122. PROFILE ON THE PRODUCTION OF SANITARY NAPKIN

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I. SUMMARY

This profile envisages the establishment of a plant for the production of sanitary napkin with a capacity of 241 tons per annum. Sanitary napkin is a piece of soft paper used for wiping the lips or finger after a meal

The demand for sanitary napkin is entirely met through domestic production and import. The present (2012) demand for sanitary napkin is estimated at 15,748 tones. The demand for sanitary napkin is projected to reach 22,088 tons and 30,979 tons by the year 2017 and 2022, respectively.

The principal raw materials required are tissue paper (2 ply), core paper, wrapping paper (45 gm/m2), all of which have to be imported.

The total investment cost of the project including working capital is estimated at Birr 6.67 million. From the total investment cost the highest share (Birr 5.28 million or 79.23%) is accounted by fixed investment cost followed by pre operation cost (Birr 917.65 thousand or 13.75%) and initial working capital (Birr 468.25 thousand or 7.02%). From the total investment cost Birr 2.42 million or 36.38% is required in foreign currency.

The project is financially viable with an internal rate of return (IRR) of 31.07% and a net present value (NPV) of Birr 6.90 million discounted at 10%.

The project can create employment for 23 persons. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports. The project will and also generates income for the Government in terms of tax revenue and payroll tax.

II. PRODUCT DESCRIPTION AND APPLICATION

Sanitary napkin is a piece of soft paper used for wiping the lips or finger after a meal. As a result, the proposed product has a wide application and use by middle and upper class citizens. Sanitary napkin is also widely used in occasional ceremonies like wedding, birth day party and other farewells. The product has also considerable demand by hotels, restaurants and pastries.

Toilet paper is a product prepared from soft paper usually in roll form of specified dimension. The normal size of the roll toilet paper is width 115 mm + 10 mm, inner diameter of winding 37-39 mm. The substance of the paper is 21-23 gm/cm^2. The raw material can be either clean soft paper or waste paper. Toilet paper is getting high demand in offices, restaurants, hotels, commercial centers, schools, homes, etc.

Standard size of sanitary napkin is as follows.

Width	70 mm
Length	190 mm
Thickness	8 mm or more
Weight	6 gm

III. MARKET STUDY AND PLANT CAPACITY

A. MAREKET STUDY

1. Past Supply and Present Demand

Data on the domestic production of napkins and toilet papers is not available as the local production data on different types of paper and paper products is not organized in a disaggregated form by different types of paper products. On the other hand, data on the imported quantity of napkins and toilet papers, which indicates the unsatisfied demand, is presented in Table 3.1.

Table 3.1

IMPORT OF NAPKINS AND TOILET PAPERS (TONES)

Year	Napkins	Toilet Paper	Total
2002	344	1,226	1,570
2003	344	1,087	1,431
2004	277	1,730	2,007
2005	528	2,689	3,217
2006	454	1,837	2,291
2007	811	2,053	2,864
2008	1,017	2,103	3,120
2009	1,062	2,193	3,255
2010	1,307	2,423	3,730
2011	1,335	2,383	3,718

***Source**: Ethiopian Revenues & Customs Authority*

Import of napkins and toilet papers in the past ten years has shown a noticeable growth. The yearly average imported quantity, which was about 1,500 tones during the years 2002/03, has increased to about 2,600 tones in the following four years of 2004--2007. Similarly, yearly average quantity imported in the recent four years (2008--2011) increased to about 3,500 tones.

According to the information from distributors and retailers of napkins and toilet papers, about 75 % of the market is covered by domestic suppliers. This means that about 11,000 tons is produced locally. Thus, the total supply (import plus local production) of napkins and toilet papers during the year 2011 is estimated at 14,718 tones. On the other hand, the average growth rate of the imported quantity of napkin & toilet paper during the last four years (2008-2011) was about 7%. To estimate the current (2012) effective demand for napkins and toilet papers, this average growth rate of imported quantity is adopted and the current effective demand for napkin & toilet paper is estimated at 15,748 tones.

