53. CANVAS-BASED PRODUCTS

I. SUMMARY

This profile envisages the establishment of a plant for the production of canvas-based products with a capacity of 10,000 pieces per annum.

The present demand for the proposed product is estimated at 10,616 pieces per annum. The demand is expected to reach at 15,559 by the year 2010.

The plant will create employment opportunities for 24 persons.

The total investment requirement is estimated at Birr 1.8 million, out of which Birr 1.0 million is required for plant and machinery.

The project is financially viable with an internal rate of return (IRR) of 11.4 % and a net present value (NPV) of Birr 0.26, discounted at 8.5 %.

II. PRODUCT DESCRIPTION AND APPLICATION

Canvas products are articles manufactured from woven canvas fabric by employing the sewing process. The products envisaged are tents, traveling bags, school bags and lorry covers. The demand for the product increases with the expansion of education and urbanization of the region.

The major raw materials required for the manufacture of canvas products comprise of cotton canvas fabric and sewing thread. Sewing thread is locally produced while canvas fabric is imported from abroad.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET TSUDY

1. Past Supply and Present Demand

Current demand for canvas-based products in the country is met both from local production and imports. Domestically, there is one government owned factory which produces canvas products exclusively to the defense forces. Hence, this study excludes the market of the defense sector. Local production of canvas products for general public is mainly undertaken by individual tailors that are found in Addis Ababa and other major towns of the country. The production of these individual tailors is mainly based on piece-by-piece basis when orders are received from clients. Hence, mass production or specialized production of canvas-based products in the country is not well developed.

Among the various canvas-based products, this study deals with those having better market potential, namely; student bags, tents and lorry covers and traveling bags. As local

production of these products is insufficient to meet the demand, a substantial amount of canvas products is imported annually. Imported canvas-based products which include tarpaulin; tents, camping goods and the like are shown in Table 3.1.

Table 3.1
IMPORT OF TARPAULINS, AWNINGS, TENTS AND CAMPING GOODS (QUANTITY IN TONNES & VALUE ('000 BIRR)

Year	Tarpaulin and Awning		Tents		Camping Goods of Textile Canvas		Total	
	Qty	Value	Qty	Value	Qty	Value	Qty	Value
1999	65.64	2309.0	47.44	3467.3	2.28	28.2	115.36	5,804.5
2000	330.5	5008.4	172.85	7555.1	1.63	188.4	504.98	12,751.9
2001	611.35	7741.1	39.00	5013.0	2.98	84.4	653.33	12,838.5
2002	540.12	6372.3	100.86	7015.6	1.14	39.2	642.12	13,427.1
2003	1326.1	24829.4	69.31	1689.2	0.49	18.5	1395.9	26,537.1
Total	**2873.71**	**46260.2**	**429.46**	**24740.2**	**8.52**	**358.7**	**3311.69**	**71,359.1**
Average	**574.74**	**9252.0**	**85.86**	**4948.0**	**1.71**	**71.74**	**662.34**	**14,271.8**

Source : *Ethiopian Customs Authority*.

As could be seen from Table 3.1, the annual average quantity of the three products imported during the past five year is about 662 tonnes with annual average value of more than Birr 14 million. It has to be noted that quantity of imported canva-based products shown in Table 3.1 represents only a certain portion of the total quantity. Other canvas-based products could not be presented due to the data aggregation problem of the Ethiopian Customs Authority.

In BGRS, there is no an organized establishment that produces canvas based products on industrial basis. Hence, the demand is met either through import or from individual tailors in Addis Ababa. In order to determine the demand for student bags, tents and traveling bags in BGRS an end-use approach has been utilized based on certain assumptions. Accordingly, the following facts and assumptions have been considered.

a) Student bags

- The demand for student bags is directly related with the student population. According to Statistical Abstract of the CSA, the number of primary and secondary students in 2001/02 (1995 E.C.) is 121,050.
- Income, preference for canvas based bags, substitute products and the like determine the demand for canvas

bags. Considering these factors only 8 % of the student population is assumed to buy canvas bags, annually.

