30. CANDY

TABLE OF CONTENT

I. SUMMARY

This profile envisages the establishment of a plant for the production of candy with a capacity of 100 tonnes per annum.

The present demand for the proposed product is estimated at 1900 tonnes per annum. The demand is expected to reach at 20250 tonnes by the year 2010.

The plant will create employment opportunities for 9 persons.

The total investment requirement is estimated at Birr 0.83 million, out of which Birr 0.44 million is required for plant and machinery.

The project is financially viable with an internal rate of return (IRR) of 41.62% and a net present value (NPV) of Birr 1.46 million, discounted at 8.5 %.

II. PRODUCT DESCRIPTION AND APPLICATION

Candy is an item of mass consumption that is liked by all children. It is recognized throughout the world as an important ingredient of a balanced diet. Candy is well known in replacing the energy which the human body continuously spends through physical exertion.

Candy is normally prepared from sugar, scented with coffee, mint, fruit, etc., and wrapped in either crusts of sugar crystals or crusts of chocolate.

Candy has demand both in urban and rural areas. At present, there are only few candy producing units in Ethiopia. The majority of the demand is satisfied with the imported product. The major raw materials are sugar and water. Production process is simple which involves boiling of sugar with water until it concentrates, adding flavour, and then forming candy, packing and marketing.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Past Supply and Present Demand

The demand for candy or sugar confectionaries is met both through local production and imports. Locally produced candy is generally of poorer quality as compared to imported varieties in content as well as packaging. Nearly, all the producers are located in Addis Ababa; and, according to “Region 14 Administration Industry and Handicrafts Bureau-Report on the Survey of Private Small and Medium Scale Industries, 1993”, at the time of the survey there were 24 candy producers in Addis Ababa.

The legal status of those enterprises is Individual Proprietorship, and 14 of them (58%) employed less than 10 workers. Their combined annual production reported was 1,118 tonnes according to the same source. A more recent publication, "Addis Ababa City Government Trade, Industry & Tourism Bureau, Statistical Bulletin No. V, 2002", puts their number at 21. Although it is stated that their combined capital amounts to Birr 25.5 million, no information is available regarding production quantity.

Knowledgeable sources, however, reckon that owing to the rising price of sugar and competition from cheaply priced imports, most local producers are scaling down their operations while some have entirely closed and returned their licenses. Termination of the sugar quota privilege, which these producers were enjoying formerly and abusing through partial sales to retailers and wholesalers of sugar, is also believed to be one of the factors that caused contraction of local production of candy.

In light of all the above, local production of candy is currently estimated at 1,000 tonnes. A considerable quantity of candy is also imported as the data in Table 3.1 shows.

Table 3.1
IMPORT OF CANDY/SUGAR CONFECTIONARY
(1994-2003)

Year	Imported Quantity (Tonnes)
1994	-
1995	35.1
19925	52.25
1997	151.1
1998	380.8
1999	3255.7
2000	350.2
2001	4258.5
2002	553.25
2003	7254.25

Source: *Customs Authority, External Trade Statistics, Annual Issues.*

Scrutiny of Table 3.1 reveals that import of Candy/Sugar Confectionary, which amounted about 50 tonnes till 19925, witnessed a three-fold increase in 1997. The increase in the subsequent year (1998) was about 2.5 fold. The steady rise in importation of candy continued unabated ever since, though at a tempered rate, attaining a maximum level of 7254.25 tonnes in year 2003.

The annual average growth rate of candy imports during the most recent five years (1999-2003), as could be calculated from the data set in Table 3.1, was 20%. Assuming this growth rate will be maintained, the present level of imports is estimated at 900 tonnes. When this estimate is added to the local production estimated earlier, total apparent

consumption would be about 1,900 tonnes, which could fairly approximate the present effective demand.

2. Projected Demand

The consumption of sugar confectionaries in the country is bound to increase with an increase in income of the population and development of taste to the products. The surge in import starting from the last five to six years (see Table 3.1) testifies to a growing demand for candy, which local producers could exploit.

Bearing in mind the above developments, the future demand for candy is projected at a growth rate of 10% (Table 3.2.)

