REQUIREMENT AND LABOR COST**

Sr. No.	Job Title	Required No. of Persons	Salary (in Birr)	
			Monthly	Annual
1	Plant manager	1	5,000	60,000
2	Secretary	1	850	10,200
3	Personnel	1	850	10,200
4	Accountant/clerk	2	1,700	20,400
5	Cashier	1	800	9,600
6	Salesman	2	1,600	19,200
7	Purchaser	1	800	9,600
8	Store keeper	2	1,600	19,200
9	Production supervisor	1	2,000	24,000
10	Quality controller/chemist	1	1,700	20,400
11	Mechanic	1	1,700	20,400
12	Electrician	1	850	10,200
13	Operator	4	2,000	24,000
14	Laborer	8	3,200	38,400
15	Driver	1	750	9,000
16	Guard	3	1,200	14,400
Sub - total		31	26,600	319,200
Employees benefit, 20% of basic salary			5,320	63,840
Total			31,920	383,040

B. TRAINING REQUIREMENT

The production supervisor, the quality controller, a mechanic and an electrician should be given a two weeks on - the - job training on the production technology, quality control, operation and maintenance of machinery and equipment by advanced technician of the equipment supplier during plant erection and commissioning. Then after, the production supervisor and the quality controller should orient the operators before start - up of production for five days on how to operate the production equipment. The total cost of training is estimated at Birr 160,000.

VII. FINANCIAL ANALYSIS

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

Construction period	1 year
Source of finance	30 % equity
	70 % loan
Tax holidays	3 years
Bank interest	10%
Discount cash flow	10%
Accounts receivable	30 days
Raw material local	30 days
Raw material imported	120 days
Work in progress	1 day
Finished products	30 days
Cash in hand	5 days
Accounts payable	30 days
Repair and maintenance	5% of machinery cost

A. TOTAL INITIAL INVESTMENT COST

The total investment cost of the project including working capital is estimated at Birr 5.32 million (see Table 7.1). From the total investment cost the highest share (Birr 4.04 million or 75.96%) is accounted by fixed investment cost followed by pre operation cost (763.11 thousand or 14.34%) and initial working capital (Birr 516.05 thousand or 9.70%). From the total investment cost Birr 1.84 million or 30.28% is required in foreign currency.

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

Sr.No	Cost Items	Local Cost	Foreign Cost	Total Cost	% Share
1	Fixed investment				
1.1	Land Lease	11.97		11.97	0.22
1.2	Building and civil work	1,080.00		1,080.00	20.30
1.3	Machinery and equipment	460.00	1,840.00	2,300.00	43.22
1.4	Vehicles	450.00		450.00	8.46
1.5	Office furniture and equipment	200.00		200.00	3.76
	Sub total	2,201.97	1,840.00	4,041.97	75.96
2	Pre operating cost *				
2.1	Pre operating cost	415.00		415.00	7.80
2.2	Interest during construction	348.11		348.11	6.54
	Sub total	763.11		763.11	14.34
3	Working capital **	516.05		516.05	9.70
	Grand Total	3,481.13	1,840.00	5,321.13	100

* *N.B Pre operating cost include project implementation cost such as installation, startup, commissioning, project engineering, project management etc and capitalized interest during construction.*

** *The total working capital required at full capacity operation is Birr 593.52 thousand. However, only the initial working capital of Birr 516.05 thousand during the first year of production is assumed be funded through external sources during the remaining years the working capital requirement will be financed by funds generated internally (for detail working capital requirement see Appendix 7.A.1).*

B. PRODUCTION COST

The annual production cost at full operation capacity is estimated at Birr 3.56 million (see Table 7.2). The cost of raw material account for 44.06% of the production cost. The other major components of the production cost are depreciation, financial cost and labor, which account for 19.55%, 10.75% and 8.96%, respectively. The remaining 16.68% is the share of utility, repair

and maintenance, labor overhead and administration cost. For detail production cost see Appendix 7.A.2.

