36. PROFILE ON DRESSED AND PACKED CHICKEN

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I. SUMMARY

This profile envisages the establishment of a plant for the production of 10,000 kg of dressed and packed chicken per annum.

The present demand for the proposed product is estimated at 7,772 kg and it is projected to reach at 22,032 kg by the year 2015.

The plant will create employment opportunities for 19 persons.

The total investment requirement is estimated at Birr 1.92 million, out of which Birr 850,000 is required for plant and machinery.

The project is financially viable with an internal rate of return (IRR) of 12% and a net present value (NPV) of Birr 165,790, discounted at 10.5%.

II. PRODUCT DESCRIPTION AND APPLICATION

Chickens belong to the general group of poultry which are domesticated birds that serve as a source of eggs or meat and that include, among commercially important kinds, such as turkeys, ducks, geese, guinea fowls, pigeons and others.

A chicken or other bird, especially a chicken at the age of 10-12 weeks and weighing up to 5.5 kg. which is dressed and fit for broiling is termed as broiler. Dressed and packed chickens are broilers killed, bled, and more or less completely prepared for cooking.

The major consumers of the product of the envisaged plant will be hotels, restaurants, supermarkets, various institutions with food catering services, and households.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Past Supply and Present Demand

The demand for dressed chicken mainly emanates from hotels and restaurant, canteens and from institutions such as boarding schools, colleges and universities and hospitals. Moreover, the item has some demand from households of relatively high income and time conscious of the society who are willing to pay the cost for the services of getting a dressed chicken over and above the purchase price of a live chicken.

The production of poultry in the country in general and that of BGRS in particular is at rudimentary stage. Now-a-days, in most part of the world poultry farming has taken the shape of an industry. In this regard, in BGRS there are some extension activities on the distribution of improved poultry population to peasants which are known for better production of eggs and meat. There is also an activity of cross breeding of the indigenous chickens with improved ones.

According to the Resource Potential Assessment conducted by IPS (2003), poultry are raised for meat production and cash income. There is high demand of meat during national and religious festivals as well as social gatherings .

The study has also revealed that the total poultry population of BGRS is about 505,411 in the year 2003. The off-take rate of poultry is also indicated to be 50%. Similarly, dressing percentage for poultry is 30% and average weight of meat per head is one k.g. Thus, the total amount of meat from poultry is calculated as 75.81 tonnes.

With the current (2004) estimated population, i.e., 594,000, the per capita consumption of chicken meat in the region is 0.13 or a daily intake of 0.35 grammes .To determine the present demand, it is found necessary to consider the consumption habit of the population. Accordingly, it is assumed that only 10% of the population will be the target

market for the product. Taking the current average per capita consumption, the present demand for dressed chicken is estimated at 7,772 k.g .

2. Projected Demand

Demand for dressed chicken is primary influenced by population growth, income, and urbanization and consumption habit of the population. As urbanization increases in the region, the consumption habit of the population also changes to pre-prepared items to save time and labour. Hence, considering the combined effect of the various influencing factors, demand for dressed chicken is assumed to grow by 10% per annum (see Table 3.1). There will be also an export potential to neighbouring regions and country's in the future when the infrastructure facilities in the region are improved.

Table 3.1
PROJECTED DEMAND FOR DRESSED CHICKEN IN BGRS

Year	Projected Demand (kg.)
2004	7,722
2005	8,494
2006	9,343
2007	10,278
2008	11,306
2009	12,436
2010	13,680
2011	15,048
2012	16,553
2013	18,208
2014	20,029
2015	22,032

3. Pricing and distribution

The ex-factory price of dressed chicken is set at Birr 15 per kg by considering the average price of live poultry in the region.

The product can be sold directly to bulk consumers such as educational institutions, hospitals and restaurants. For individual households, it can be reached through supermarket and specialized food shops.

B. PLANT CAPACITY AND PRODUCTION PROGRAMME

1. Plant Capacity

The designed annual capacity of the plant will be 10,000 kg of dressed and packed chickens of about 1.125 kg, each. The production capacity is based on single shift of 8 hours per day and 300 days per year operation of the plant.

2. Production Programme

The plant will operate at 90% of its rated capacity in the first year. Full production capacity will be achieved in the second year and thenafter.