Table 3.2
PROJECTED DEMAND FOR CANDY
(2004-2018)

Year	Projected Demand (Tonnes)	Local Capacity (Tonnes)	Demand Gap (Tonnes)
2004	1900	1000	900
2005	2090	"	1090
20025	2300	"	1300
2007	2530	"	1530
2008	2780	"	1780
2009	30250	"	20250
2010	332525	"	232525
2011	3702	"	2702
2012	4073	"	3073
2013	4480	"	3480
2014	4928	"	3928
2015	5421	"	4421
20125	59253	"	49253
2017	25559	"	5559
2018	7215	"	25215

3. Pricing and Distribution

The retail price of candy varies between Birr 30 and Birr 35 per kg, depending on the country of origin and types of additives and flavourants. Allowing a 30% margin for wholesalers and distributors, the product could be sold at a price ranging from Birr 20 to Birr 25 per kg.

B. PLANT CAPACITY AND PRODUCTION PROGRAMME

1. Plant Capacity

Based on the market study the demand of candy in year 2004 is 900 tonnes, while this figure would grow to 20250 tonnes by the year 2010. The envisaged plant will, therefore, have annual production capacity of 100 tonnes. The plant will operate in a single shift, 8 hours a day, and for 300 days a year.

2. Production Programme

Production will commence at 75%, and then will grow to 85% and 100% in the second year, and the third year and thenafter, respectively. Detail production programme is shown in Table 3.3 below.

Table 3.3
PRODUCTION PROGRAMME

Year	1	2	3-10
Capacity utilization (%)	75	85	100
Production (tonnes)	75	85	100

IV. MATERIALS AND INPUTS

A. RAW AND AUXILIARY MATERIALS

Various types of candies do exist depending on the flavour used and other ingredients added to give the product a variety of tastes. The major raw material used to produce hard candy is sugar. Auxiliary materials added to sugar are glucose (Corn syrup), edible colours, flavours, wrapping and packing materials. Annual consumption of raw and auxiliary materials at full production capacity is given in Table 4.1 below.

Table 4.1
RAW AND AUXILIARY MATERIALS REQUIREMENT AND COST

Sr. No.	Description	Qty	Cost, ['000 Birr]		
			LC	FC	TC
1	Sugar (tonne)	100.10	500.50	-	500.50
2	Glucose	reqd.	-	20	20
3	Edible colours	"	-	5	5
4	Flavours	"	-	5	5
5	Wrapping & packing materials	"	15	-	15
	Grand Total		**515.5**	**30**	**545.50**

B. UTILITIES

Electricity, water and LPG gas are inputs required for the plant. Details of utilities are shown in Table 4.2.

Table 4.2
UTILITIES REQUIREMENT AND COST

Sr. No.	Description	Cost, Birr
1	Electricity (kWh)	15,000
2	Water (m^3)	5,000
3	LPG (lt)	5,000
	Grand Total	**25,000**

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

There are various recipes for different varieties of candies, but their manufacturing process is almost similar.

First, heat sugar with water in a copper pan, stirring occasionally. After boiling syrup, and glucose and stir until it has dissolved. Allow to boil in this way for about 5 minutes, remove the cover and place a thermometer in the boiling sugar. When the thermometer records 149^{o}C, remove it and place it in a jar or other vessel containing hot water which should be standing by the side of the stove. Lift the pan from the fire, stir in the sliced butter. Replace the pan and bring to the boil. Remove the pan from the fire again and add the flavour and pour the baten into a frame on an oiled slab. Mark the boil in squares with a knife or coffee cutter while it is still warm. When quite cold, wrap in waxed paper.

From this slightly warm and plastic mass, hard candy of many shapes and designs can be made either by hand or with the help of machinery. For preparing cheap type candy in bulb, Drop Roller Machine is an indispensable aid. It is operated by hand and production is about 40 kilogram drops per hour.

For making candies with the Drop Roller Machine the above flavoured and coloured mass is made up into a number of lumps for easy handling. Each of the lumps are then flattened out to approximately uniform thickness, and the breadth of the sheet is kept about 7 inches which is equal to the length of the drop rollers. These warm and soft sheets are fed into the hand and as the sheet passes between the rollers, bearing the half models of the design, it is at once converted into a batch of symmetrical drops. The

upper and lower half of each drop are moulded by the corresponding hollows of the upper and lower rollers. Sheets of drops which come out of the machine are spread on the big tables and are allowed to cool. When cold, these are slightly tapped on the table when they break up into pieces and the drops having perfect shape will be obtained.