2. Projected Demand

Demand for napkins and toilet paper is related to urbanization, modernization and changes in life styles. As the population of the country becomes more and more urbanized and living standards improve, there will be a growing demand for napkins and toilet papers. The general economic development of the country is more likely represented by the Gross Domestic Product (GDP) which was growing at an average growth rate of about 11% during the past seven years. However, to be conservative, in this study, the future demand is projected on the basis of the average growth rate of the quantity of napkins and toilet paper imported during the years (2008-2011), which is 7%. Accordingly, the total projected demand, the domestic production and the unsatisfied demand is presented in Table 3.2.

Table 3.2

TOTAL & UNSATISFIED PROJECTED DEMAND FOR NAPKINS AND TOILET PAPERS (TONES)

Year	Total Projected Demand	Domestic Production	Unsatisfied Demand
2013	16,850	11,000	5,850
2014	18,030	11,000	7,030
2015	19,292	11,000	8,292
2016	20,642	11,000	9,642
2017	22,088	11,000	11,088
2018	23,634	11,000	12,634
2019	25,288	11,000	14,288
2020	27,058	11,000	16,058
2021	28,952	11,000	17,952
2022	30,979	11,000	19,979

The unsatisfied demand for napkins and toilet papers will increase from 5,850 tones in the year 2013 to 12,634 tones and 19,979 tones by the year 2018 and 2022, respectively.

3. Pricing and Distribution

The price of different types of napkins and toilet papers vary based on their quality and size. The recommended price for the new project is, therefore, Birr 3.75 for table napkins and Birr 1.25 for small napkins. Toilet papers of the new project will have the ex-factory price of Birr 3.75.

The products will be distributed through the existing outlets and direct delivery to major distributors.

B. PLANT CAPACITY AND PRODUCTION PROGRAMME

1. Plant Capacity

Based on demand projection indicated in the market study, the suggested plant capacity is 241 tons per annum. The plant is envisaged to operate in double shift of 16 hours a day for 270 days a year. This is excluding 13 holidays and 52 Sundays, and assigning 30 days for executing repair and maintenance programme of the production equipment.

2. Production Programme

The plant is expected to operate 75% and 85% of the installed capacity in the first and second years, respectively. The plant will reach full capacity on the third year. The rationale behind such production build-up is that the production equipment are new, and operators usually take sometime to develop the specific skills and knowhow.

IV. MATERIALS AND INPUTS

A. RAW AND AUXILIARY MATERIALS

The major raw materials and auxiliaries required for the production of sanitary napkins and toilet papers are shown in Table 4.1 below. All the raw and auxiliary materials are to be imported.

Table 4.1

RAW AND AUXILIARY MATERIALS REQUIREMENT AND COST

Sr. No.	Description	Unit Of Measure	Annual Quantity	Unit Price (CIF)	Total Price (CIF)
1	Tissue paper (2 ply)	tone	241.3	6,400.0	1,543,942.0
2	Core paper	kg	2,651.0	4.8	12,724.8
3	Wrapping paper (45 gm/m2)	kg	843.5	12.8	10,796.8
4*	Glue	kg	1,687.0	128	215,936.0
5*	Polyethylene film	As req.	-		8,000.0
				total	**1,791,399.6**

B. UTILITIES

Electricity and water are utilities required for the plant. Electricity is required as motive power and to supply lighting and sockets. Water is required for human consumption and general purposes. The annual consumption of electricity and water is given in Table 4.2.

Table 4.2

ANNUAL UTILITIES REQUIREMENT AND COST

Sr. No.	Description	Qty	Unit cost (Birr)	Total cost (Birr)
1	Electricity (kWh)	18,000	0.58	9,503
2	Water (m^3)	500	10.00	5,000
	Total	**-**	**-**	**14,503**

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

The technology of producing sanitary napkin differs depending on the raw materials used, the shape of finished products, the size, etc. Therefore, there is no fixed method of manufacturing

and processing. The prime requisite of sanitary napkin as a product is cleanliness having good absorption, strength against leak, fine feeling to the touch, stability and adaptability to bodily movement, and no breaking or getting out of shape.