- Taking 5 % of student growth rate, the current effective demand for canvas bags is estimated at 10, 168 pieces.

b) Traveling bags and tents

- Potential buyers of traveling bags and tents are assumed to be only the urban households.
- According to Statistical Abstract of CSA, urban population of BGRS as of July 2004 is 56,000. Taking an average of 4.5 persons per household, the number of urban households in BGRS is calculated to be 12,444.
- Ownership of tent in the country is mostly by a group of households for social and cultural gathering such as *Edir*, marriage ceremony and the like. Therefore, one tent is assumed to be purchased by a group of 50 households of the urban residents. This gives total potential demand of 249 tents. Due to various factors, only 10 % of the groups are assumed to buy tents every year. Hence, the annual present demand for tent in BGRS is estimated at 25 in number.
- A minimum of three to four traveling bags (for husband, wife and children) are owned by a single household in urban areas. Traveling bags are required for replacement as well as due to formation of new households. For replacement of the total households only 3 % are assumed to buy one canvas traveling bag each year in BGRS. This gives a demand of about 373 bags. Taking the urban population growth of 4 %, the formation of new households in each year in urban areas is estimated at 498. Assuming 10 % of the household to buy canvas-traveling bags, the present effective demand by this group would be 50 pieces. This brings the total present demand for traveling bags to 423 pieces.

2. Projected Demand

The demand for student bags, traveling bags and tents is mainly influenced by population growth, urbanization, expansion of education and income growth. Considering the combined effect of the above factors, demand is forecasted to grow by 6% per annum. Taking the present demand as a base, the projected demand for each of the items to be produced by the project is shown in Table 3.2.

Table 3.2
PROJECTED DEMAND FOR CANVAS –BASED PRODUCTS IN BGRS (IN NO.)

Year	Student bags	Tents	Traveling Bags
2004	10,168	25	423
2005	10,778	27	448
2006	11,425	28	475
2007	12,110	30	504
2008	12,837	32	534
2009	13,607	33	566
2010	14,424	35	600
2011	15,289	38	636
2012	16,206	40	674
2013	17,179	42	715
2014	18,209	45	757
2015	19,302	47	803

3. Pricing and Distribution

Price of canvas-based products varies according to the quality of the raw material, design and size of the product. Based on retail prices collected in Addis Ababa, the following ex-factory prices are recommended for sales revenue projection.

- student bags = Birr 20.00
- Tent (medium) = Birr 2000.00
- Traveling bags = Birr 80

The products can be distributed through the existing general merchandise shops throughout the region. It can also open its own shop in the major towns of the region.

B. PLANT CAPACITY AND PRODUCTION PROGRAMME

1. Plant Capacity

Based on demand projection indicated in the market study, the envisaged plant will have annual production capacity of 20 tents, 400 traveling bags and 10,000 student bags. The plant will operate in single shift of 8 hours a day for 300 working days a year.

2. Production Programme

The plant will start operation at 70% of its rated capacity during the first year, and then raise its capacity to 85% and 100% during the second and third year, respectively and then after. Detailed production programme is given in Table 3.3.

Table 3.3
PRODUCTION PROGRAMME

Year	1	2	3-10
Capacity utilization (%)	70	85	100
Items			
1. Tent	14	17	20
2. Traveling bags	280	340	400
3. Student bags	7000	8500	10,000

IV. MATERIALS AND INPUTS

A. RAW AND AUXILIARY MATERIALS

The major raw materials needed for the manufacture of tents are cotton canvas (specific gravity = 450 g/m2), nylon twin rope, sewing thread and metallic eyelets.

Traveling bags, production on the other hand, require plastic zippers, lining fabric and card board in addition to cotton canvas and sewing thread.

Student bags, besides cotton canvas, lining fabric and sewing threads, require buckles. Table 4.1 below presents annual raw materials required at full production capacity. All raw materials are available from local market.

