Pre-feasibility Study

DAIRY FARM (75 COWS) ENVIRONMENTALLY CONTROLLED HOUSING (ECH) SYSTEM

June 2023

"The figures and financial projections are approximate due to fluctuations in exchange rates, energy costs, and fuel prices etc. Users are advised to focus on understanding essential elements such as production processes and capacities, space, machinery, human resources, and raw material etc. requirements. Project investment, operating costs, andrevenues can change daily. For accurate financial calculations, utilize financial calculators on SMEDA's website and consult financial experts to stay current with market conditions."

Small and Medium Enterprises Development Authority
Ministry of Industries and Production
Government of Pakistan

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2. EXECUTIVE SUMMARY

This pre-feasibility study is based upon the business analysis of setting up a dairy farm where cows with proven pedigree[1] and genomics[2], hence having high genetic worth are kept primarily for milk production in dairy sheds constructed on Environmentally Controlled Housing (ECH) system. The dairy cows are fed Total Mixed Ration (TMR), which is a high energy and protein rich nutritionally balanced formulated feed. The cows are bred by pedigreed genetics (preferably sexed semen) through Artificial Insemination method to attain maximum genetic potential.

Dairy production is an all-inclusive activity, related to dairy animal housing and comfort, reproduction, feeding and farm management. It encompasses all aspects and activities related to raising dairy animals during various phases of life to get maximum productivity in terms of hygienic milk.

A dairy farm with 75 cows needs a total investment of approximately Rs. 141.42 million out of which, capital cost of the project is Rs. 139.30 million with working capital of Rs. 2.12 million. The project is assumed to be working on a 30:70 debt and equity ratio. It is assumed that starting from 75 animals in year 1, the herd will increase to approximately 952 animals, out of which, 392 would be lactating cows of various age groups, 318 female calves and 242 heifers in 10th year of the project. The culling rate is assumed to be 20% per annum for adult cows below 7 years of age and 100% for cows above 7 years of age.

The Internal Rate of Return (IRR), Payback Period and Net Present Value (NPV) of the project, based upon stated assumptions, are 34%, 4.24 years and Rs. 133.54 million respectively. The farm will provide employment opportunity to 6 individuals initially which will increase to 26 at year 10, with the increase in size of the farm. The legal status of the project is proposed to be a sole proprietorship.

The project is proposed to be located in peri-urban areas around metropolitan cities like Karachi, Lahore, Islamabad, Faisalabad, Okara, Sahiwal, Sheikhupura, Sargodha, Multan, Bahawalpur, Hyderabad, Quetta, Ziarat, Peshawar etc. which are major markets of milk consumption. The rural and peri-urban areas around the major cities with abundant water and availability of feed make a better choice for farming; provided access to livestock markets and veterinary services is ensured. The milk may be sold at the farm gate or directly sold in the urban market.

[1] *Pedigree: A registered record of sire (father) and dam (mother) of a cow for three generations.*
[2] *Genomic Selection: refers to selection decisions based on Genomic Estimated Breeding Values (GEBV). It allows farmers to identify genetically superior heifers at younger age through DNA test, hence an accurate GEBV is determined before they reach sexual maturity.*

Most critical considerations or factors for success of the project are background knowledge and related experience for application of Good Animal Husbandry Practices (GAHP), market / demand of milk, understanding of ECH dairy system, importance of feeding regimes for getting optimum results from good genetics, farm and labour management etc.

3. INTRODUCTION TO SMEDA

The Small and Medium Enterprises Development Authority (SMEDA) was established in October 1998 with an objective to provide fresh impetus to the economy through development of Small and Medium Enterprises (SMEs).

With a mission "to assist in employment generation and value addition to the national income, through development of the SME sector, by helping increase the number, scale and competitiveness of SMEs", SMEDA has carried out 'sectoral research' to identify policy, access to finance, business development services, strategic initiatives and institutional collaboration and networking initiatives.

Preparation and dissemination of prefeasibility studies in key areas of investment has been a successful hallmark of SME facilitation by SMEDA.

Concurrent to the prefeasibility studies, a broad spectrum of business development services is also offered to the SMEs by SMEDA. These services include identification of experts and consultants and delivery of need based capacity building programs of different types in addition to business guidance through help desk services.

4. PURPOSE OF THE DOCUMENT

The objective of the pre-feasibility study is primarily to facilitate potential entrepreneurs in project identification for investment. The project pre-feasibility may form the basis of an important investment decision and in order to serve this objective, the document/study covers various aspects of project concept development, start-up, and production, marketing, finance and business management.

The purpose of this document is to facilitate potential investors in setting up **Dairy Farm** with Environmentally Controlled Housing (ECH) system on commercial basis by providing them a general understanding of the business with the intention of supporting potential investors in crucial investment decisions.

The need to come up with pre-feasibility reports for undocumented or minimally documented sectors attains greater imminence as the research that precedes such reports reveal certain thumb rules; best practices developed by existing enterprises by trial and error, and certain industrial norms that become a guiding source regarding various aspects of business set-up and it's successful management.

Apart from carefully studying the whole document one must consider critical aspects provided later on, which form basis of any Investment Decision.

5. BRIEF DESCRIPTION OF PROJECT & PRODUCT

The proposed dairy farm will be established on owned land with shed constructed on Environmentally Controlled Housing (ECH) system. The farm will begin operations with 75 cows to achieve milk production of 574,875 litres in first year of the project. The initial capacity utilization of milk production for sales revenue is 75% increasing up to a maximum of 90%. Female calves will be raised on milk replacer for first three months of age. Upon weaning at 4th month of age, calves will be offered Total Mixed Ration (TMR) depending on their live body weights and different physiological phases of their productive life until culling.

Breeding of animals will be planned through 'Sexed-Semen Artificial Insemination' method allowing the farmer to breed their best animals giving 70% probability or chance to produce female calves, hence developing strong replacement heifers and future dairy herd with distinguished genomics.

Female calves will be given special attention and raised as 'Heifers' whereas male calves will be sold in the market around the age of two weeks. The milk will be sold primarily at farm gate to bulk buyers at the rate of Rs. 140 with 10% annual growth rate in selling price.