The production process is a step by step cutting, folding and rolling the various components of the raw and auxiliary materials required for the product. The activities are done sequentially so that the final product will have good absorption and strength against leakage.

After the napkin is covered by laminated paper, adhesive tape is stripped horizontally so as to fix the napkin to the position in order to have stability to bodily movement. Finally, the napkin is packed by polyethylene films.

With regard to production of toilet paper, the roll of raw material is first fed to the machine adjusted to slit the soft paper to the width of the finished product. Paper cones prepared for the purpose are put onto the machine. The soft paper is then wound onto the paper cone until it reaches the required thickness. The machine is then operated to produce market size soft papers. Each piece is then wrapped with polyethylene film.

2. Environmental Impact Assessment

The operation of the envisaged plant is a simple cut and pack operation which does not have any complicated process that generates waste, and hence there is no adverse environmental impact created as a result of this operation.

B. ENGINEERING

1. Machinery and Equipment

Total cost of machinery and equipment is estimated at Birr 2,623,000, of which Birr 2428,000 is required in foreign currency. Machinery and equipment required for the production of sanitary napkins & toilet papers along with estimated costs are given Table 5.1.

Table 5.1

MACHINERY AND EQUIPMENT REQUIREMENT AND COST

Sr. No.	Description	Qty. (No.)	Cost ('000 Birr)		
			LC	FC	TC
1	Core rewinding and cutting m/c	1	-	320	320
2	Tissue paper rewinding and slitting m/c	1	-	1,680	1,680
3	Sealing machine	1	-	128	128
4	Fork lift	1	-	300	300
	Total FOB		**-**		**1,630**
	Bank, Insurance, Freight, etc.		195	-	195
	Total CIF		**195**	**2,428**	**2,623**

2. Land, Building and Civil Works

The total land area required by the envisaged plant is 500 m^2. The required building area for housing of production equipment, storage of raw materials and finished goods, building for management and other utilities is estimated to be 300m^2. Assuming Birr 5,000 as the unit cost per m^2 of building, the total expenditure on building is estimated at Birr 1.5 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 m^2, the land lease request is evaluated and decided upon by the Industrial Zone Development and Coordination Committee of the City's Investment Authority. However, if the land request is above 5,000 m^2 the request is evaluated by the City's Investment Authority and passed with recommendation to the Land Development and Administration Authority for decision, while the lease price is the same for both cases.

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

The new regulation classified the city into three zones. The first Zone is Central Market District Zone, which is classified in five levels and the floor land lease price ranges from Birr 1,686 to Birr 894 per m^2. The rate for Central Market District Zone will be applicable in most areas of the city that are considered to be main business areas that entertain high level of business activities.

The second zone, Transitional Zone, will also have five levels and the floor land lease price ranges from Birr 1,035 to Birr 555 per m^2 .This zone includes places that are surrounding the city and are occupied by mainly residential units and industries.

The last and the third zone, Expansion Zone, is classified into four levels and covers areas that are considered to be in the outskirts of the city, where the city is expected to expand in the future. The floor land lease price in the Expansion Zone ranges from Birr 355 to Birr 191 per m^2 (see Table 5.2).

Table 5.2

NEW LAND LEASE FLOOR PRICE FOR PLOTS IN ADDIS ABABA

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

Accordingly, in order to estimate the land lease cost of the project profiles it is assumed that all new manufacturing projects will be located in industrial zones located in expansion zones. Therefore, for the profile a land lease rate of Birr 266 per m^2 which is equivalent to the average floor price of plots located in expansion zone is adopted.

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

Table 5.3

INCENTIVES FOR LEASE PAYMENT OF INDUSTRIAL PROJECTS

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

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

Accordingly, the total land lease cost at a rate of Birr 266 per m2 is estimated at Birr 133,000 of which 10% or Birr 13,300 will be paid in advance. The remaining Birr 119,700 will be paid in equal installments with in 28 years i.e. Birr 4,275 annually.

