

**211. PROFILE ON PRODUCTION OF
CANVAS FABRICS**

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I. SUMMARY

This profile envisages the establishment of a plant for the production of canvas fabrics with a capacity of 200 tones per annum.

The present demand for the proposed product is estimated at 197 tones per annum. The demand is expected to reach 328 tones by the year 2020.

The plant will create employment opportunities for 49 persons.

The total investment requirement is estimated at about Birr 38.75 million, out of which Birr 31.98 million is required for plant and machinery.

The project is financially viable with an internal rate of return (IRR) of 16.35 % and a net present value (NPV) of Birr 10.12 million discounted at 8.5 %.

II. PRODUCT DESCRIPTION & APPLICATION

Canvas fabrics is a coarse cloth made of cotton or other fibers. The most distinctive feature of this woven fabric is its weight and therefore its high resistance – the weight is 500 gm/m². Other features include water resistance and rot resistance, and depend on the end use of the canvas.

The uses of canvas fabrics may be various especially in the field of the protection of persons and goods against atmospheric conditions: solar radiation, rain, cold weather, wind, etc. The performance of clothes made of cotton or hemp are the best since these fibers are more durable and comfortable than synthetic products in these applications.

The main uses of canvas fabrics are for manufacturing tents, sacks, bags, rucksacks, awnings, tarpaulins, sails, temporary covering and other similar articles. Another large

field of application is the manufacture of shoes, especially of training shoes, which at present have a large market in the country.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Past Supply and Present Demand

The local demand for canvas fabric is supplied from import. Ethiopia imports a variety of canvas fabrics from the world market. The major types of canvas fabrics that are imported from the world market include unbleached or bleached canvas fabrics. The imported quantity of canvas fabrics is shown in Table 3.1.

Table 3.2
IMPORT OF CANVAS FABRICS

Year	Quantity in Ton
2000	253
2001	354
2002	121
2003	237
2004	57
2005	81
2006	278

Source: - Compiled from Customs Authority.

As could be seen from Table 3.1, import of canvas fabric fluctuates from year to year. The import level which was about 354 tones in the year 2001 has dropped to 121 tones in

2002 which however increased to 237 tones in the year 2003 and again decreased to 57 and 81 tones in 2004 and 2005 respectively. The average import during the period under consideration was 197 tones.

Due to the fluctuating nature of import, to arrive at the total current demand for the product the average import figure is assumed to approximate present demand. Accordingly, current total demand is estimated at 197 tones.

2. Projected Demand

It is clearly indicated that the entire demand for the product is met through import. As an import substitution project there is a wide market. The demand for the product will grow with population and income rise. For the purpose this project demand is assumed to grow by 4 % which is equivalent to population growth rate. Accordingly, the projected demand is shown in Table 3.2.

Table 3.2
PROJECTED DEMAND (tone)

Year	Projected Demand
2008	205
2009	213
2010	222
2011	231
2012	240
2013	250
2014	260
2015	270
2016	281
2017	292
2018	304
2019	316
2020	328

3. Pricing and Distribution

The price of canvas fabrics varies according to their finishing type. The canvas fabrics to be produced could be either plain, colored printed etc. Accordingly the average ex-factory price is set at Birr 6,250.43 per 1000 sq.mts or Birr 6.25 per one sq.mt.

Currently, distribution of fabrics is undertaken by long established wholesalers, most of them located in Merkato area of Addis Ababa and other big towns and cities. The envisaged plant can also adopt the existing distribution channel.

B. PLANT CAPACITY & PRODUCTION PROGRAMME

1. Plant Capacity

The market study indicated above shows that the demand of canvas fabrics in 2008 will be 205 tones. This demand will grow to 270 tones in 2015 and to 328 tones in 2020. Based on the demand figures, it is proposed that the canvas fabrics manufacturing plant will have annual production capacity of 200 tones. This is equivalent to 400,000 m² of canvas fabrics. Assuming that the width of the canvas fabric is 1.5 m, the plant will produce about 266,667 meters of canvas fabrics. The plant will operate single shift 8 hours a day and for 300 days a year.

2. Production Programme

Production will normally start at a lower level of plant capacity since time is required for production workers to master the skill of operation of production equipment, and for the plant to establish potential market outlets. In view of this, the plant will start operation at 65% of plant capacity at the first year of operation, and then production will rise to 75%, 85% and finally to 100% full capacity during the 2nd, 3rd, 4th year and then after, respectively. Production build-up programme together with corresponding capacity utilization is shown in Table 3.3 below.

