

## DAIRY SECTOR INVESTMENT OPPORTUNITY BRIEF

# Heifer Production



## **1. Executive Summary**

This dairy sector investment opportunity brief highlights the potential of establishing a dairy farm for heifer production in Ethiopia. The dairy farm will start its operation after purchasing 100 cows. It plans to increase its number of heifer production by 10% each year.

The total investment cost of the project is estimated to be \$122,028. Out of the total investment cost, \$43,590 will be invested in fixed assets, \$41,026 to purchase cows and the remaining \$75,618 is allocated to cover working capital and insemination cost.

The farm will create employment opportunities to 13 individuals. Though the initial goal of the project is to establish a sustainable heifer production plant, its methods can be adapted by other farmers. Hence, the project intends to implement an out-growers scheme program after its fifth year operation. The project is financially viable with an average annual net profit of \$71,320, an average net profit margin of 27%, and a five-year internal rate of return after tax of 32% and a NPV of \$132,638.

## **2. Product Description and Objectives**

Heifers are young cows that have not given birth to a calf. The most widely known exotic breeds that are suitable for agro ecology of Ethiopia include Holstein Friesian and Jersey breeds. Formerly, government ranches were the main source of heifers for dairy production. However, currently, such facilities no longer operate in the country, while, private sector involvement remains very limited. As a result, one of the biggest hurdles constraining more rapid growth in the dairy industry is finding crossbred heifers with a known pedigree. Since suppliers of heifers are few, demand remains only partially satisfied, prices are high and opportunities for market expansion abundant. The sector offers lucrative returns for investors who engage in heifer production.

The heifer production farm, which is envisioned, will focus on generating income through heifer production and distribution to commercial milk producers. The project also plans to implement a complementary, out-growers scheme and expand heifer production. Importantly, the enterprise will put high emphasis on the promotion of sustainable land use and on the training of farmers, especially as that training involves the application of improved agricultural practices.

The investment project objectives include, the following:

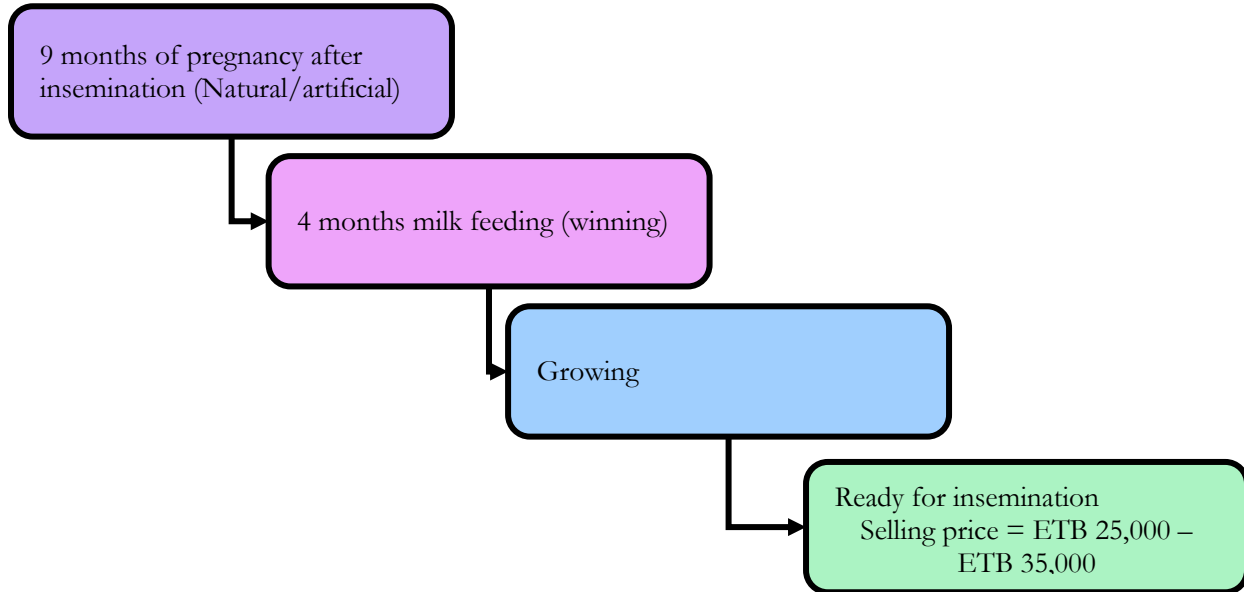
- Production and distribution of a cross breed heifers including 50% Horro and 50% Freisan breeds through artificial insemination (AI services);
- Render AI services to selected villages in the Farm's vicinity and establish around it a network of milk sheds which will become reliable suppliers of milk and/or heifer and calves;
- Provide technical back-up extension services for smallholder farmers to improve land usage.