VI. HUMAN RESOURCE AND TRAINING REQUIREMENT

A. HUMAN RESOURCE REQUIREMENT

The plant requires 23 work forces. The total estimated annual expenditure on labor including employees' benefits is Birr 96,000 (see Table 6.1).

Table 6.1
HUMAN RESOURCE REQUIREMENT AND COST

Sr. No.	Description	Req. No.	Monthly Salary (Birr)	Annual Cost (Birr)
1	General manager	1	3,500	42,000
2	Production supervisor	1	2,500	30,000
3	Secretary/accountant	1	1,500	18,000
4	Cashier	1	1,000	12,000
5	Store keeper	1	1,000	12,000
6	General service/guard	3	800	28,800
7	Skilled workers (operators)	5	1,600	96,000
	Unskilled workers (laborers)	3	900	32,400
	Total number of workers	**16**	**-**	**271,200**
	Workers' benefits (15% BS)	-	-	40,680
	Total Salary	**-**	**-**	**311,880**

B. TRAINING REQUIREMENT

The production supervisor and skilled workers require few weeks training on machine operation and production technology. Training is assumed to be entertained during the erection and commissioning period and the cost is in built there and hence about Birr 25,000 is sufficient to cover expenses associated with the training programme.

VII. FINANCIAL ANALYSIS

The financial analysis of the sanitary napkin 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 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 6.67 million (See Table 7.1). From the total investment cost the highest share (Birr 5.28 million or 79.23%) is accounted by fixed investment cost followed by pre operation cost (Birr 917.65 thousand or 13.75%) and initial working capital (Birr 468.25 thousand or 7.02%). From the total investment cost Birr 2.42 million or 36.38% 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	13.30		13.30	0.20
1.2	Building and civil work	1,500.00		1,500.00	22.48
1.3	Machinery and equipment	195.00	2,428.00	2,623.00	39.31
1.4	Vehicles	900.00		900.00	13.49
1.5	Office furniture and equipment	250.00		250.00	3.75
	Sub total	**2,858.30**	**2,428.00**	**5,286.30**	**79.23**
2	**Pre operating cost ***				
2.1	Pre operating cost	481.15		481.15	7.21
2.2	Interest during construction	436.50		436.50	6.54
	Sub total	**917.65**		**917.65**	**13.75**
3	**Working capital ****	**468.25**		**468.25**	**7.02**
	Grand Total	**4,244.20**	**2,428.00**	**6,672.20**	**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 656.85 thousand. However, only the initial working capital of Birr 468.25 thousand during the first year of production is assumed to be funded through external sources. During the remaining years the working capital requirement will be financed by funds to be generated internally (for detail working capital requirement see Appendix 7.A.1).*

B. PRODUCTION COST

The annual production cost at full operation capacity is estimated at Birr 4.04 million (see Table 7.2). The cost of raw material account for 44.28% of the production cost. The other major components of the production cost are depreciation, financial cost and direct labour, which account for 21.90%, 8.90% and 6.70% respectively. The remaining 18.22% is the share of utility, repair and maintenance, labour 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 (000 Birr)	%
Raw Material and Inputs	1,791.00	44.28
Utilities	15.00	0.37
Maintenance and repair	131.00	3.24
Labour direct	271.00	6.70
Labour overheads	41.00	1.01
Administration Costs	200.00	4.94
Land lease cost	-	-
Cost of marketing and distribution	350.00	8.65
Total Operating Costs	**2,799.00**	**69.20**
Depreciation	885.83	21.90
Cost of Finance	360.11	8.90
Total Production Cost	**4,044.94**	**100**

C. FINANCIAL EVALUATION

1. Profitability

Based on the projected profit and loss statement, the project will generate a profit through out its operation life. Annual net profit after tax will grow from Birr 746 thousand to Birr 1.67 million

during the life of the project. Moreover, at the end of the project life the accumulated net cash flow amounts to Birr 14.82 million. For profit and loss statement and cash flow projection see Appendix 7.A.3 and 7.A.4, respectively.