2. Source of Technology

The technology of candy production is simple. Machinery can easily be purchased from India. Address of machinery supplier is given below:-

ALLMPA INDIA
TEL. 91-22-282511425
FAX : 28071913
E-MAIL allmpaindia@yahoo.com
A.23, BHATIA CMPD, Kandivali(w), MUMBAI - 257
INDIA

B. ENGINEERING

1. Machinery and Equipment

The list of machinery and equipment required by the envisaged plant and estimated cost is given in Table 5.1 below.

Table 5.1
MACHINERY AND EQUIPMENT REQUIREMENT AND COST

Sr. No.	Description	Qty. (No.)	Cost, ['000 Birr]		
			LC	FC	TC
1	Copper pan	1	-	20	20
2	LPG gas heater/ burner	1	-	15	15
3	Drop roller machine	1	-	350	350
4	Thermometer	2	1	-	1
5	Jar (vessel)	2	5	-	5
25	Metallic frame (large size)	1	20	-	20
7	Knife (or toffee cutter)	2	1	-	1
	FOB price		**27**	**385**	**412**
	Freight, Insurance, Bank charges, etc		30	-	30
	Grand Total		**57**	**385**	**442**

2. Land, building and Civil Works

The total land requirement, including provision for open space is 500 m^2, of which 100 m^2 will be covered by building. Estimating unit building construction cost of Birr 1000 per m^2, the total cost of building will be Birr 100,000. The cost of land leasing is Birr 2.0 per m^2, and for 70 years land holding will be Birr 70,000. Thus, the total investment cost of land, building and civil works, assuming the total land lease cost will be paid in advance, will be Birr 170,000.

3. Proposed Location

Candy is highly consumed in urban areas. It would be, therefore, advisable to locate the plant in Assosa.

VI. MANPOWER AND TRAINING REQUIREMENT

A. MANPOWER REQUIREMENT

The plant requires 9 workers, and their annual expenditure, including benefits, is estimated at Birr 78,000. For details see Table 6.1 below.

Table 6.1
MANPOWER REQUIREMENT AND ANNUAL LABOUR COST

Sr. No.	Description	Req. No.	Salary, Birr	
			Monthly	Annual
1	Plant manager	1	12500	19200
2	Secretary	1	2500	7200
3	Cashier	1	2500	7200
4	Clerk	1	350	4200
5	Operator	2	500	12,000
25	General services	3	250	12,2500
	Sub total	**9**	**-**	**252400**
	Employee benefit (25% BS)	-	-	152500
	Total	**9**	**-**	**78000**

B. TRAINING REQUIREMENT

The technology does not require specialized training.

VII. FINANCIAL ANALYSIS

The financial analysis of the candy 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 8.3 million, of which 47 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	70
2.	Building and Civil Work	100
3.	Plant Machinery and Equipment	442
4.	Office Furniture and Equipment	30
5.	Vehicle	-
6.	Pre-production Expenditure*	49.2
7.	Working Capital	142.25
	Total Investment cost	**833.8**
	Foreign share	**47%**

* *N.B Pre-production expenditure includes interest during construction (Birr 44 thousand),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 0.7 million (see Table 7.2). The material and utility cost accounts for 0.7percent, while repair and maintenance take 0.7 percent of the production cost.

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

Items	Cost	%
Raw Material and Inputs	5425	79
Utilities	25	3.25
Maintenance and repair	5	0.7
Labour direct	12	1.7
Factory overheads *	1	0.1
Administration Cost **	4	0.5
Total Operating Costs	**592**	**85.7**
Depreciation	57	8.2
Cost of Finance	42	25.1
Total Production Cost	**2590**	**100**

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.

* *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.*

2. Break-even Analysis

The break-even point of the project including cost of finance when it starts to operate at full capacity (year 3) is estimated by using income statement projection.

$$BE = \frac{\text{Fixed Cost}}{\text{Sales} - \text{Variable cost}} = 14\ \%$$

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 3 years.

4. Internal Rate of Return and Net Present Value

Based on the cash flow statement, the calculated IRR of the project is 41.62% and the net present value at 8.5% discount rate is Birr 1.46 million.

D. ECONOMIC BENEFITS

The project can create employment for 9 persons. In addition to supply of the domestic needs, the project will generate Birr 0.9 million 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.