

## **61. PROFILE ON BAMBOO FURNITURE**

**TABLE OF CONTENTS**

	<b><u>PAGE</u></b>
I. SUMMARY	61 - 3
II. PRODUCT DESCRIPTION AND APPLICATION	61 - 3
III. MARKET STUDY AND PLANT CAPACITY	61 - 3
A. MARKET STUDY	61 - 3
B. PLANT CAPACITY AND PRODUCTION PROGRAMME	61 - 5
IV. MATERIALS AND INPUTS	61 - 6
A. MATERIALS	61 - 6
B. UTILITIES	61 - 6
V. TECHNOLOGY AND ENGINEERING	61 - 7
A. TECHNOLOGY	61 - 7
B. ENGINEERING	61 - 7
VI. MANPOWER AND TRAINING REQUIREMENT	61 - 8
A. MANPOWER REQUIREMENT	61 - 8
B. TRAINING REQUIREMENT	61 - 9
VII. FINANCIAL ANALYSIS	61 - 9
A. TOTAL INITIAL INVESTMENT COST	61 - 10
B. PRODUCTION COST	61 - 11
C. FINANCIAL EVALUATION	61 - 11
D. ECONOMIC BENEFITS	61 - 12

## **I. SUMMARY**

This profile envisages the establishment of a plant for the production of 3,800 sets of bamboo furniture per annum.

The present demand for the proposed product is estimated at 18,355 sets per annum and it is projected to reach 26,549 sets by the year 2014.

The plant will create employment opportunities for 15 persons.

The total investment requirement is estimated at Birr 585,220, out of which Birr 80,800 is required for plant and machinery.

The project is financially viable with an internal rate of return (IRR) of 18% and a net present value (NPV) of Birr 290,950, discounted at 10.5%.

## **II. PRODUCT DESCRIPTION AND APPLICATION**

Bamboo furniture is a furniture made from bamboo. At present, there are few artisans engaged in bamboo articles production. This includes tables & chairs various house hold items. Bamboo furniture could be used in individual homes, hotels and recreational areas.

## **III. MARKET STUDY AND PLANT CAPACITY**

### **A. MARKET STUDY**

#### **1. Past Supply And Present Demand**

Furniture are movable articles commonly made from wood, metal, stone and plastics. Wooden furniture being the most preferable, now-a-days wood based furniture is becoming expensive, bamboo furniture can be the best substitute for wooden furniture.

According to the 1999/2000 Household Income, Consumption and Expenditure Survey conducted by the CSA, 0.44% of households income or Birr 27.5 is allocated to furniture and fixture. On the other hand, the country level expenditure on wooden ware was 0.04% or Birr 2.66 while that of straw & bamboo as a construction material for housings have more percentage coverage than wooden ware expenditure of households.

For the purpose of this study, of the total 11,464,688 household units, only 1,663,159 urban households are considered, rural housing units excluded. Total expenditure for furniture fixture is, therefore, estimated at Birr 45,888,556. At an average price of Birr 2,500 for bamboo sofa set, the demand for bamboo furniture is estimated at 18,355 sets.

## **2. Projected Demand**

The demand for bamboo furniture is closely related with new housing units construction. On the other hand, a rise in standard of living also will have a direct impact on bamboo furniture demand either through replacement or additions of furniture variety. Eventhough the demand for bamboo furniture is directly related with new housing units, the replacement of existing furniture with bamboo furniture will be the market's major market segment in the short run. Generally, household spending on furniture and fixture increases with the per capita growth rate more than proportional. Thus, it is appropriate to forecast the demand for bamboo furniture and texture along with GDP growth rate. The 1998-2002 average real GDP growth rate achieved was 3.76%. Applying this annual growth rate, the demand for bamboo furniture in the coming ten years is presented in Table 3.1.

**Table 3.1****PROJECTED DEMAND FOR BAMBOO FURNITURE**

<b>Year</b>	<b>Qty. (Set)</b>
2005	19,045
2006	19,761
2007	20,504
2008	21,275
2009	22,075
2010	22,905
2011	23,766
2012	24,660
2013	25,587
2014	26,549

**3. Pricing and Distribution**

After considering the current retail price of various types of furniture, a factory-gate price of Birr 115 per set is recommended for the envisaged plant. The product can be distributed through establishment of own outlets at selected urban centers.