Table 4.1
RAW MATERIALS REQUIREMENT AND COST

Sr. No	Description	Unit of Measure	Qty.	Unit Price (Birr)	Cost ('000 Birr)
1	Cotton canvas (450/m^2)	m^2	12,000	15.0	180
2	Twin rope (5 and 10 mm diam)	m	5,000	0.15	0.75
3	Eyelets, metallic	pcs	18,000	0.10	1.80
4	Plastic zippers	m	2,000	1.00	2.00
5	Lining fabric	m^2	800	3.00	2.40
6	Card bard (30x60cm)	pcs	10,000	2.00	20.00
7	Buckles	pcs	500	0.50	0.25
8	Sewing thread	km	As req.	10.0	20.00
	Total				**227.20**

B. UTILITIES

Utilities requirement of the plant comprises of electricity and water. Table 4.2 details annual requirements at full production capacity.

Table 4.2
ANNUAL UTILITIES REQUIREMENT AND COST

Sr. No.	Description	Unit of Measure	Qty	Unit Price [Birr]	Cost ['000 Birr]
1	Electricity	kWh	30,000	0.474	14.22
2	Water	m^3	1,000	1.5	1.5
	Total		**-**	**-**	**15.72**

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

The manufacture of tents, traveling bags, and student bags from cotton canvas calls for simple knowhow and machinery.

The process involves the following major operations:

- Pattern design and pattern making;
  (pattern making is carried out manually)
- Canvas cutting, grading process by mechanical cutting system and piece bundling;
- Sewing by high speed, heavy duty industrial machine;
- Trimming and inspection; and
- Packing.

In addition to the above basic operations which are common to all the envisaged products, the manufacture of tents also involves button-holding and insertion of eyelets for fastening cords. Student and traveling bag making, in addition, involves the making of straps and fitting of zippers and buckles.

2. Source of Technology

The technology of manufacturing machinery for producing canvas-based items is simple and conventional; and can be procured from countries like India, China and European countries.

Address of supplier is given below:-

Air, land and sea Ltd.
316,station Road Harrow, Middle SEKHA1 2DX
Tel: 0208616482

B. ENGINEERING

1. Machinery and Equipment

The list of machinery and equipment required by the canvas-based products manufacturing plant is given in Table 5.1. An estimated cost of machinery is Birr 1.05 million, of which Birr 0.80 million is required in foreign currency.

2. Land, Building and Civil Works

Total land requirement of the project is estimated at 1000 m^2, of this the built-up area accounts for about 400 m^2. The cost of leasing land for 70 years, at rate of Birr 2.0 per m^2, will be Birr 140,000.

Assuming Birr 800 as a unit cost (per m^2) of building, the total expenditure on building is estimated at Birr 320,000. Thus, the total cost of land, building and civil works, assuming that the total land lease cost will be paid in advance, will be Birr 460,000.

3. Proposed Location

Assosa is the most appropriate location for the envisaged canvas-based products making plant. The reason for this is easy access to raw materials either from producers or distributors. Infrastructural development and urbanization are also factors favourable to the establishment of canvas-based products making plant in Assosa.

Table 5.1
MACHINERY AND EQUIPMENT REQUIREMENT AND COST

Sr No.	Description	Qty	Cost, ['000 Birr]		
			LC	FC	TC
1	Heavy duty industrial sewing machine	8			
2	Band knife cutter	2			
3	Strap cutter	2			
4	Straight knife cutter	3			
5	Single needle lock stitch	5			
6	3 - needle chain stitch	3			
7	Over-lock machine	2			
8	Button-hole making machine	2			
9	Eye-let fitting machine	2			
10	Miscellaneous Tools (set)				
	Works Tables, chairs, shelves, etc.				
	Total FOB price		**-**	**800**	**800**
	Bank charge, insurance, freight, handling cost		250	-	250
	Total CIF		**250**	**800**	**1050**

VI. MANPOWER AND TRAINING REQUIREMENT

A. MANPOWER REQUIREMENT

Table 6.1 below indicates detailed manpower requirement. Total number of employees is estimated to be 24 persons.