Table 3.3
PRODUCTION PROGRAMME

Year	1	2	3	4 and above
Capacity utilization (%)	65	75	85	100
Production				
a) In tone	130	150	170	200
b) In M ²	260,000	300,000	340,000	400,000

IV. MATERIALS AND INPUTS

A. RAW MATERIAL

The major raw material considered for the production of canvas fabrics is cotton. The proposed cloth is made of woven cotton starting from bales of cotton, so that the cotton is the only required raw material. The yield of cloth is assumed to be 90% by weight of cotton supplied as an input. The canvas fabric has an average weight of 500 gm/m². Thus, the weight of cotton required to produce 400,000 m² of canvas fabric will be: $(0.5 \times 400,000) / 0.9$ or 222.22 tones. Table 4.1 below shows the annual requirement of cotton and related cost. It is also assumed that the raw material will be procured from local markets.

Table 4.1
RAW MATERIAL REQUIREMENT

No.	Description	Qty	Cost ('000 Birr)		
			LC	FC	TC
	A. Raw Material				
	Raw Cotton (tone)	222.22	2222.20	-	2222.20
	Costs associated with raw material	-	200	-	200
	Total	-	2422.20	-	24222.20

B. UTILITIES

Utilities required consists of electricity, water, steam, fuel oil, oil and lubricants. Annual requirements of these items and related costs at full capacity production is given in Table 4.2 below.

Table 4.2
ANNUAL REQUIREMENT OF UTILITIES

No.	Description	Qty	Cost (Birr)
1	Electricity (kWh)	275,000	130,350
2	Water (M ³)	15,000	150,000
3	Fuel oil (liters)	5,000	27,050
4	Oils and lubricants (kg)	120	2,200
	Total	-	309,600

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

The project takes into consideration all the process steps from cotton bale plucking to the woven fabric. Other operations such mercerizing, bleaching, dyeing or impregnation are presumed as being carried out in Awassa textile factory.

In connection with the high strength required by the end-use, the classic ring spinning in the carded system is suggested and no combing machine is included. Consequently the production process consists of the following unit operations:

- Yarn Spinning
- Thread preparation
- Cloth preparation

- a) Yarn Spinning: This unit operation consists of the following sub processes:
- Bale plucking
 - Fibers beating and cleaning
 - Carding
 - Multiple coupling and drawing
 - Roving frame
 - Ring spinning frame
- b) Thread Preparation: The preparation of thread can be carried out through the following sub processes:
- Cone winding
 - Double winding
 - Double twist frames
- c) Cloth preparation: Cloth is prepared by carrying out weaving operations.

It is to be noted here that the warp preparation as well as the finishing or dyeing treatment are presumed as being accomplished in the departments of Awassa Textile Factory, as the installation of new machinery for such a small capacity is not economically viable.

2) Source of Technology

The technology of canvas fabrics production is an age long skill developed and applied in Europe and Asia, China, Korea, Japan, Taiwan and European countries have well developed knowledge in producing machineries used in canvas fabrics production. Address of a machinery supplier is given below.

Shanghai Small Enterprises Trade
Development Service Centre

International Cooperation Division

Shanghai 200032

Fax: (008621) 642201814

B. ENGINEERING

1. Machinery and Equipment

Machinery and equipment required for the envisaged plant is listed in table 5.1 below.

Table 5.1
LIST OF PLANT MACHINERY & EQUIPMENT

No.	Description	Qty	Cost ('000 Birr)		
			LC	FC	TC
1	Spinning department				
	a) Bale plucker	1	-	5650	25650
	b) Cleaning and beating units	2			
		1			
	c) Carding machine	1			
	d) First draw frame	1			
	e) Second draw frame	1			
	f) Roving frame	1			
	g) Spinning frame	1			
2	Thread preparation room				
	a) Automatic cone winder fitted with 48 spindles	1		5435	15435
	b) Doubling winders with 24 spindles	2			
	c) Twisters with spindles	2			
3	Loom department				
	a) Rapier weaving machine (in 1900mm width) equipped with cam system, automatic pick finder, central lube oil system	2	-	9900	9900
	b) Loom, fitted with a dobby system for the moving of heddles	1			
4	Auxiliary units				
	a) Air conditioning units for winding, threading and loom departments	3		9800	19800
	b) Compressed air system (one stand-by)	2			
	c) Anti-fine system of sprinkler type	Set			
	d) Boiler				
	FOB price			30785	70785
	Freight, insurance, customs, bank charges, materials handling cost.		1200	-	1200
	CIF landed cost		1200	30785	31985

The finishing treatments may include scorching, mercerizing, bleaching, drying, dyeing, water proofing and packaging. All these treatments may be carried out in Awassa textile factory. All these treatments are evaluated at a cost ranging from Birr 28 to Birr 29.50 per meter.

2. Land, Building and Civil Works

The total land area required for the envisaged plant is estimated at about 5000 m². At the rate of Birr 1.0 for 80 years the total land lease value will be Birr 400,000. The total built-up area will be Birr 2500 m², and at the rate of Birr 2000 per m², the total cost of building will be Birr 5 million.

3. Proposed Location

Location of the plant needs to consider proximity to raw materials, availability of infrastructure, and distance to potential market outlets. . In view of these two woredas, namely Lemo and Sodo Zuria were identified as potential locations. Of these Lemo is selected as appropriate woreda. It is therefore proposed that the canvas fabrics manufacturing plant will be located in Hosanna town.

