PROFILE ON LIVESTOCK FEED

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I. SUMMARY

This profile envisages the establishment of a plant for the production of 22,150 tonnes of livestock feed per annum.

The present demand for the proposed product is estimated to be 20,037 tonnes per annum. The demand is projected to reach 28,567 tonnes by the year 2012.

The project will create employment opportunities for 31 persons.

The total investment cost of the project is estimated at Birr 14.42 million, out of which Birr 7 million is for plant machinery and equipment.

The project is financially viable with an internal rate of return (IRR) of 29% and net present value (NPV) of Birr 15 million, discounted at 10.5%.

II. PRODUCT DESCRIPTION AND APPLICATION

Livestock feed is a mixture of feedstuffs produced by feed processing plant. It contains protien, minerals, and other nutrients which are usefull for beef and milk production and survival of the animals. The mixture would be produced from oil seed cake, mollasses, meal (bone and blood), Sadium hydrooxide (NaOH), lye-tearement of straw or stock. Such mix may be varied over a wide range of compositions, determined by nutriitional values required, within the following average minimum and maximum values:

- NaOH lye-treated straw or stocks	40 – 64%
- Oil seed Cake	26 – 60%
- Molasses	0 – 12 %

The plant will be sized according to the possibility of treating the maximum amount of each material as per the required feed composition.

III. MARKET STUDY AND PLANT CAPACITY

A. MARKET STUDY

1. Past Supply and Present Demand

Agriculture is the dominant feature of the Ethiopian economy in which the livestock sub-sector is an integral part. According to the agricultural sample survey (C.S.A) of 1999/2000 the national private holdings of cattle, sheep and goats were 33075330, 10950680 and 8591760, respectively. The country however did not exploit the potential advantages of its geographical location and huge animal resources. Ruminant feed is one of the major factors that contribute to low productivity of local animals.

Animal feeds are not imported into the country. The need for animal feed is supplied from locally existing private and public animal feed processing plants.

According to a study conducted by IPS, at present there are six animal feed processing plants in the country Table 3.1 presents the volume of domestic production of animal feed for the period 1988-1998.

Table 3.1

DOMESTIC PRODUCTION OF ANIMAL FEED (1988-1998)

Year	Quantity (tonnes)
1988	28,294
1989	30,138
1990	28,192
1991	20,897
1992	11,186
1993	7,120
1994	6,019
1995	10,549
1996	4,601
1997	5,453
1998	4,991

***Source**: CSA Statistical Abstract*

As can be seen in Table 3.1, local production of animal feed ranges between a low figure of 4,601 tonnes in the year 1996 to a high figure of 30138 tonnes in the year 1989. The annual average production of these factories for the time under reference were about 14,377 tonnes. Considering the size of the livestock population in the country and the recommended per capita consumption per annum, it is clear that the supply of animal feeds in the country false short of the anticipated demand due to several reasons.

To determine the current demand for animal feeds in Somali Region the following assumptions are used.

I. According to "Agricultural Sample Survey", C.S.A in 1999/2000 the Somali Region livestock population is estimated to be 335,600 cattle, 198.610 sheep and 277,050 goats. Its assumed that the number of livestock population stated above will be maintained.

II. Considering conditional limiting factors such as product adaptability, income of farmers, accessibility of the product to remote market places, etc only 2.5 per cent of the cattle, sheep and goat population are assumed to be fed with animal feed.

III. According to planning and programming unit of dairy development enterprise, the average feed consumption during the period 1985-1990 in state dairy farms was 2.7 kg/ head a day. This is taken as the per capita consumption of the targeted livestock population.

With regard to the above mentioned assumptions, the present demand for animal feed in Somali Region is estimated at 20,037 tonnes per annum.

2) Demand Projection

Demand projection is made on the assumption that the demand for animal feed should grow with the growth in size of livestock population, income of farmers and the attitude of farmers towards the product. Hence, a modest growth rate of 3 per cent is used to project the demand for animal feed in the region as depicted in Table 3.2.

Table 3.2

PROJECTED DEMAND FOR ANIMAL FEED IN SOMALI REGION (TONNES)

Year	Projected Demand
2001	20,638
2002	21,257
2003	21,895
2004	22,551
2005	23,228
2006	23,925
2007	24,642
2008	25,382
2009	26,143
2010	26,928
2011	27,735
2012	28,567

3. Pricing and Distribution

The price of processed animal feed depends upon the availability and value of raw materials. In this profile, the ex-factory price of animal feed to be produced by the project under consideration is estimated to be Birr 675 per tonne.