The subject business can be set-up at any appropriate location that ensures easy availability of feed, water and other related services. The development of urban or peri-urban commercial dairy farms is a relatively new concept in dairy production. Metropolitan cities like Lahore, Karachi, Multan, Rawalpindi and Faisalabad etc. are major markets of milk as dairy farms established around these cities fulfil their daily milk demand. There is a year-round market of milk, however, the demand increases in summer (April to November).

5.1 Dairy Farm Production Process

- Selection of dairy cattle breed such as Holstein Friesian with proven pedigree and high genetic worth from elite and renowned sires: Holstein cows are recognized by their distinctive color markings and outstanding milk production, having large body stature with typical color patterns of black & white or red & white. Holstein heifers can be bred at around 15 months of age as they gain 65% of their adult body weight (approx. 550 kgs). Gestation period of the animal is nine months with normal productive life of 6-7 years.

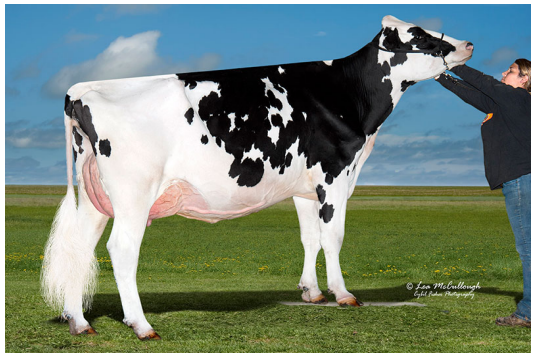

Figure 1: A typical Holstein Cow

- The pedigree and genetic worth of cows must be considered on top priority, i.e. proper pedigree paper and documentation containing all identifications and registrations of dairy cows by Holstein Aassociation from USA or EU. Pedigree is a document showing an animal's lineage, a record of their ancestry; a typical Holstein pedigree shows three generations - the animal itself, its sire and dam, along with their sires and dams. It may also list genetic and performance records for each animal, when applicable.

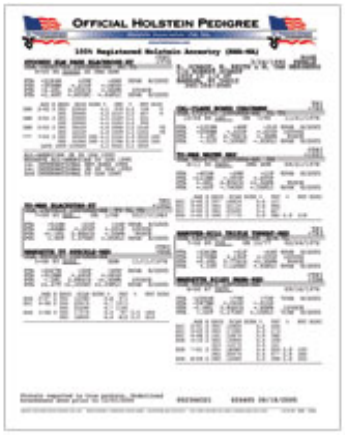

Figure 2: A typical Pedigree

The pedigree is very important as it can be useful to farmers and breeders in providing information about the cow's ancestors and thereby helping to predict how well that animal may perform later in life e.g. how much milk might be produced or how they will look in their body stature and conformation etc., based on the performance of their ancestors. Aside from providing owners and breeders with detailed information about their animals, official Holstein pedigrees also serve as a verified source of ancestry, performance and genetic information when selling animals, giving the buyer trusted documentation ensuring that information presented on the animal is accurate.

- Selection of animals with excellent body condition and udder health: average daily milk production of 35 litres or above for cows in first lactation, essentially with no disease history is desirable.
- Housing: Good housing leads to good management practices and ultimately optimum production. Generally, housing should be;

I. Pre-engineered building
II. Tunnel-type, ventilated, comfortable and dry with hygienic environment
III. Designed with the probability of future expansion when required

The housing should facilitate;

- Easy drainage and removal of dung, urine and waste material
- Apparent (or feels like) temperature not exceeding 27 °C
- Minimum sun exposure: axis of length to be east to west
- Availability of feed and water round the clock

- The Environmental Controlled Housing (ECH) system is a new and remarkable revolution in Pakistan's dairy sector by creating a self-sufficient temperature and humidity level in dairy house.

  Following are some of the features of this system which are quite different from traditional;

Figure 3: A typical ventilation system in ECH system

- ✓ Concrete structure is preferred over steel with low roof height for easy maintenance and access.
- ✓ Proper insulation to prevent heat from all sides. Optimum temperature of 26°C should be maintained inside the shed area. Temperature may be reduced up to 20°C at certain places if required.
- ✓ Proper Heating, Ventilation & Air Conditioning Control (HVAC) designed and planned as per-engineering principles as such type of structure is designed to utilize minimum possible electricity. Electricity cost is much less than traditional fans barns as only 4 fans of 1.5 HP and 4 storm fans are used. Negative pressure fans utilize 18~20 fans of same capacity in the same size.
- ✓ No gases, odor or smell inside the barn due to proper ventilation system, hence, animals are comfortable in cool breeze passing through them from all sides. In this way, the production efficiency of pedigreed Holstein cows does not suffer in hot weather resulting in optimum productivity utilization in summers.
- ✓ May be self-sufficient if enery is produced from biogas produced from farmyard manure.

- ✓ The structure of the farm is designed in a way to allow natural flow of water resulting in minimum human efforts for cleanliness.
- ✓ There is limited need for extra lighting sources at the farm house in day light due to semi closed nature of the housing system.
- ✓ Electricity cost is markedly less than traditional fan barns.
- ✓ The animals should be dehorned, as they are easier to handle in barns, causing less accidental injuries to other animals and attendants.

- Feeding: The lactating Holstein cows are fed 1 kg of Dry Matter (DM) feed per 1.75 litres of milk produced. The ration allows nutritionally balanced feed in 24 hours. It includes dry matter derived from 60% roughages and 40% concentrate containing 17-18% Crude Protein (CP) and energy to increase animal productivity. This prefeasibility study suggests to offer cows with commercially prepared and formulated TMR to sustain the protein and energy levels required to maintain milk yields.
- Watering: Supply of clean drinking water in clean troughs i.e. 50 to 80 litres of water consumption per adult animal per day, round the clock, maintains milk production capacity of the animal.
- Breeding: Efficient and timely Artificial Insemination (AI) of good genetic worth preferably sexed-semen is a key to success in good breeding programs of herd.
- Calving: Pregnant animals should be given special attention in third trimester of pregnancy and should be separated in pregnancy pens. Veterinary assistance should be sought out in case of emergency. Calf care and heifer management is very important in maintaining dairy farm production. The farmer will raise female calves as future breeding heifers which will replace culled dairy animals. The first generation (F1) will be capable of breeding at age of 14 months; hence producing milk at about 23-24 months of age.
- Lactation Period: lactation period is the period during which animals yield milk after calving. The animals producing milk are called 'Wet Animals'. Generally standard lactation and dry period are taken as 305± 5 and 60 days respectively. This pre-feasibility study has taken 80% of the total number of animals as wet cows. The calving interval (interval between two calving) in Holstein cows is 12-14 months. The average daily milk yield of a cow is 35 litres.
- Udder health: Hygienic and clean milking three times a day (morning/afternoon/ evening) lowers chances of mastitis as udder health and hygiene is most important in dairy animals.