Table 7.2

ANNUAL PRODUCTION COST AT FULL CAPACITY (year three)

Items	Cost (in 000 Birr)	%
Raw Material and Inputs	1,568.68	44.06
Utilities	64.70	1.82
Maintenance and repair	115.00	3.23
Labour direct	319.20	8.96
Labour overheads	63.84	1.79
Administration Costs	100.00	2.81
Land lease cost	-	-
Cost of marketing and distribution	250.00	7.02
Total Operating Costs	2,481.42	69.69
Depreciation	696.20	19.55
Cost of Finance	382.92	10.75
Total Production Cost	3,560.54	100

C. FINANCIAL EVALUATION

1. Profitability

Based on the projected profit and loss statement, the project will generate a profit throughout its operation life. Annual net profit after tax will grow from Birr 585 thousand to Birr 1.23 million during the life of the project. Moreover, at the end of the project life the accumulated net cash

flow amounts to Birr 10.93 million. For profit and loss statement and cash flow projection see Appendix 7.A.3 and 7.A.4, respectively.

2. Ratios

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

3. Break-even Analysis

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

$$\text{Break- Even Sales Value} = \frac{\text{Fixed Cost} + \text{Financial Cost}}{\text{Variable Margin ratio (\%)}} = \text{Birr } 1,806,000$$

$$\text{Break -Even Capacity utilization} = \frac{\text{Break- even Sales Value} \times 100}{\text{Sales revenue}} = 45.74\%$$

4. Pay-back Period

The pay- back period, also called pay – off period is defined as the period required for recovering the original investment outlay through the accumulated net cash flows earned by the project. Accordingly, based on the projected cash flow it is estimated that the project’s initial investment will be fully recovered within 4 years.

5. Internal Rate of Return

The internal rate of return (IRR) is the annualized effective compounded return rate that can be earned on the invested capital, i.e., the yield on the investment. Put another way, the internal rate of return for an investment is the discount rate that makes the net present value of the investment's income stream total to zero. It is an indicator of the efficiency or quality of an investment. A project is a good investment proposition if its IRR is greater than the rate of return that could be earned by alternate investments or putting the money in a bank account. Accordingly, the IRR of this project is computed to be 30.39% indicating the viability of the project.

6. Net Present Value

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

Accordingly, the net present value of the project at 10% discount rate is found to be Birr 5.06 million which is acceptable. For detail discounted cash flow see Appendix 7.A.5.

D. ECONOMIC AND SOCIAL BENEFITS

The project can create employment for 31 persons. The project will generate Birr 2.10 million in terms of tax revenue. The establishment of such factory will have a foreign exchange saving and earning effect to the country by substituting the current imports and exporting its products to the international market. The project will also create backward linkage with the agricultural sector and sugar and salt industries and also generates income for the Government in terms of payroll tax.

Appendix 7.A

FINANCIAL ANALYSES SUPPORTING TABLES

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

Item	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Raw Material and Inputs	1,412	1,569	1,569	1,569	1,569	1,569	1,569	1,569	1,569	1,569
Utilities	58	65	65	65	65	65	65	65	65	65
Maintenance and repair	104	115	115	115	115	115	115	115	115	115
Labour direct	287	319	319	319	319	319	319	319	319	319
Labour overheads	57	64	64	64	64	64	64	64	64	64
Administration Costs	90	100	100	100	100	100	100	100	100	100
Land lease cost	0	0	0	0	4	4	4	4	4	4
Cost of marketing and distribution	250	250	250	250	250	250	250	250	250	250
Total Operating Costs	2,258	2,481	2,481	2,481	2,485	2,485	2,485	2,485	2,485	2,485
Depreciation	696	696	696	696	696	63	63	63	63	63
Cost of Finance	0	383	335	287	239	191	144	96	48	0
Total Production Cost	2,954	3,561	3,513	3,465	3,421	2,740	2,692	2,644	2,596	2,548