For the envisaged project, it is recommended either to distribute the product directly to end-users wherever they are accessible or by establishing a small distributing store or using commissioned agent at strategic locations.

B. PLANT CAPACITY AND PRODUCTION PROGRMME

1. Plant Capacity

The plant would have a production capacity of 22,150 tonnes of integrated livestock feed per annum at full capacity.

2. Production Programme

The plant will work about 185 days per annum and three shitfs of 8 hours per day. The plant will start its operation with 75% capacity in the first year and operate at full capacity in the second year and thereafter.

IV. MATRIALS AND INPTUS

A. MATERIALS

Raw material required for the production of livestock feed, at full operation capacity and the corresponding costs are shown in Table 4.1.

Table 4.1

ANNUAL RAW MATERIALS REQUIREMENT AND COSTS

Sr. No.	Description	Qty	Cost, Birr in '000		
			Local	Foriegn	Total
1	Oil Seed cake (tonnes)	5,400	1,890		1,890
2	Molasess (tonnes)	2020	1110		1,110
3	NaOH (50% solution)- tonnes	265		530	530
4	Wheat Bran (qut.)	14500	5075		5,075
5	Jute Bags (100 kg capacity)-(pcs)	221500	664.5		664.5
	Total		**8,739.5**	**530**	**9,269.5**

B. UTILITIES

Utilities required by the plant are electricity, steam and water for procecing and sanitation. Annual utilities requirement of the plant and corrosponding cost are indicated in table 4.2.

Table 4.2

ANNUAL UTILITIES REQUIREMENT AND COST

No	Description	Qty	Cost Birr in ’000 (local)
1	Electricity (Kwh)	233.1	65.3
2	Water (M^3)	90.3	45
3	Steam (Kg)	2664	266.4
	Total		**367.7**

V. TECHNOLOGY AND ENGINEERING

A. TECHNOLOGY

1. Production Process

Raw materials, oil seed cake, molasses, straw or stock and NaOH are supplied to the processing plant. The stock or straw is unpacked and break into pieces before NaOH lye treatment took place. After the lye-treatment mixing, pelletizing and drying up of these component completed. Then, integrated fodder is weighed and bagged in jute bags and distributed to the market.

2. Source of Technology

The requried machinery and equipment can be obtained from Hagbes Ethiopia.

B. ENGINEERING

1. Machinery and Equipment

The required plant machinery and equipment are listed in Table 5.1. Total cost is estimated at Birr 7 million, out of which Birr 6.4 million (90.8%) is in foreign currancy. The requried machinery and equipment are supplied as a set.

2. Land, Building and Civil Works

Total land requirement for the envisaged plant is 5,000 m^2, of which 2240 m^2 is earmarked for processing plant building and storage for raw material and finished product. The total expenditure for land at the lease rate of Birr 1.20 per m^2 and for 95 years of land holding is estimated at Birr 475,000. On the other hand, the total cost of building and civil works, at the unit cost of Birr 1,200 per m^2 is estimated at Birr 2,688,000.

Table 5.1

LIST OF MACHINERY AND EQUIPMENT

No	Description	Qty
1	Hammer mill and accessaries (unit)	1
2	Intake feeder	1
3	Buket elivater (40 ton/hr)	4
4	Redler conveyers	4
5	Belt weigher	3
6	Belt conveyer	5
7	Row material silo	8
8	Pre cutter	2
9	Straw cutter	2
10	Feeding Table	1
11	Horizontal mixer	1
12	Lye-mixing tank	2
13	Lye-mixure	1
14	Lye-(NaOH) holding tank (30 m3)	1
15	Molasses tank (30 m3)	2
16	Molaasses mixser (7 t/hr)	
17	Conditioner (20 m3)	1
18	Pellet processer (7 t/hr)	1
19	Sieve (30 t/hr)	1
20	Straw feeder (10 t/hr)	1
21	Finished feed silo and bagging equipment	1
22	Compresor (7atm, 400 lts/min)	1
23	Steam production plant and other auxilaries (set)	1

3. Proposed Location

The livestock feed plant would be located near by cereal producing area and oil and sugar cane processing plants. In this respect, Jigjiga and Gode Zones could be ideal locations.