- Proper storage of milk should be done preferably at temperature of 4 ^{0}C.
- Disease management: Vaccination & medicine is required to prevent any disease outbreak in the dairy herd. Each animal will be vaccinated before entering the farm. Procurement of vvaccines from reliable sources should be sought.

  Following is a tentative vaccination schedule;

Table 1: Tentative Vaccination Schedule

Disease	Vaccine	Time for vaccination	Dose/ Administration
Foot & Mouth Disease	FMD	February/March & September/October	5 ml sub cut.
Black Quarter	BQ	March/April	5 ml sub cut.
Haemorrhagic Septicemia	HS	May/June & November/December	5 ml / 300 kg body wt. sub cut.
Anthrax	Anthrax	August	1 ml sub cut.
Brucella Abortus	BA	Once in life for heifers (4-12 months of age)	1ml sub cut.

- Record keeping: The animals should be ear-tagged with essential information of animal such as date of birth/ purchase. The records for daily milk yields, number of lactations, vaccination, body weight, Artificial Inseminations (AI), calving, vaccination and medication etc. are also important.
- Culling: Good productive animals should be selected and uneconomical animals should be culled. Low yielding culled animals may be sold in the regular livestock market. On an average, cows are productive for 7 to 8 years. The culling rate of 20% per annum in the total herd is desirable for a successful dairy farm. However, all cows above 7 years of age should be culled.
- Regular technical assistance from dairy and livestock professionals, experts and technical consultants is advised.

Returns on the proposed business and its profitability are highly dependent on the efficiency of above mentioned factors. In case a dairy farm is not able to attain its target milk production or implement effective husbandry practices, it will not be able to cover the potential market and recover payments; hence, cost of operating the business will increase.

5.2 Installed and Operational Capacities

In the proposed study, initially, 75 cows are recommended to obtain optimum milk production in first year of project. It is assumed that on average, 80 % of total animals present at farm would be 'Wet' i.e. in lactation on farm. The female calves born at farm will be added to the milking herd through heifer management; hence total number of animals to be 952, among which, 392 animals will be in lactation, 318 female calves and 242 heifers in 10th year of project. The male calves will be sold in open market within two weeks of age. Average milk production of cows during one lactation period is estimated to be 11,000-12,000 litres. The dairy farm will have the capacity to generate revenues at 75% capacity utilization of total milk produced at farm i.e. 574,875 litres in its first year of operation.

The annual mortality rate is assumed to be 5% for new born calves, 1% for heifers and 1% for adult cows. The project will attain 90% of its installed capacity till 10th year of operations.

6. CRITICAL FACTORS

The most critical considerations or factors for success of the project are:

- Background knowledge and related experience of the entrepreneur in dairy farm operations.
- Application of good husbandry practices such as housing, breeding, feeding, watering, vaccination and medication to ensure animal's health and disease-free environment.
- Awareness about supply and demand of milk in the market as demand of milk is relatively higher in summer as compared to winter season.
- Efficient marketing of the project and bulk supply to wholesalers.

Commercial dairy farmers depend on land, labor and animals as the major resources. Modern dairy farming practices emphasize increased yet focused use of capital and management which harness all available resources for productive and profitable unit. The judicial use of resources to achieve clearly defined goals is the key success factor in modern dairy farming.

Low yield animals are uneconomical to keep; hence they should be culled efficiently as early as possible. Overall genetic improvement of dairy animals is necessary for improved milk production on farm hence, milking records of all lactating cows at equal intervals is very important.

The selection of best sources for continuous supply of sexed-semen from elite bulls for well-organized Artificial Insemination (AI) program is an essential part of herd improvement and planning a replacement heifer program at farm.

Feeding dairy animals on nutritionally balanced ration having high energy forages and good quality protein sources along with vitamin supplements should be adopted. Total Mixed Ration (TMR) serves best example of balanced ration for all types of phases in a cow's productive life.

The important farm management practices include feeding for growth, lactation, pregnancy or maintenance, hygienic milk production, comfortable and ventilated barns, temperature and relative humidity level maintenance in sheds during hot and humid summer months, timely detection of heat within 60-90 days after calving and AI service with sexed-semen. If animals are bred within the 60-90 days of calving, overall performance of herd can be improved.

Timely vaccination against mentioned diseases such as Rinder pest, Black Quarter, Foot and Mouth Disease, Brucellosis along with the prevention of mastitis and parasitic control will also improve overall performance of the dairy herd.

7. GEOGRAPHICAL POTENTIAL FOR INVESTMENT

Commercial dairy farming is a viable business proposition for peri-urban areas of Pakistan. There is higher demand for milk in peri urban areas around the major cities such as Karachi, Hyderabad, Sukkar Lahore, Faisalabad, Sheikhupura, Bahawalpur, Multan, Jhang, Sahiwal, Pakpattan, Okara, Jehlum, Peshawar, Charsadda, D.I. Khan, Quetta, etc. across the country; hence, the said project offers good investment opportunities for potential investment in all provinces of country. The peri-urban areas around major cities with abundant water and availability of fodder make a better choice for farming; provided there is ready access to livestock related marketing and veterinary services.

8. POTENTIAL TARGET CUSTOMERS / MARKETS

This pre-feasibility study suggests that milk will be sold at the farm gate directly to the consumers or milk contractors. It can also be sold directly to milk centers in the urban market or may be pasteurized at farm by the farmer and delivered to the nearest city, however it involves extra investment which is not included in this prefeasibility study. Milk contractors collect milk from farmers and deliver it to the consumer's doorstep. Milk collection networks of different processing companies also collect milk directly from the farm and transport it to the processing facilities.

Although metropolitan cities like Lahore, Sialkot, Kasur, Gujranwala, Bahawalpur, Okara, Quetta, D. I. Khan etc are considered major markets for the sale of milk, yet commercial dairy farming in peri-urban locations takes place around all major cities.