IV. MATERIALS AND INPUTS

A. RAW AND AUXILIARY MATERIALS

The principal raw and auxiliary materials required are birds (chickens of about 1.5 kg each), polyethylene bags and cardboard boxes. Chickens required by the plant can be acquired locally in all zones of the region. According to the 'Resource Potential Study' the number of poultry in BGRS is more than 505,000 while the annual requirement of this project is only 10,215 birds. This indicates that of the existing stock only 2% is required for this project. This amount could be easily collected from few selected areas of the region with a very minimum effort. Hence, the major raw material i.e. poultry birds could be supplied on sustainable basis. The annual requirement for raw and auxiliary materials and the corresponding cost estimated at 100% capacity utilization are given in Table 4.1.

Table 4.1

ANNUAL REQUIREMENT AND COST ESTIMATES OF RAW AND AUXILIARY MATERIALS

Sr. No.	Description	Unit of Measure	Qty.	Cost '000 Birr
1	Chickens (1.5 kg each)	No.	10,125	50,625
2	Polyethylene bags (kg)	kg	5,000	4,750
3	Polyethylene bags (edible entrails)	pcs	90	4,525
	Grand Total	**-**	**-**	**59,900**

B. UTILITIES

The major utilities required are: fuel oil to generate steam, process water, electric power and refrigerant. The total yearly consumption of utilities at 100% capacity utilization rate and their estimated costs are given in Table 4.2.

Table 4.2

ANNUAL UTILITIES REQUIREMENT AND ESTIMATED COST

Sr. No.	Description	Unit of Measurement	Qty.	Cost Birr	
				Unit Cost	Total Cost
1	Fuel oil	tonne	2.5	2400.00	6,000
2	Process water	m^3	462	2.00	924
3	Electric power	kWh	17,551	0.473	8,302
4	Refrigerant	kg	3.5	3.00	10.5
	Grand Total	**-**	**-**	**-**	**15236.5**

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

The incoming chickens are manually taken from the transportation crates and hung upside down by their feet on a conveying chain in the course of which they are bled by the jugular vein. The feather is removed by spraying with 60-65^{o}C hot water and by beating with rotating fingers.

The heads are removed by special hooks in the decapitation process. Then, follows the evisceration (removal of the entrails using special forks and under a shower of water). Washing with 8-10^{o}C hot water, feet cutting by a double-disc knife and neck cutting by an automatic knife will be the next operations.

The cooled broilers are then weighed on automatic weighing scales and classified by weight into several lots with weight differences of upto 50 grams. In the packing process, the broilers in the same weight and lot are manually stuffed with bags containing the stomach, liver and heart. Then, the broilers are manually packed into polyethylene pouches and tightly closed by wire clips. The packed broilers are then placed in group of 10 in water-proof card-board which are scaled manually and marked with a label. Finally, the boxes are freezed at upto 35^{o}C and about -20^{o}C, prior to dispatching.

2. Source of Technology

Equipment for production of dressed and packed chicken can be acquired from Italy, Bulgaria, Brazil, etc. through contacts with the commercial attaches of respective embassies to Ethiopia. The following firm can be considered as one of the possible source of technology: Dah Chong Hong (Japan) Ltd. (K.K.Taisha) Bouekekou (10). 18-2, Roppongi 5- Chome, Minato - Ku, 106-0032 Tel. 03-3582-0706 Fax: 03-3586-8393 03-3582-7148.

B. ENGINEERING

1. Machinery and Equipment

The list of required plant machinery and equipment is given in Table 5.1. The cost of machinery and equipment is estimated at Birr 850,000, of which Birr 798,000 is required in foreign currency.

Table 5.1

LIST OF MACHINERY AND EQUIPMENT REQUIRED

Sr. No	Description	Qty. (No.)
1	Boiler	1
2	Compressor	1
3	Water treatment set	1
4	Conveyor	1
5	Feather removing equipment	2
6	Vacuum lung aspirator	1
7	Cooling water tank	1
8	Automatic weighing scale	1
9	Freezing room	1
10	Autoclave	1
11	Digestor	1
12	Silo	1
13	Edible entrail line	1

2. Land, Building and Civil Works

The total area of land required for the plant is about 1,250 square meters. The lease cost of land, at the rate of Birr 2/m^2 for 70 years, is estimated at Birr 175,000. The total built-up area will be 700 square meters and the estimated cost of building, at the rate of Birr1,000 per m^2, will amount to Birr 700,000. The total cost of land, building and civil works assuming that the total land lease cost will be paid in advance is estimated at Birr 875,000.