VI. MANPOWER AND TRAINING REQUIREMENT

A. MANPOWER REQUIREMENT

The plant requires manpower for production and administrative activities. Production manpower is comprised of skilled operators and unskilled assistants. Administrative manpower includes managerial staff and administrative crew. The details of manpower including monthly and annual salaries are given in Table 6.1 below.

B. TRAINING REQUIREMENT

Training will be given to machinery operators, production head, shift foreman, technicians and quality control expert. One-month training on the techniques of machinery operation and quality control will be provided in Awassa textile factory. Experts of machinery supplier will take the responsibility to conduct the training programme. A total of Birr 30,000 will be allocated to cover the expenses of the training programme.

Table 6.1
MANPOWER REQUIREMENT

No.	Job Title	Nos.	Monthly Salary	Annual Salary
	<u>A. Administration</u>			
1	Plant manager	1	2500	30,000
2	Executive secretary	1	1000	12,000
3	Administration and finance head	1	1500	18,000
4	Personnel officer	1	800	9,600
5	Sales head	1	1000	12,000
6	Stores head	1	1000	12,000
7	Secretary	2	600	7,200
8	Cashier	1	600	7,200
9	Clerk	1	500	6,000
10	Driver	1	500	6,000
11	Guard	3	250	9,000
12	Janitors	3	200	7,200
	Sub total	17		136,200
	<u>B. Production</u>			
1	Production head	1	1500	18,000
2	Foreman (one for each dept)	3	1200	43,200
3	Skilled operators	15	700	126,000
4	Unskilled workers	6	400	28,800
5	Production clerk	1	500	6,000
6	Auxiliary equipment experts	3	800	28,800
7	Technicians (electrician, mechanic & instrument expert)	3	800	28,000
	Sub total	32	-	279,600
	Workers' Benefit	-	-	103,950
	Total	49	-	519,750

VII. FINANCIAL ANALYSIS

The financial analysis of the canvas fabrics 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	8.5 %
Discount cash flow	8.5 %
Accounts receivable	30 days
Raw material local	30 days
Work in progress	3 days
Finished products	30 days
Cash in hand	10 days
Accounts payable	30 days

A. TOTAL INITIAL INVESTMENT COST

The total investment cost of the project including working capital is estimated at Birr 38.75 million, of which 32 per cent will be required in foreign currency.

The major breakdown of the total initial investment cost is shown in Table 7.1.

Table 7.1
INITIAL INVESTMENT COST

Sr. No.	Cost Items	Total Cost ('000 Birr)
1	Land lease value	400
2	Building and Civil Work	5,000.00
3	Plant Machinery and Equipment	31,985.00
4	Office Furniture and Equipment	175
5	Vehicle	450
6	Pre-production Expenditure*	150
7	Working Capital	590.04
	Total Investment cost	38,750.0
	Foreign Share	32

* *N.B Pre-production expenditure includes interest during construction (Birr 2.32 million) training (Birr 30 thousand) and Birr 120 thousand costs of registration, licensing and formation of the company including legal fees, commissioning expenses, etc.*

B. PRODUCTION COST

The annual production cost at full operation capacity is estimated at Birr 2.16 million (see Table 7.2). The material and utility cost accounts for 29.40 per cent, while repair and maintenance take 1.94 per cent of the production cost.

Table 7.2**ANNUAL PRODUCTION COST AT FULL CAPACITY ('000 BIRR)**

Items	Cost	%
Raw Material and Inputs	2,422.20	26.06
Utilities	309.6	3.33
Maintenance and repair	180	1.94
Labour direct	383.55	4.13
Administration Costs	114.18	1.23
Total Operating Costs	136.2	1.47
Depreciation	3,545.73	38.15
Cost of Finance	3586	38.59
Total Production Cost	2161.49	23.26

C. FINANCIAL EVALUATION**1. Profitability**

According to the projected income statement, the project will start generating profit in the first year of operation. Important ratios such as profit to total sales, net profit to equity (Return on equity) and net profit plus interest on total investment (return on total investment) show an increasing trend during the life-time of the project.

The income statement and the other indicators of profitability show that the project is viable.

2. Break-even Analysis

The break-even point of the project including cost of finance when it starts to operate at full capacity (year) is estimated by using income statement projection.

$$\text{BE} = \frac{\text{Fixed Cost}}{\text{Sales} - \text{Variable Cost}} = 42 \%$$

3. Payback Period

The investment cost and income statement projection are used to project the pay-back period. The project's initial investment will be fully recovered within 5 years.

4. Internal Rate of Return and Net Present Value

Based on the cash flow statement, the calculated IRR of the project is 16 % and the net present value at 8.5 % discount rate is Birr 10.12 million.

D. ECONOMIC BENEFITS

The project can create employment for 49 persons. In addition to supply of the domestic needs, the project will generate Birr 8.45 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.