Following are some of the target clients for a dairy farmer;

- Domestic consumers
- Milk contractors and suppliers
- Milk collection and processing companies
- Dairy products manufacturing companies
- On-farm Processing by farmer (however, it requires minimum viable capacity of 40,000 liters of milk daily)

The cost of production per litre of raw milk should be lower than its sale price so that the farmer finds it economical. The daily milk intake of Lahore & Karachi is 3 million litres and 5 million litres respectively. The demand for milk increases during summers as consumption of whey (lassi) increases due to hot weather. Yogurt or curd is another popular product. These are high value products however with relatively short shelf life.

Milk processing companies use milk as a raw material to formulate different types of milk i.e. pasteurized milk, UHT treated milk, condensed milk, skim milk & milk powder, etc. Different value added products like ghee, khoya, yogurt, ice cream, butter and cheese are also prepared from raw milk. Processed milk market has increased its share in quality conscious consumers. Processed milk has achieved 4% share in Lahore milk market during the last two decades. Milk supply is increasing at the rate of 4% annually, however demand is increasing at 15% annually.

9. PROJECT COST SUMMARY

9.1 Project Economics

The financial model for this pre-feasibility study indicates estimated revenue of Rs. 80.48 million in first year of the project. The capacity utilization during year one is 75%, which will be increased to 90% as the project proceeds.

The following table shows Internal Rate of Return, payback period and Net Present Value of the proposed venture.

Table 1: Project Economics

Description	Details
Internal Rate of Return (IRR)	34%
Payback Period (Years.)	4.24
Net Present Value (Million Rs.)	133.54

9.2 Project Financing

Following table provides details of equity required and variables related to bank loan;

Table 2: Project Financing

Description	Details
Total Equity (70%)	Rs. 99.0 M
Bank Loan (30%)	Rs. 42.42 M
Markup to the Borrower (% per annum)	26%
Tenure of the Project (Years)	10

9.3 Project Cost

Following fixed and working capital requirements have been identified for operations of the proposed business.

Table 3: Project Cost

Description	Cost (Rs.)
Capital Cost	
Land	11,334,332
Building and Infrastructure	26,536,000
Machinery and Equipment	25,892,000
Cows	74,812,500
Furniture & Fixture	301,100
Office Vehicle	105,000
Office Equipment	80,000
Pre-operating Cost	240,000
Total Capital Cost	**139,300,932**
Working Capital	
Raw Material Inventory	905,407
Cash	1,210,030
Total Working Capital	**2,115,437**
Total Project Cost	**141,416,369**

The proposed pre-feasibility is based on the assumption of 30% debt and 70% equity, however this composition can be changed as per requirements of the investor.

9.4 Space Requirement

Space requirement for the proposed dairy farm is calculated considering requirements for management office, sheds for cows, calves and dry animals, milk chiller rooms, storage, open paddocks etc.

Details of space requirement and cost related to land & building are given below;

Table 4: Space Requirment in Year 1

Description	Unit Area (Sq.ft.)	Est. Area (Sq.ft)	Unit Cost (Rs.)	Total Cost (Rs.)
Shed for Wet Cows	80	6,000	1,500	9,000,000
Open Paddock for Wet Cows	160	12,000	100	1,200,000
Shed for Dry Cows	80	6,000	1,250	7,500,000
Open Paddock for Dry Cows	160	12,000	100	1,200,000
Shed for Calves	40	3,000	1,250	3,750,000
Open Paddock for Calves	80	6,000	100	600,000
Stores (fodder, TMR & machines)		400	2500	1,000,000
Room (chillers, utensils & milk storage)		144	2,500	360,000
Residence (Manager)		120	4,000	480,000
Admin / Accounts Room		120	4,000	480,000
Washroom (Executives)		24	4,000	96,000
Rooms (Workers)		300	2,500	750,000
Washrooms (Workers)		48	2,500	120,000
Total Infrastructure		**46,156**		**26,536,000**

Total investment in building and infrastructure is approximately Rs. 26.54 million. Shed space has been increased with the increase in number of animals in the herd; hence an expansion is suggested in year 6 and 9.

The housing of labor & management staff and room for chiller utensils and milk storage would be constructed on the first floor.

Land is to be purchased as per maximum space requirements of the farm for 10 years. Total land requirement is approximately 4 acres at an average price of Rs. 3 million per acre.

9.5 Machinery & Equipment Requirement

Following farm machinery and equipment are needed to run daily farm operations in year 1;

Table 5: Machinery & Equipment

Description	Quantity (Nos)	Unit Cost (Rs)	Total Cost Year 1 (Rs.)
Calf Feeder (New born calves)	32	4,000	128,000
Calf Cages	5	50,000	250,000
Cooling System: Cone Fans	4	150,000	600,000
Cooling System: Storm Fans	5	300,000	1,500,000
Cooling System Pads (6 Pads/cone fan)	24	3,000	72,000
Water Turbine (6" bore, 15HP Motor)	1	500,000	500,000
Milking Line (Buckets)	3	200,000	600,000
Transformer (100 KVA) Incl. price, wire, connection, installation	1	2,005,000	2,005,000
Generator (50 KVA) Hyundai	1	1,500, 000	1,500,000
Solar Energy System (60KW) on-grid	1	9,000,000	9,000,000
Solar Back up System (20KW)	1	8,000,000	8,000,000
Milk Chiller (3000 litres)	1	1,400,000	1,400,000
Milk Testing Machines	1	40,000	40,000
Velocity Meter	1	10,000	10,000
Surgery Kit	1	75,000	75,000
AI Equipment	1	50,000	50,000
Dystocia Kit	1	50,000	50,000
Energy Savers-Farm (50 W)	12	1,000	12,000
Miscellaneous	1	100,000	100,000
Total Machinery & Equipment			**25,892,000**

It is assumed that electricity infrastructure such as transformer of 100 KVA power along with connection, wires and installations are included. A 'Solar on Grid System' of 60KW with Net Metering facility is suggested in this pre-feasibility study. Cost of this system may vary according to selection of equipment (e.g., type of solar panel, type of batteries for backup or customized mounting structure). The solar energy system will produce an average 4 KWH /day which may vary due to

inappropriate system design, selection of solar panels, inverter and climate conditions.