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

Item	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Sales revenue	3,870	4,300	4,300	4,300	4,300	4,300	4,300	4,300	4,300	4,300
Less variable costs	2,008	2,231	2,231	2,231	2,231	2,231	2,231	2,231	2,231	2,231
VARIABLE MARGIN	1,862	2,069	2,069	2,069	2,069	2,069	2,069	2,069	2,069	2,069
in % of sales revenue	48.11	48.11	48.11	48.11	48.11	48.11	48.11	48.11	48.11	48.11
Less fixed costs	946	946	946	946	950	317	317	317	317	317
OPERATIONAL MARGIN	916	1,122	1,122	1,122	1,119	1,752	1,752	1,752	1,752	1,752
in % of sales revenue	23.66	26.10	26.10	26.10	26.01	40.73	40.73	40.73	40.73	40.73
Financial costs		383	335	287	239	191	144	96	48	0
GROSS PROFIT	916	739	787	835	879	1,560	1,608	1,656	1,704	1,752
in % of sales revenue	23.66	17.20	18.31	19.42	20.45	36.28	37.39	38.51	39.62	40.73
Income (corporate) tax	0	0	0	251	264	468	482	497	511	525
NET PROFIT	916	739	787	585	615	1,092	1,126	1,159	1,193	1,226
in % of sales revenue	23.66	17.20	18.31	13.60	14.31	25.40	26.18	26.95	27.73	28.51

Appendix 7.A.4
CASH FLOW FOR FINANCIAL MANAGEMENT (in 000 Birr)

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Scrap
TOTAL CASH INFLOW	4,457	4,767	4,304	4,300	4,300	4,300	4,300	4,300	4,300	4,300	4,300	1,580
Inflow funds	4,457	897	4	0	0	0	0	0	0	0	0	0
Inflow operation	0	3,870	4,300	4,300	4,300	4,300	4,300	4,300	4,300	4,300	4,300	0
Other income	0	0	0	0	0	0	0	0	0	0	0	1,580
TOTAL CASH OUTFLOW	4,457	3,155	3,402	3,295	3,498	3,467	3,623	3,590	3,556	3,523	3,011	0
Increase in fixed assets	4,457	0	0	0	0	0	0	0	0	0	0	0
Increase in current assets	0	549	59	0	0	0	0	0	0	0	0	0
Operating costs	0	2,008	2,231	2,231	2,231	2,235	2,235	2,235	2,235	2,235	2,235	0
Marketing and Distribution cost	0	250	250	250	250	250	250	250	250	250	250	0
Income tax	0	0	0	0	251	264	468	482	497	511	525	0
Financial costs	0	348	383	335	287	239	191	144	96	48	0	0
Loan repayment	0	0	479	479	479	479	479	479	479	479	0	0
SURPLUS (DEFICIT)	0	1,612	902	1,005	802	833	677	710	744	777	1,289	1,580
CUMULATIVE CASH BALANCE	0	1,612	2,514	3,519	4,321	5,153	5,830	6,540	7,284	8,061	9,350	10,930

Appendix 7.A.5
DISCOUNTED CASH FLOW (in 000 Birr)

Item	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Scrap
TOTAL CASH INFLOW	0	3,870	4,300	4,300	4,300	4,300	4,300	4,300	4,300	4,300	4,300	1,580
Inflow operation	0	3,870	4,300	4,300	4,300	4,300	4,300	4,300	4,300	4,300	4,300	0
Other income	0	0	0	0	0	0	0	0	0	0	0	1,580
TOTAL CASH OUTFLOW	4,973	2,313	2,481	2,481	2,732	2,749	2,953	2,968	2,982	2,996	3,011	0
Increase in fixed assets	4,457	0	0	0	0	0	0	0	0	0	0	0
Increase in net working capital	516	55	0	0	0	0	0	0	0	0	0	0
Operating costs	0	2,008	2,231	2,231	2,231	2,235	2,235	2,235	2,235	2,235	2,235	0
Marketing and Distribution cost	0	250	250	250	250	250	250	250	250	250	250	0
Income (corporate) tax		0	0	0	251	264	468	482	497	511	525	0
NET CASH FLOW	-4,973	1,557	1,819	1,819	1,568	1,551	1,347	1,332	1,318	1,304	1,289	1,580
CUMULATIVE NET CASH FLOW	-4,973	-3,416	-1,598	221	1,788	3,339	4,686	6,019	7,337	8,640	9,929	11,509
Net present value	-4,973	1,415	1,503	1,366	1,071	963	760	684	615	553	497	609
Cumulative net present value	-4,973	-3,558	-2,055	-689	382	1,345	2,105	2,789	3,404	3,957	4,454	5,063

NET PRESENT VALUE 5,063
INTERNAL RATE OF RETURN 30.39%
NORMAL PAYBACK 4 years