The proposed nuclear farm plans on becoming the center of heifer production in Ethiopia through the natural insemination of local cows. The farm would engage smallholders in heifer production by providing them with semen and other extension services (such as veterinary services and feed) in exchange for the production services which their indigenous cattle would provide. The farm would

purchase heifers from local farmers and pay them a premium price, one month after they give birth. A graphic presentation of this business model is provided below.

### Heifer Multiplication Model

Fig 1:- Heifer Production Flow



### 3. Farm Capacity and Production Program

#### Building and Civil Work

The heifer farm is expected to be set up on land secured from one of the regional cities, most likely in the Oromia Region. A processing barn will be constructed depending on scale on the anticipated growth of the company in the near future. . A single cow requires barn space of 10 sq meters and pasture capacity of 1.2 sqm land. The project’s total barn investment requirements can be calculated based on the number of heifers which it plans to produce in the near term. Since the company begin with 100 heifers per year, the project will need to secure 1,000 sqm land.. The farm will also construct ancillary buildings for feed storage, a calf pen, a maternity stall, cattle yard, milking parlor, restraining crush, hay barn and office space.

#### Farm Capacity

The project will start up with the purchase of 100 cows and will grow its production by 20% each year.

#### Farm Inputs and Utilities

All farm inputs needed for the project can be purchased from local sources in Addis Ababa and its surrounding areas of Oromia Regional State. The required farm inputs are briefly discussed below.

### **Hay and Concentrate (Feed)**

Hay can be purchased from Oromia Regional State woredas like Sululta, Betch, Alemagena and Akaki. Concentrate is a type of feed, which is indispensable for specialized dairy farms to get attractive yield from cows. This concentrate will be purchased from known feed processing plants in Addis Ababa and its surroundings.

### **Veterinary Cost and AI service**

All veterinary drugs can be purchased or available in drugs shops in Addis Ababa. And the AI service will undertake by private inseminators in Addis Ababa.

### **Utilities**

The utilities required by the dairy farm are water and electricity and annual requirement is estimated as follows;

#### **Electricity**

Electricity cost of the project is very low as there are no machineries that require high power usage. Thus the consumption is estimated at 3 kWh, and the total energy requirement for 8 hours a day is estimated at 24 kWh per day. Hence, in 365 days the total annual consumption will be 8,760 kwh.

#### **Water**

Water is used for cleaning and drinking in the project. The total water consumption is estimated to be over 400 m<sup>2</sup>.

### **Manpower Requirement**

The total human resource required for the envisaged project is 13 persons. The estimated annual salary requirement is anticipated to be \$14,923. Proper training in farm management will be carried out as the need arises.

### **Environmental Impact**

The project considers environmental issues and will have a well-established biogas system to convert the manures and other waste disposals into usable energy. The farm will also have proper fences to keep the animals away from contacts with other animals so that zero grazing system will be practiced. To manage all the effluent that come from the farm, a proper drainage facility and floor slope will be constructed.

## **4. Financial Assumption**

The financial model for the project is based on the following assumptions;

| <b>Description</b> | <b>Year 1</b> | <b>Year 2</b> | <b>Year 3</b> | <b>Year 4</b> | <b>Year 5</b> |
|--------------------|---------------|---------------|---------------|---------------|---------------|
| Heifer Production  | 75            | 90            | 108           | 130           | 156           |
| Selling Price      | 1,538         | 1,692         | 1,946         | 2,238         | 2,574         |

## Total Initial Investment Cost

The total investment cost of the project including working capital is estimated to be \$122,028. The following table summarizes the total investment cost breakdown;

| Total Investment          | Amount (USD)   | %age        |
|---------------------------|----------------|-------------|
| Building and Construction | 20,513         | 17%         |
| Purchase of Hiefers       | 41,026         | 34%         |
| Insemination cost         | 2,821          | 2%          |
| Vehicle                   | 23,077         | 19%         |
| Working Capital           | 34,592         | 28%         |
| <b>Total Investment</b>   | <b>122,028</b> | <b>100%</b> |

## Financial Analysis

Based on the projected financial statement, the project will generate profit every year throughout the projected 5 years period. Annual average net profit after tax is projected to be \$71,320 with an average margin of 27%. The IRR after tax of the project is 32%, indicating the financial viability of the business. The NPV, at a 10% discount rate, is expected to be \$132,638.