In case of load shedding, solar backup system including 24 dry cell batteries with sufficient storage capacity (1600Ah, 2V) will operate to generate 20KW load (for essential equipment such s chiller, cooling system etc.) for 3 hours. Furthermore, a diesel generator set (50 KVA) is also suggested for emergency such as in the event of long duration load shedding, power break down or weather conditions affecting the efficiency of solar system.

9.6 Office Vehicle

Following office vehicle is needed for the farm;

Table 6: Office Vehicle

Description	No.	Cost / Unit (Rs.)	Total Cost (Rs.)
Motor Cycle	1	100,000	100,000
Registration fee*			5,000
Total cost			**105,000**

**5 % of office vehicles cost*

It is assumed that Rs. 20,000 per month will be spent on running of this vehicle in a radius of 50 km around farm premises i.e. Rs. 240,000 per annum. However, an additional expense of Rs. 25,000 per month will be required to cover long distance travelling expenses to carry out essential operations of farm, translating to an expense of Rs. 300,000 per annum.

9.7 Furniture & Fixtures Requirement

Details of furniture and fixtures required for the project are given below;

Table 7: Furniture & Fixture

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Tables	2	12,000	24,000
Chairs	4	5,000	20,000
Fans (75 W)	4	7,500	30,000
Electric Wiring & Lighting	Lump Sum	100,000	100,000
Energy Savers	6	350	2,100
Miscellaneous Furniture for Workers	1	125,000	125,000
Total Furniture & Fixtures			**301,100**

9.8 Office Equipment Requirement

Following office equipment will be required for the dairy farm;

Table 8: Office Equipment

Description	Quantity	Unit Cost (Rs.)	Total Cost (Rs.)
Computer	1	60,000	60,000
Cell Phone	1	20,000	20,000
Total			**80,000**

9.9 Human Resource Requirement

In order to run operations of the farm smoothly, following human resources along with number of employees and monthly salary are recommended;

Table 9: Human Resource Requirment in Year 1

Description	No. of Employees	Monthly Salary (Rs.)*	Total Salary Year 1 (Rs)
Farm Supervisor	1	40,000	480,000
Farm Labour (Cows)	3	30,000	1,080,000
Farm Labour (Calves)	1	30,000	360,000
Security Guard	1	30,000	360,000
Total	**6**		**2,280,000**

*Note: The annual growth in salary is estimated to be 10% per annum.

It is recommended that the farm supervisor be categorized as 'NVQF Certificate Level-3 OR Level-4' having comprehensive practical and theoretical knowledge within dairy farming with the responsibility for supervision of various critical activities at farm related to improvement of farm productivity. He should also provide inputs to review and develop targets for sub-ordinate farm workers. (For further details on qualifications, please visit Pakistan National Vocational Qualifications Framework (NVQF), National Vocational and Technical Training Commission (NAVTTC), www.navttc.org).

9.10 Raw material Requirement

Following tables show raw material requirement for individual animal at different stages on the proposed dairy farm during first year of project;

Table 10: Daily Feeding Requirements (CP 17.5%) for One Wet Cow*

Description	Daily Feed Allowance (Kgs)	Rate Rs./ Kg.	Feed Cost (Rs./Day)	Milk Days (No.)	Total Cost (Rs./ Cow)
Total Mixed Ration (TMR)	21 (@ 3 % of Live BW)	74	1,554	305	473,970

**Average adult Live Body Weight (BW) of cow is assumed to be 700 kg. One lactation period of cow is estimated to be 305 +_ 5 days and dry period is 60 days.*

Table 11: Daily Feeding Requirements (CP 12%) for One Dry Cow*

Description	Daily Feed Allowance (Kgs)	Rate Rs./ Kg.	Feed Cost (Rs./Day)	Dry Days (No.)	Total Cost (Rs./ Cow)
Total Mixed Ration (TMR)	17.5 (@ 2.5 % of Live BW)	47	822.5	60	49,350

**Average adult Live Body Weight (BW) of cow is assumed to be 700 kg. One lactation period of cow is estimated to be 305 +_ 5 days and dry period is 60 days.*

Table12: Daily Feeding Requirements of One Female Calf (birth till One Year age)**

Description	Daily Feed Allowance	Rate Rs./ Kg	Feeding Days (No.)	Feed Cost (Rs./Day)	Total Cost in Year 1 (Rs./ Calf)
Milk Replacer (1-90 days age)	6 litres	80	90	480	43,200
TMR (4-12 months age)	8.25 Kgs (3 % of Live Body Wt.)	59.2	275	488.4	134,310
Total					**177,510**

***Average birth weight of the new born calf is 35-40 kgs. At the time of weaning at three months of age, it is 150 kgs which increases up to 400 kgs at the age of one year.*

Table13: Daily Feeding Requirements of One Heifer (One Year+ Age)***

Description	Feed Allowance (Kgs/ Day)	Rate (Rs./ Kg)	Days (No.)	Feed Cost (Rs./ Day)	Total Cost in (Rs./ Heifer)
TMR	16.5 (@3% of Live BW)	59.2	365	977.6	356,833

****Average Live body weight (BW) of heifer, older than one year is assumed to be 550 kgs.*

When planning on herd basis, following table shows the maximum expenses on nutritionally balanced Total Mixed Ration (TMR). The Crude Protein (CP) content of feed would vary depending upon wet and dry status of cows as well as live body weights.

Table14: Total Cost of Feeding (Year 1 & 2)

Description	Total Cost (Rs.)*****			
	No. of Animals	Year 1	No. of Animals	Year 2
Lactating Cows (80% of herd)	60	34,032,600	59	36,811,929
Dry Cows (20% of herd)	14	4,202,975	14	4,623,273
Female Calves Younger than 1 Yr (3 months) age)	50	2,154,600	44	2,222,867
Female Calves Younger than 1 Yr (4-12 months) age)		6,698,711		7,368,582
Heifers-Female calves older than 1 Yr age	0	0	47	18,582,225
Total	**124**	**47,088,886**	**164**	**69,608,876**

*****Prices are rounded off to near decimal point for 365 days of feeding. The number of animals are calculated after mortality count which is 5% in new born, 1 % in female calves older than one year and 1% in adult cows.*

Table15: Total Cost of Vaccination, Medication and AI in Year 1

Description	Rs./ Animal/ Year	Total Cost in Year 1 (Rs.)
Vaccination and Medication	1,000	121,631
Artificial Insemination (AI)	10,000	742,500
Total	**11,000**	**864,131**

9.11 Utilities and other costs

An essential cost to be borne by the project is the cost of electricity. The electricity expenses of the dairy farm will be met by solar energy system with back up system. One-time cost of transformer (100 KVA) including price, wires, connection and installation is Rs. 2,005,000 in first year of operation. The direct electricity cost is estimated to be around Rs. 18,000 per month during first year of operation.