2. Ratios

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

3. Break-even Analysis

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

$$\text{Break Even Sales Value} = \frac{\text{Fixed Cost + Financial Cost}}{\text{Variable Margin ratio (\%)}} = \text{Birr } 2{,}304{,}904$$

$$\text{Break Even Capacity utilization} = \frac{\text{Break even Sales Value}}{\text{Sales revenue}} \times 100 = 44\ \%$$

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 3 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 31.07% 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 6.90 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 23 persons. The project will generate Birr 4.16 million in terms of tax revenue. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports. The project will also generate other income for the Government.

Appendix 7.A

FINANCIAL ANALYSES SUPPORTING TABLES

Appendix 7.A.1
NET WORKING CAPITAL (in 000 Birr)

Items	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
Total inventory	313.43	358.20	402.98	447.75	447.75	447.75	447.75	447.75	447.75	447.75
Accounts receivable	172.03	192.43	212.84	233.25	233.61	233.61	233.61	233.61	233.61	233.61
Cash-in-hand	6.25	7.14	8.04	8.93	8.99	8.99	8.99	8.99	8.99	8.99
CURRENT ASSETS	**491.70**	**557.78**	**623.85**	**689.93**	**690.35**	**690.35**	**690.35**	**690.35**	**690.35**	**690.35**
Accounts payable	23.45	26.80	30.15	33.50	33.50	33.50	33.50	33.50	33.50	33.50
CURRENT LIABILITIES	**23.45**	**26.80**	**30.15**	**33.50**	**33.50**	**33.50**	**33.50**	**33.50**	**33.50**	**33.50**
TOTAL WORKING CAPITAL	**468.25**	**530.98**	**593.70**	**656.43**	**656.85**	**656.85**	**656.85**	**656.85**	**656.85**	**656.85**

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	1,254	1,433	1,612	1,791	1,791	1,791	1,791	1,791	1,791	1,791
Utilities	11	12	14	15	15	15	15	15	15	15
Maintenance and repair	92	105	118	131	131	131	131	131	131	131
Labour direct	190	217	244	271	271	271	271	271	271	271
Labour overheads	29	33	37	41	41	41	41	41	41	41
Administration Costs	140	160	180	200	200	200	200	200	200	200
Land lease cost	0	0	0	0	17	4	4	4	4	4
Cost of marketing and distribution	350	350	350	350	350	350	350	350	350	350
Total Operating Costs	2,064	2,309	2,554	2,799	2,803	2,803	2,803	2,803	2,803	2,803
Depreciation	886	886	886	886	886	85	85	85	85	85
Cost of Finance	0	480	420	360	300	240	180	120	60	0
Total Production Cost	2,950	3,675	3,860	4,045	3,989	3,128	3,068	3,008	2,948	2,888

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	3,696	4,752	5,280	5,280	5,280	5,280	5,280	5,280	5,280	5,280
Less variable costs	1,714	1,959	2,204	2,449	2,449	2,449	2,449	2,449	2,449	2,449
VARIABLE MARGIN	**1,982**	**2,793**	**3,076**	**2,831**	**2,831**	**2,831**	**2,831**	**2,831**	**2,831**	**2,831**
in % of sales revenue	53.62	58.77	58.26	53.62	53.62	53.62	53.62	53.62	53.62	53.62
Less fixed costs	1,236	1,236	1,236	1,236	1,240	439	439	439	439	439
OPERATIONAL MARGIN	**746**	**1,557**	**1,840**	**1,595**	**1,591**	**2,392**	**2,392**	**2,392**	**2,392**	**2,392**
in % of sales revenue	20.18	32.76	34.85	30.21	30.13	45.30	45.30	45.30	45.30	45.30
Financial costs		480	420	360	300	240	180	120	60	0
GROSS PROFIT	**746**	**1,077**	**1,420**	**1,235**	**1,291**	**2,152**	**2,212**	**2,272**	**2,332**	**2,392**
in % of sales revenue	20.18	22.66	26.89	23.39	24.45	40.75	41.89	43.02	44.16	45.30
Income (corporate) tax	0	0	0	371	387	645	664	682	700	718
NET PROFIT	**746**	**1,077**	**1,420**	**865**	**904**	**1,506**	**1,548**	**1,590**	**1,632**	**1,674**
in % of sales revenue	20.18	22.66	26.89	16.37	17.11	28.53	29.32	30.12	30.91	31.71