3. Proposed Location

Populated and advanced towns, such as Assosa, Chagni, etc. could be preferable locations for the envisaged plant.

VI. MANPOWER AND TRAINING REQUIREMENT

A. MANPOWER REQUIREMENT

The total manpower required is 19 persons. Details of manpower and annual estimated labour cost including the fringe benefits are given in Table 6.1.

Table 6.1

MANPOWER REQUIREMENT AND ESTIMATED LABOUR COST

Sr. No.	Description	No. of Persons	Salary, Birr	
			Monthly	Annual
1.	Manager	1	1,500	18,000
2.	Secretary	1	500	6,000
3.	Production and Technical Head	1	1,250	15,000
4.	Quality Controller (chemist)	1	900	10,800
5.	Operator	4	450	21,600
6.	Labourer	5	200	12,000
7.	Mechanic / Electrician	1	600	7,200
8.	Finance and Administration Head	1	1,200	14,400
9.	Driver	1	450	5,400
10.	Guard	2	200	4,800
11.	Stor-keeper	1	500	6,000
	Total	**19**		**121,200**
	Employees' benefit (20% of basic salary)	-		24,240
	Grand Total	**-**		**145,440**

B. TRAINING REQUIREMENT

The quality controller, two shift leaders and eight operators need a two months on-the-job training by the skilled technician of the equipment supplier during erection and commissioning period. The total training cost is estimated at Birr 25,000.

VII. FINANCIAL ANALYSIS

The financial analysis of dresssed and packed chicken 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)	
• Chicken	10 days
• Others	60 days
Raw materials (import)	90 days
Work in progress	1 days
Finished products	2 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 1.92 million, out of which about 4.16% will be required in foreign currency. Details are indicated in Table 7.1.

Table 7.1

INITIAL INVESTMENT COST ('000 BIRR)

Sr. No.	Cost Items	Foreign Currency	Local Currency	Total
1	Land	-	175.00	175.00
2	Building and Civil Work	-	560.00	560.00
3	Plant Machinery and Equipment	798.00	52.00	850.00
4	Office Furniture and Equipment	-	25.00	25.00
5	Pre-production Expenditure*	-	306.83	306.83
	Total Investment Cost	**798.00**	**1,118.83**	**19,168.30**
6	Working Capital	-	14.06	14.06
	Grand Total	**798.00**	**18,384.36**	**19,182.36**

B. PRODUCTION COST

The annual production cost at full operation capacity of the plant is estimated at Birr 368,750 (see Table 7.2). The material and utility cost accounts for 70% per cent while repair and maintenance take 7.6 per cent of the production cost.

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* *Pre-production expenditure include interest during construction (Birr 256,830), training (Birr 25,000) and cost of registration, licensing and formation of the company including legal fees, commissioning expenses, etc.*

Table 7.2

ANNUAL PRODUCTION COST

('000 BIRR)

Items	Year			
	3	**4**	**7**	**10**
Raw Material and Inputs	52.39	59.90	59.90	59.90
Labour Direct	51.66	40.00	40.00	40.00
Utilities	17.75	18.96	18.96	18.96
Maintenance and repair	27.22	28.05	28.05	28.05
Labour overheads	12.89	13.33	13.33	13.33
Administration Cost	5.94	6.67	6.67	6.67
Total operating costs	**167.85**	**166.90**	**166.90**	**166.90**
Depreciation	62.00	62.00	62.00	52.00
Cost of Finance	148.98	139.85	106.31	61.06
Total Production Cost	**378.83**	**368.75**	**335.21**	**279.96**

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.

$$BE = \frac{\text{Fixed Cost}}{\text{Sales-Variable Cost}} = 23\ \%$$

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 years time.

4. Internal Rate of Return and Net Present Value

Based on the cash flow statement, the calculated IRR of the project is 12 % and the net present value at 10.5% discount rate is Birr 165,790.

D. ECONOMIC BENEFITS

The project can create employment opportunities for 19 persons. In addition to supply of the domestic needs, the project will generate Birr 395,010 in terms of tax revenue. Moreover, the Regional Government can collect employment, income tax and sales tax revenue.