It is further assumed that within the cooling system, the cone fans and storm fans with water motor will operate for 12 hours per day. The milk chiller and energy savers will operate for 12 hours per day (average) throughout the year. The water turbine will operate for 2 hours daily (average). The milking line with buckets will operate for 6 hours daily (average) to carry out three milking sessions daily.

The project is supported with solar energy system of 60KW, with a back up system of 20 KW. In addition, a generator of 40 KW is also installed for back up support for smooth running of farm operations through out the year

Machinery maintenance expense is assumed to be Rs. 20,000 per month or Rs 240,000 in year one.

Monthly expenses related to long distance official travelling, communication and office vehicle running are Rs. 25,000, 15,000 and 20,000 respectively.

Similarly, monthly expenses related to business promotion and office routine tasks are Rs. 13,500 and Rs. 900 respectively. The general administration expenses are Rs. 30,000 per month. Professional fees related to any legal, audit or technical consultation is assumed to be Rs. 3,500 per month.

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9.12 Revenue Generation

Based on capacity utilization of 75% for revenues from milk production from 75 cows, sales revenue during the first year of operations are shown in the following table. However, capacity has been increased at 10% for a maximum utilization of 90% till year 10.

Table16: Revenue Generation – Year 1

Description	Unit	Annual Production	Price (Rs./Unit)	Total Revenue in Year 1 (Rs.)
Sale of Milk	No. of Liters	574,875	140*	80,482,500
Sale of male calves	No.	19 to 20	10,000	203,063
Total				**80,685,563**

The annual culling rate is 20% applicable to all adult cows and heifers below 7 years of age. However, there will be zero culling of adult lactating cows during first and second year of the farm operation.

10. CONTACT DETAILS

In order to facilitate potential investors, contact details of private sector Service Providers relevant to the proposed project are given hereunder.

10.1 Machinery Suppliers

Happy Cattle Dairy Farm Pvt. Ltd. Address: C-2 Building, 3rd Floor, D-Block Commercial Market, Valencia Town, Lahore. Ph: 0307-6664300, 0300-5553699
Profarm Pakistan Pvt. Ltd. Address: Plot No. 52, Block R-1, M. A. Johar Town, Lahore. Ph: 042 35291992-4 (3 lines) Customer Service (24/7): 0323-8888211
Dairy Solution Pvt. Ltd. Address: 177/B, Johar Town, Lahore. Ph: 042-35169450 +92-42-35169451 Fax: 042-35169449
Cattle Kit Pvt. Ltd. Pakistan Address: 104-A, Punjab Govt. Servants Housing Society, Mohlan Waal, Lahore Ph: 042-35978500-3 Email: Info@cattlekit.com.pk, Web: www.cattlekit.com.pk

10.2 Raw Material Suppliers

Feed Suppliers
Hi-Tech Feeds Pvt. Ltd. (for TMR) Address: 1-A, Shadman Chowk, Jail Road, Lahore. Ph: 042-37564503
Panjnad Feeds (TMR Supplier) Address: Head Office: 171 Shadman II, Lahore. Ph: 042-35961021-28
Maxim Agri Address: 7-B, Aziz Ave, Gulberg V, Lahore Ph: 0323-4007000
ICI Corporate Office Address: 63-Mozang Road, Lahore UAN: 042-111-100-200
Shareef Feeds Pvt. Ltd. Address: 7-A, New Muslim Town, Lahore. Ph: 04235758233-5
Dairy Lac Pvt. Ltd. Head Office: Plot No. 317, Road No. 5, Landhi Cattle Colony, Bin Qasim Town, Karachi Feed Mill: Chak 112, Wangay Wala Pull, Jaranwala, Faisalabad. Ph: 0334-3433333, 0300-8274874

National Feeds Pvt. Ltd. Address: 171- Shadman – II Lahore. Ph: 042 37551405-8
AI / Semen Suppliers
Ghazi Brothers Address: B-35 KDA Scheme No 1, Mian Muhammad Shah Road, Karachi. Ph: 021-4543579
World Wire Sires by Maxim International Pvt. Ltd. Address: 69-A, Sector-XX, Khayaban-e-Iqbal, DHA, Lahore. Ph: 042-35693993
DRDF/ Prime Genetics Pvt. Ltd. DHA Phase VIII, Lahore. Ph: 0344-4472155
Matra Asia Pvt. Ltd. Address: 4th Floor, Plazo 100, Block B-II, MM Alam Road, Gulberg III, Lahore. Ph: 042-35790031
Milk Contractors/ Processors
Engro Foods Pvt. Limited Address: 5th, 6th Floor, Harbor Front Building Marine Drive, Block 4, Clifton, Karachi. Ph: +92 21 3529-6000 (10 lines)
Nestle Pakistan Address: 308, Upper Mall, Lahore, Ph: 042-35757082-95, UAN +92-42-111637853
Millac Foods Address: 309-310, 3rd Floor, Beaumont Plaza, Beaumont Road, Civil Lines Quarters, Karachi. UAN: 092-111-MILLAC (645-522)
Adams Milk Foods Pvt. Ltd. Address: 128/1-M, Quaid-e-Azam Industrial Estate, Kot Lakpat, Lahore Ph: 042-35117104
Accha Foods Pvt. Ltd. Address: C-1, Main Boulevard, Green Forts 2, Canal Road, Lahore Ph: 042-35451076
Holstein Cow Suppliers
The pedigreed Holstein breed cows with average daily milk production capacity of 35 liters of EU and USA origin may be found from following sources; 1. Holstein Association USA (www.holsteinusa.com) 2. United States Livestock Exporters Association (USLEA) *(www.livestockexportersusadotcom.wordpress.com)*
Holstein Cow Local Suppliers
Happy Cattle Dairy Farm Pvt. Ltd. Address: C-2 Building, 3rd Floor, Block-D, Commercial Market, Valencia Town Lahore.