**B. PLANT CAPACITY AND PRODUCTION PROGRAMME****1. Plant Capacity**

The envisaged plant, at the initial stage, can be made to produce tables and chairs. At later stages, the plant can diversify its production to baskets, and bamboo -based doors and windows. Thus, the plant is designed to produce 3,800 sets of bamboo furniture's (3,800 tables and 15,200 chairs) operating 300 days per year and 8 hours a day in a single shift. Sundays and National holidays are taken into consideration in setting the number of working days.

## 2. Production Programme

The plant will start production at 75% of its rated capacity. Then, it will build up production to 85% and 100% in the successive years. The gradual capacity build-up is suggested to develop substantial market outlets for the product and enable the operators to get adequate time to develop the required skills and experience.

## IV. MATERIALS AND INPUTS

### A. RAW AND AUXILIARY MATERIALS

The major raw material is bamboo. Other materials include varnish and black oil. The total annual expenditure for raw material and auxiliary materials required by the plant is estimated at Birr 211,500. Details are shown in Table 4.1.

**Table 4.1**

#### **RAW AND AUXILIARY MATERIALS REQUIREMENT AND COST**

<b>Sr. No.</b>	<b>Item</b>	<b>Cost '000 Birr</b>
1.	Raw bamboo	190,000
2.	Varnish & Black Oil	15,000
3.	Others	6,500
	<b>Grand Total</b>	<b>211500</b>

### B. UTILITIES

Utilities required by the envisaged plant consist of electricity and water. The annual cost of utilities is estimated at Birr 3500. From this, electric consumption (1000kWh) accounts for Birr 3,250 and water consumption (125m<sup>3</sup>) accounts for Birr 250.

## **V. TECHNOLOGY AND ENGINEERING**

### **A. TECHNOLOGY**

#### **1. Production Process**

The major operation involved in the production of bamboo furniture (tables & chairs) are raw bamboo cooking, slitting, forming (setting the framework) body preparation and finishing. Different designs can be incorporated into the product.

First raw bamboo is cooked and dried. Then, it is split and cut into required thickness and size by tools prepared for this purpose. The framework required for the specific product is, then, prepared. Bamboo splits are, then, interwoven according to the design and required strength. Varnishes can be applied on the product to produce fine and attractive finish.

#### **2. Source of Technology**

Machinery and equipment for the new envisaged plant can be acquired from local companies such as Hagbes Plc, Blue Nile Trading, etc.

### **B. ENGINEERING**

#### **1. Machinery and Equipment**

Machinery and equipment required by the plant are a range of wood working tools together with benches. Hand saws, knives, vises, hand drills, etc. are some of the usefull appliance required by the plant. The complete list of machinery & equipment together with the cost which is required in local currency is given in Table 5.1.

**Table 5.1****LIST OF MACHINERY AND EQUIPMENT AND COST**

<b>Sr. No.</b>	<b>Item</b>	<b>Qty.</b>	<b>Cost '000 Birr</b>
1	Knives (pcs)	19 pcs	0.38
2	Hacksaw (with blades)	11 pcs	0.44
3	Drilling machine	3 sets	4.50
4	Grinding machine	6 sets	6.00
5	LPG torch (with gas cylinders)	7 sets	1.75
6	Vise (with benches	8 pcs	3.20
7	Files	as require	0.4
8	Wood lathe	1 pcs	45
9	Power saw	1 pcs	15
10	Other items	-	4
	<b>Grand Total</b>		<b>80.76</b>

**2. Land, Building and Civil Works**

The building area required by the plant is 300 m<sup>2</sup>. Estimating the unit cost (per m<sup>2</sup>) of building at Birr 750, the total expenditure for building will be Birr 225,000. Payments to be made for land holding assuming Birr 2.5 per m<sup>2</sup> and 70 years of land holding is estimated at Birr 52,500. Thus, the total investment cost for land, building and civil works assuming that the total land lease cost will be paid in advance is estimated at 277,500.