VI. MANPOWER AND TRAINING REQUIREMENT

A. MANPOWER REQUIREMENT

Manpower required and the corresponding labour costs are indicated in Table 6.1.

Table 6.1

MANPOWER REQUIREMENT AND LABOUR COST

No	Description	Req. No.	Monthly salary, Birr	Annual salary, Birr
1	Plant Manger	1	1250	15000
2	Shift suppervisers	3	900	32,400
3	Secretary	1	600	7200
4	Milling Line operarers	3	800	28800
5	Straw operators	3	800	28800
6	Molasses line operators	3	800	28800
7	Finished line operators	3	800	28800
8	Fork lift opreters	3	700	25200
9	Mechanic / electrician	1	800	28800
10	Clerks	2	250	6000
11	Driver	3	400	14400
12	Labourers	6	250	18000
	Total	**31**		**262,200**
	Employees Benefit (20%)			54,440
	Grand Total			**316,640**

B. TRAINING REQUIREMENT

The manager and three line operators would receive training for two weeks at a cost of Birr 28,250. The training will be given by the machinery supplier at the project site.

VII. FINANCIAL ANALYSIS

The financial analysis of the livestock feed processing project is based on the data presented in the previous chapters and the following assumptions:-

Construction period	2 years
Source of finance	30 % equity
	70 % loan
Tax holidays	4 years
Bank interest	10.5%
Discounted cashflow	10.5%
Land value	Based on estimated lease rate of the region
Repair and maintenance	2 % of the total plant and machinery
Accounts receivable	30 days
Raw material local	30 days
Raw materials import	90 days
Work in progress	7 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 Birr 14.42 million, out of which about 46% will be required in foreign currency. For details see Table 7.1.

Table 7.1

SUMMARY OF THE INITIAL INVESTMENT COST ('000 BIRR)

	Cost Items	Foreign Currency	Local Currency	Total
1	Land	-	475.00	475.00
2.	Building and Civil Work	-	2,688.00	2,688.00
3.	Plant Machinery and Equipment	6,400.00	600.00	7,000.00
4.	Office Furniture and Equipment	-	150.00	150.00
5.	Vehicle	-	750.00	750.00
6.	Pre-production Expenditure *	-	1,411.01	1,411.01
	Total Investment cost	**6,400.00**	**6,074.01**	**12,474.01**
8	Working Capital	231.15	1,716.23	1,947.38
	Total	**6,631.15**	**7,790.25**	**14,421.40**

B. PRODUCTION COST

The annual production cost at full operation capacity of the plant is estimated at Birr 12.07 million (see Table 7.2). The material and utility cost accounts for 80 per cent while repair and maintenance take 1 per cent of the production cost.

** Pre-production expenditure include interest during construction (Birr 1.18 million), training (Birr 28,250) and the balance accounts for cost of registration, licensing and formation of the company including legal fees, commissioning expenses, etc.*

Table 7.2

ANNUAL PRODUCTION COST ('000 BIRR)

Item	Year			
	3	4	7	10
Raw Material and Inputs	6,952.13	9,269.50	9,269.50	9,269.50
Labour direct	144.90	193.20	193.20	193.20
Utilities	275.78	367.70	367.70	367.70
Maintenance and repair	105.00	140.00	140.00	140.00
Factory overheads	40.83	54.44	54.44	54.44
Administration Overheads	69.00	69.00	69.00	69.00
Total Operating Costs	**7,587.63**	**10,093.84**	**10,093.84**	**10,093.84**
Depreciation	1,050.05	1,050.05	1,050.05	854.40
Cost of Finance	948.48	927.61	826.51	689.09
Total Production Cost	**9,586.16**	**12,071.50**	**11,970.40**	**11,637.33**

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) will 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 is estimated by using income statement projection.

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

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 6 years.

4. Internal Rate of Return and Net Present Value

Based on the cashflow statement, the calculated IRR of the project is 29 % and the net present value at 10.5% discount rate is Birr 15 million.

D. ECONOMIC BENEFITS

The project can create employment for 31 persons. In addition to supply of the domestic needs, the project will generate Birr 18 million interms 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.