Ph: 0307-6664300, 0300-5553699

Bovi Tech
Address: Property # W-95-R-16/1, Sheikh Abdul Qadir Jillani (Outfall) Rd, Lahore.
Ph: 0310-0508485

HRM Dairies Pvt. Ltd.
Address: HRM Dairies, Arifwala, Pakpattan
Ph: 0313-5220980

10.3 Technical Experts / Consultants

Dr. Sami Ullah.
Farm Manger
Infinite Dairy Farm, Sargodha.
Ph: 0323-4360006, 0300-4360453

Dr. Nasir Javed
Consultant
Lead Foundation, West wood Colony, Lahore
Ph: 0300-8432595

Dr. Sattar
Farm manager
JK Dairies, RYK
Ph: 0300-8416682

Mr. Waqas Khan
Pak Dairies, Sargodha
Ph: 0303-4444909

Dr. Abid
Mk dairies, Kassowal, Chichawatni
Ph: 0345-7634947, 0303-7431450

10.4 Solar Solution Companies

Beams Energy
Address: Plot No. 1508, Murad Colony, Samundri Road, Coca Cola Factory, Faisalabad
Ph: 03478666861

Solaris Engineering:
Address: Plot No. 164, Block D2, Phase 1, Johor Town, Lahore
Ph: 0312 6606309

Zi Solar
Address: Mezanian Floor, Block D, FTC, Shahrah-e-Faisal, Karachi Cantt., Karachi
Ph: 03459440202

11. USEFUL WEB LINKS

Links of Federal & Provincial Government, Semi Government and other (sector & Cluster based) Development organizations are given under to get benefit from the services offered.

Table17: Useful Web Links

Small & Medium Enterprises Development Authority (SMEDA)	www.smeda.org.pk
Government of Pakistan	www.pakistan.gov.pk
Ministry of Industries & Production	www.moip.gov.pk
Ministry of National Food Security & Research	www.mnfsr.gov.pk
Government of Punjab	www.punjab.gov.pk
Government of Sindh	www.sindh.gov.pk
Government of Khyber Pakhtunkhwa	www.khyberpakhtunkhwa.gov.pk
Government of Balochistan	www.balochistan.gov.pk
Government of Gilgit Baltistan	www.gilgitbaltistan.gov.pk
Government of Azad Jamu Kashmir	www.ajk.gov.pk
Trade Development Authority of Pakistan (TDAP)	www.tdap.gov.pk
Security Commission of Pakistan (SECP)	www.secp.gov.pk
Federation of Pakistan Chambers of Commerce and Industry (FPCCI)	www.fpcci.com.pk
State Bank of Pakistan (SBP)	www.sbp.org.pk
Punjab Small Industries Corporation	www.psic.gop.pk
Sindh Small Industries Corporation	www.ssic.gos.pk
Punjab Board of Investment & Trade (PBIT)	www.pbit.gop.pk
Sindh Board of Investment (SBI)	www.sbi.gos.pk
Pakistan Agricultural Research Council (PARC)	www.parc.gov.pk
Balochistan Agricultural Research Centre (BARC)	www.parc.gov.pk
Southern-zone Agricultural Research Centre (SARC)	www.parc.gov.pk
Arid Zone Research Institute (AZRI)	www.parc.gov.pk
Punjab Livestock & Dairy Development Board	www.plddb.pk
University of Agriculture, Faisalabad,	www.uaf.edu.pk
Lasbela University of Agriculture, Water & Marine Sciences, Lasbela	www.luawms.edu.pk
Sindh Agriculture University, Tondojam	www.sau.edu.pk
Gomal College of Veterinary Sciences, Dera Ismail Khan	www.gu.edu.pk
KPK Agricultural University, Peshawar	www.aup.edu.pk
Pir Mehr Ali Shah Arid Agricultural University, Rawalpindi	www.uaar.edu.pk

University College of Veterinary & Animal Sciences, Islamia University Bahawalpur (IUB),	www.iub.edu.pk
University of Veterinary & Animal Sciences (UVAS), Lahore	www.uvas.edu.pk
Bahauddin Zakariya University (BZU), Multan	www.bzu.edu.pk
Animal Husbandry In-Service Training Institute (AHITI), Peshawar	
Veterinary Research Institute (VRI), Punjab	
Agribusiness Support Fund (ASF), Lahore,	www.asf.org.pk
Livestock and Dairy Development Department, Punjab	www.livestockpunjab.gov.pk
Livestock & Fisheries Department, Sindh	www.sindh.gov.pk
Agriculture & Livestock Department, KPK	www.khyberpakhtunkhwa.gov.pk
Livestock & Dairy Development, Balochistan	www.balochistan.gov.pk