## Projected Income Statement

| Description                   | Project Years  |                |                |                |                |
|-------------------------------|----------------|----------------|----------------|----------------|----------------|
|                               | 1              | 2              | 3              | 4              | 5              |
| <b>Total Revenue</b>          | <b>115,385</b> | <b>152,308</b> | <b>210,185</b> | <b>290,055</b> | <b>400,276</b> |
| <b>Operating Costs:</b>       |                |                |                |                |                |
| Feed Cost                     | 53,031         | 63,637         | 76,364         | 91,637         | 109,965        |
| Insemination Cost             | -              | 5,641          | 5,641          | 6,205          | 8,462          |
| Salary and Wages              | 14,923         | 17,908         | 21,489         | 25,787         | 30,944         |
| Electricity and Water         | 2,534          | 2,787          | 3,066          | 3,372          | 3,710          |
| Fuel and lubricants           | 4,923          | 5,662          | 6,511          | 7,487          | 8,610          |
| Travel and per diem           | 4,477          | 5,372          | 6,447          | 7,736          | 9,283          |
| Stationary, telephone and PTT | 513            | 564            | 621            | 683            | 751            |
| Office Supplies               | 2,051          | 2,359          | 2,713          | 3,120          | 3,588          |
| <b>Total Operating Cost</b>   | <b>82,452</b>  | <b>103,930</b> | <b>122,851</b> | <b>146,027</b> | <b>175,313</b> |
| Gross Profit                  | 32,933         | 48,378         | 87,333         | 144,027        | 224,963        |
| Depreciation                  | 5,641          | 5,641          | 5,641          | 5,641          | 5,641          |
| Profit After Depreciation     | 27,292         | 42,737         | 81,692         | 138,386        | 219,322        |
| Profit Tax (30%)              | 8,188          | 12,821         | 24,508         | 41,516         | 65,797         |
| <b>Net Profit</b>             | <b>19,104</b>  | <b>29,916</b>  | <b>57,185</b>  | <b>96,870</b>  | <b>153,525</b> |
| <i>Profit Margin</i>          | <i>17%</i>     | <i>20%</i>     | <i>27%</i>     | <i>33%</i>     | <i>38%</i>     |

## Projected Cash Flow Statement

| Description                | Project Years  |               |                 |                |                |                |
|----------------------------|----------------|---------------|-----------------|----------------|----------------|----------------|
|                            | 0              | 1             | 2               | 3              | 4              | 5              |
| <b>Cash Inflows</b>        |                |               |                 |                |                |                |
| Owner's Equity             | 122,028        |               |                 |                |                |                |
| Net Profit                 | -              | 19,104        | 29,916          | 57,185         | 96,870         | 153,525        |
| Depreciation               | -              | 5,641         | 5,641           | 5,641          | 5,641          | 5,641          |
| <b>Total Cash Inflows</b>  | <b>122,028</b> | <b>24,745</b> | <b>35,557</b>   | <b>62,826</b>  | <b>102,511</b> | <b>159,166</b> |
| <b>Cash Outflows</b>       |                |               |                 |                |                |                |
| Investment                 | 87,436         | -             | 49,231          | 59,077         | 77,982         | 127,606        |
| Working Capital            | 34,592         | -             | 6,795           | 8,154          | 9,785          | 11,742         |
| Replacement                | -              | -             | -               | -              | -              | -              |
| Principal Repayment        | -              | -             | -               | -              | -              | -              |
| Dividend (30%)             | -              | -             | -               | -              | -              | -              |
| <b>Total Cash Outflows</b> | <b>122,028</b> | <b>-</b>      | <b>56,026</b>   | <b>67,231</b>  | <b>87,767</b>  | <b>139,349</b> |
| <b>Net Cash Flow</b>       | <b>-</b>       | <b>24,745</b> | <b>(20,469)</b> | <b>(4,406)</b> | <b>14,745</b>  | <b>19,818</b>  |
| <b>Cum. Cash Balance</b>   |                | <b>24,745</b> | <b>4,276</b>    | <b>(129)</b>   | <b>14,615</b>  | <b>34,433</b>  |