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	**5,767**	**4,624**	**4,755**	**5,283**	**5,280**	**5,280**	**5,280**	**5,280**	**5,280**	**5,280**	**5,280**	**2,007**
Inflow funds	5,767	928	3	3	0	0	0	0	0	0	0	0
Inflow operation	0	3,696	4,752	5,280	5,280	5,280	5,280	5,280	5,280	5,280	5,280	0
Other income	0	0	0	0	0	0	0	0	0	0	0	2,007
TOTAL CASH OUTFLOW	**5,767**	**2,993**	**3,456**	**3,640**	**4,196**	**4,091**	**4,289**	**4,247**	**4,205**	**4,163**	**3,521**	**0**
Increase in fixed assets	5,767	0	0	0	0	0	0	0	0	0	0	0
Increase in current assets	0	492	66	66	66	0	0	0	0	0	0	0
Operating costs	0	1,714	1,959	2,204	2,449	2,453	2,453	2,453	2,453	2,453	2,453	0
Marketing and Distribution cost	0	350	350	350	350	350	350	350	350	350	350	0
Income tax	0	0	0	0	371	387	645	664	682	700	718	0
Financial costs	0	436	480	420	360	300	240	180	120	60	0	0
Loan repayment	0	0	600	600	600	600	600	600	600	600	0	0
SURPLUS (DEFICIT)	**0**	**1,632**	**1,300**	**1,643**	**1,084**	**1,189**	**991**	**1,033**	**1,075**	**1,117**	**1,759**	**2,007**
CUMULATIVE CASH BALANCE	**0**	**1,632**	**2,931**	**4,574**	**5,658**	**6,847**	**7,838**	**8,871**	**9,946**	**11,063**	**12,822**	**14,829**

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**	**3,696**	**4,752**	**5,280**	**5,280**	**5,280**	**5,280**	**5,280**	**5,280**	**5,280**	**5,280**	**2,007**
Inflow operation	0	3,696	4,752	5,280	5,280	5,280	5,280	5,280	5,280	5,280	5,280	0
Other income	0	0	0	0	0	0	0	0	0	0	0	2,007
TOTAL CASH OUTFLOW	**6,236**	**2,127**	**2,372**	**2,617**	**3,170**	**3,191**	**3,449**	**3,467**	**3,485**	**3,503**	**3,521**	**0**
Increase in fixed assets	5,767	0	0	0	0	0	0	0	0	0	0	0
Increase in net working capital	468	63	63	63	0	0	0	0	0	0	0	0
Operating costs	0	1,714	1,959	2,204	2,449	2,453	2,453	2,453	2,453	2,453	2,453	0
Marketing and Distribution cost	0	350	350	350	350	350	350	350	350	350	350	0
Income (corporate) tax		0	0	0	371	387	645	664	682	700	718	0
NET CASH FLOW	**-6,236**	**1,569**	**2,380**	**2,663**	**2,110**	**2,089**	**1,831**	**1,813**	**1,795**	**1,777**	**1,759**	**2,007**
CUMULATIVE NET CASH FLOW	**-6,236**	**-4,667**	**-2,287**	**377**	**2,487**	**4,576**	**6,407**	**8,221**	**10,016**	**11,793**	**13,552**	**15,559**
Net present value	-6,236	1,426	1,967	2,001	1,441	1,297	1,034	930	837	754	678	774
Cumulative net present value	-6,236	-4,809	-2,842	-841	600	1,897	2,931	3,861	4,699	5,452	6,131	6,904

NET PRESENT VALUE	6,904
INTERNAL RATE OF RETURN	31.07%
NORMAL PAYBACK	3 years