Table 6.1
MANPOWER REQUIREMENT AND ANNUAL LABOUR COST

Sr. No.	Descriptin	Req. No.	Salary (Birr)	
			Monthly	Annual
1	General manager	1	1600	19200
	Designer	1	600	7200
3	Tailor	12	500	7200
4	Assistant Tailor	3	350	12600
5	Technician / Maintenance	2	420	10080
6	Secretary	1	400	4800
7	Store - keeper	1	600	7200
8	General services	3	250	9000
	Sub-total	**24**		**142080**
	Employee benefit (25% BS)			35520
	Grand Total			**177600**

B. TRAINING REQUIREMENT

The manufacture of canvas - based products calls for simple know-how and machinery. However, the general manager, designer and tailors do require two weeks training on production technology at plant site. For this a total of Birr 5,000 can be allocated to cover expenses associated with the training programme.

VII. FINANCIAL ANALYSIS

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

Construction period	1 years
Source of finance	30 % equity
	70 % loan
Tax holidays	3 years
Bank interest	7.5 %
Discounted cashflow	8.5 %

Repair and maintenance	3 % of the total plant and machinery
Accounts receivable	30 days
Raw material, local	30 days
Raw materials, import	90 days
Work in progress	5 days
Finished products	30 days
Cash in hand	5 days
Accounts payable	30 days

A. TOTAL INITIAL INVESTMENT COST

The total initial investment cost of the project including working capital is estimated at 1.8 million, of which 45.5 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 ('000 BIRR)
1	Land lease value	140
2.	Building and Civil Work	320
3.	Plant Machinery and Equipment	1050
4.	Office Furniture and Equipment	35
5.	Vehicle	-
6.	Pre-production Expenditure*	103.84
7	Working Capital	120.73
	Total Investment cost	**1,769.6**
	Foreign share	**45.5%**

* *N.B Pre-production expenditure includes interest during construction (Birr 93.8 thousand), training (Birr 5 thousand), and (Birr 5 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 of the plant is estimated at Birr 0.52 million (see Table 7.2). The material and utility cost accounts for 46.6 percent, while repair and maintenance take 1.9 per cent of the production cost.

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

Item	Unit Cost	%
Raw Material and Inputs	227.2	43.6
Utilities	15.72	3.0
Maintenance and repair	10	1.9
Labour direct	37.1	7.1
Factory overheads *	2	0.4
Administration Cost **	7	1.3
Total Operating Costs	**299**	**57.4**
Depreciation	133.5	25.6
Cost of Finance	88.7	17
Total Production Cost	**521.2**	**100**

**Factory overhead cost includes salaries and wages of supervisors, insurance of factory workers, social costs on salaries of direct labour, etc.*

*** Administrative cost includes salaries and wages, insurance, social costs, materials and services used by administrative staff etc.*

C. FINANCIAL EVALUATION

1. Profitability

According to the projected income statement, the project will start generating profit in the third 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 lifetime 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 operates at full capacity (3rd year) is estimated by using income statement projection.

$$BE = \frac{\text{Fixed Cost}}{\text{Sales} - \text{Variable cost}} = 83.5\ \%$$

3. Pay-Back 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 seven years.

4. Internal Rate of Return and Net Present Value

Based on the cash flow statement, the calculated IRR of the project is 11.4 % and the net present value at 8.5% discount rate is Birr 0.26 million.

D. ECONOMIC BENEFITS

The project can create employment opportunity for 24 persons. In addition to the supply of the domestic needs, the project will generate Birr 0.1million per annum in terms of tax revenue when it starts to operate at full capacity. Moreover, the Regional Government can collect employment, income tax and sales tax revenue. The establishment of such factory will have a foreign exchange saving effect to the country by substituting the current imports.