**3. Proposed Location**

Based on the availability of raw material infrastructure, utility and market out let Metekel and Assosa zones are recommended to be the location of the envisaged plant.

**VI. MANPOWER AND TRAINING REQUIREMENT****A. MANPOWER REQUIREMENT**

Manpower required by the plant is 15 persons. The detailed list of labour force along with annual labour cost is presented in Table 6.1.



## B. TRAINING REQUIREMENT

The operators are required to be trained in institution like Development Agency for Handcrafts and Small Industries (DAHSI) in Addis Ababa. Such a training is estimated to cost about Birr 6,000.

**Table 6.1**  
**MANPOWER REQUIREMENT AND LABOUR COST (BIRR)**

Sr. No.	Description	Qty.	Monthly Salary	Annual Expenditure
1	<b>A. Administration</b>			
1.1	Plant Manager Clerk	1	900	10800
1.2	General Services	1	250	3000
			200	2400
2	<b>B. Production</b>			
2.1	Operators	3	400	14400
2.2	Labourers	10	200	24000
	<b>Sub total</b>	<b>15</b>		<b>54,600</b>
3	Benefits (25% Bs)			13,500
	<b>Grand Total</b>			<b>68,100</b>

## VII. FINANCIAL ANALYSIS

The financial analysis of bambo furnitures project is based on the data provided in the previous chatpers and the following assumptions:-

Construction period	2 years
Source of finance	30% equity 70% loan
Tax holidays	3 years
Bank interest	10.5%
Discounted cash flow	10.5%

Repair and maintenance	5 % of Plant machinery and equipment
Accounts receivable	30 days
Raw material (local)	30 days
work in progress	2 days
Finished products	30 days
Cash at 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 Birr 585,220. Details are indicated in Table 7.1.

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

Sr. No.	Cost Items	Total
1.	Land	52.5
2.	Building and Civil Work	225.0
3.	Plant Machinery and Equipment	80.8
4.	Office Furniture and Equipment	50.0
5.	Pre-production Expenditure*	120.9
	<b>Total Investment Cost</b>	<b>529.2</b>
6.	Working Capital	56.1
	<b>Grand Total</b>	<b>585.2</b>

---

\* *Pre-production expenditure include interest during construction (Birr 70.900), training (Birr 6,000) and cost 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 357,300 (see Table 7.2). The material and utility cost accounts for 60 per cent while repair and maintenance take 4 per cent of the production cost.

**Table 7.2**  
**ANNUAL PRODUCTION COST**  
**('000 BIRR)**

Items	Year			
	3	4	7	10
Raw Material and Inputs	158.6	179.8	211.5	211.5
Labour Direct	24.3	27.5	32.4	32.4
Utilities	2.6	3.0	3.5	3.5
Maintenance and repair	11.3	12.7	15.0	15.0
Factory overheads	10.1	11.5	13.5	13.5
Administration Overheads	16.2	18.4	21.6	21.6
<b>Total operating costs</b>	<b>223.1</b>	<b>252.9</b>	<b>297.5</b>	<b>297.5</b>
Depreciation	35.1	35.1	35.1	25.1
Cost of Finance	41.1	37.0	24.7	12.3
<b>Total Production Cost</b>	<b>299.3</b>	<b>324.9</b>	<b>357.3</b>	<b>334.9</b>

## 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 the percentage of net profit to total sales, net profit to equity (return on equity) and net profit plus interest to total investment (return on total investment) will show an increasing trend throughout the production life of the project.

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

## 2. Break-even Analysis

The break-even point of the project is estimated by using income statement projection.

$$\text{BE} = \frac{\text{Fixed Cost}}{\text{Sales-Variable Cost}} = 24 \%$$

## 3. Pay-Back Period

The investment cost and income statement projection are used to project the pay-back period, the project will fully recover the initial investment and working capital within 6 years time.

## 4. Internal Rate of Return and Net Present Value

Based on the cash flow statement, the calculated IRR of the project is 18% and the net present value at 10.5% discount rate is 290,950.

## D. ECONOMIC BENEFITS

The project can create employment opportunities for 15 persons. In addition to supply of the domestic needs, the project will generate Birr 390,980 in terms of tax revenue. 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.