12. ANNEXURES

12.1 Income Statement

Statement Summaries — **SMEDA**

Income Statement

Rs. in actuals

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue	80,685,563	98,872,099	164,316,001	190,415,104	282,639,283	339,863,874	482,427,291	678,561,873	917,343,511	1,297,238,290
Cost of goods sold	50,337,678	74,127,890	97,073,870	127,034,459	172,878,044	213,117,107	304,337,066	409,176,538	571,817,436	773,546,375
Gross Profit	30,347,884	24,744,209	67,242,131	63,380,645	109,761,239	126,746,767	178,090,224	269,385,335	345,526,076	523,691,915
General administration & selling expenses										
Administration expense	360,000	395,050	433,513	475,720	522,037	572,863	628,638	689,843	757,007	830,710
Rental expense	-	-	-	-	-	-	-	-	-	-
Utilities expense	-	-	-	-	-	-	-	-	-	-
Travelling & Comm. expense (phone, fax, etc.)	480,000	528,000	580,800	638,880	702,768	773,045	850,349	935,384	1,028,923	1,131,815
Office vehicles running expense	240,000	264,000	290,400	319,440	351,384	386,522	425,175	467,692	514,461	565,907
Office expenses (stationary, etc.)	10,800	11,852	13,005	14,272	15,661	17,186	18,859	20,695	22,710	24,921
Promotional expense	161,371	197,744	328,632	380,830	565,279	679,728	964,855	1,357,124	1,834,687	2,594,477
Insurance expense	-	-	-	-	-	-	-	-	-	-
Professional fees (legal, audit, etc.)	40,343	49,436	82,158	95,208	141,320	169,932	241,214	339,281	458,672	648,619
Depreciation expense	3,964,610	3,964,610	4,000,910	4,034,185	4,114,711	4,154,973	10,134,378	10,251,301	10,379,917	18,409,243
Amortization expense	48,000	48,000	48,000	48,000	48,000	-	-	-	-	-
Property tax expense	-	-	-	-	-	-	-	-	-	-
Miscellaneous expense	-	-	-	-	-	-	-	-	-	-
Subtotal	5,305,124	5,458,692	5,777,418	6,006,535	6,461,159	6,754,249	13,263,467	14,061,321	14,996,377	24,205,693
Operating Income	25,042,760	19,285,517	61,464,713	57,374,111	103,300,081	119,992,517	164,826,757	255,324,015	330,529,699	499,486,222
Other income	-	-	-	-	-	-	-	-	-	-
Gain / (loss) on sale of assets	-	-	-	-	-	-	-	-	-	-
Earnings Before Interest & Taxes	25,042,760	19,285,517	61,464,713	57,374,111	103,300,081	119,992,517	164,826,757	255,324,015	330,529,699	499,486,222
Interest expense	10,843,184	10,453,000	10,068,494	9,571,199	8,928,030	8,096,199	8,682,393	7,245,014	5,386,004	2,981,682
Earnings Before Tax	14,199,576	8,832,517	51,396,219	47,802,912	94,372,050	111,896,318	156,144,364	248,079,000	325,143,695	496,504,540
Tax	4,199,851	2,321,380	17,218,676	15,961,018	32,260,217	38,393,711	53,880,527	86,057,649	113,030,293	173,006,588
NET PROFIT/(LOSS) AFTER TAX	9,999,725	6,511,137	34,177,543	31,841,893	62,111,833	73,502,608	102,263,837	162,021,351	212,113,403	323,497,952
Balance brought forward		4,999,863	5,755,500	19,966,521	25,904,207	44,008,020	117,510,628	219,774,465	381,795,816	593,909,219
Total profit available for appropriation	9,999,725	11,510,999	39,933,043	51,808,415	88,016,041	117,510,628	219,774,465	381,795,816	593,909,219	917,407,171
Dividend	4,999,863	5,755,500	19,966,521	25,904,207	44,008,020	-	-	-	-	-
Balance carried forward	4,999,863	5,755,500	19,966,521	25,904,207	44,008,020	117,510,628	219,774,465	381,795,816	593,909,219	917,407,171

12.2 Balance Sheet

Statement Summaries — **SMEDA**

Balance Sheet

Rs. in actuals

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Assets											
Current assets											
Cash & Bank	1,210,030	10,334,296	14,284,116	30,361,801	37,628,674	56,979,862	72,865,549	178,675,041	340,387,369	446,952,547	820,389,813
Accounts receivable	-	1,543,500	1,892,160	2,876,158	3,410,302	5,062,038	5,717,391	8,640,718	11,971,222	16,278,456	22,856,011
Finished goods inventory	-	-	-	-	-	-	-	-	-	-	-
Equipment spare part inventory	-	-	-	-	-	-	-	-	-	-	-
Raw material inventory	905,407	1,472,287	2,119,198	3,053,841	4,594,325	6,223,696	9,794,632	14,504,206	22,285,562	33,118,843	-
Pre-paid annual land lease	-	-	-	-	-	-	-	-	-	-	-
Pre-paid building rent	-	-	-	-	-	-	-	-	-	-	-
Pre-paid lease interest	-	-	-	-	-	-	-	-	-	-	-
Pre-paid insurance	-	-	-	-	-	-	-	-	-	-	-
Total Current Assets	2,115,437	13,350,083	18,295,474	36,291,800	45,633,300	68,265,596	88,377,572	201,819,965	374,644,154	496,349,846	843,245,824
Fixed assets											
Land	11,334,332	11,334,332	11,334,332	11,334,332	11,334,332	11,334,332	11,334,332	11,334,332	11,334,332	11,334,332	11,334,332
Building/Infrastructure	26,536,000	25,209,200	23,882,400	22,555,600	21,228,800	19,902,000	56,019,558	52,820,540	49,621,522	96,260,944	90,570,004
Animals	74,812,500	66,957,188	108,188,850	136,035,776	193,904,861	267,474,812	336,895,824	482,607,445	655,975,631	923,144,792	1,249,587,691
Machinery & equipment	25,892,000	23,302,800	21,076,600	18,783,850	16,930,330	14,593,657	52,885,964	47,168,444	41,450,924	89,692,679	77,022,986
Furniture & fixtures	301,100	270,990	240,880	210,770	180,660	150,550	120,440	90,330	60,220	30,110	-
Office vehicles	105,000	94,500	84,000	73,500	63,000	52,500	42,000	31,500	21,000	10,500	-
Office equipment	80,000	72,000	64,000	56,000	48,000	40,000	32,000	24,000	16,000	8,000	-
Total Fixed Assets	139,060,932	127,241,010	164,871,062	189,049,829	243,689,983	313,547,852	457,330,118	594,076,591	758,479,629	1,120,481,357	1,428,515,013
Intangible assets											
Pre-operation costs	240,000	192,000	144,000	96,000	48,000	-	-	-	-	-	-
Legal, licensing, & training costs	-	-	-	-	-	-	-	-	-	-	-
Total Intangible Assets	240,000	192,000	144,000	96,000	48,000	-	-	-	-	-	-
TOTAL ASSETS	141,416,369	140,783,092	183,310,536	225,437,628	289,371,283	381,813,448	545,707,690	795,896,555	1,133,123,784	1,616,831,203	2,271,760,837
Liabilities & Shareholders' Equity											
Current liabilities											
Accounts payable	-	3,870,319	5,721,277	7,485,741	9,805,241	13,409,424	16,511,295	23,624,847	31,800,060	44,421,449	60,011,087
Export re-finance facility	-	-	-	-	-	-	-	-	-	-	-
Short term debt	-	-	-	-	-	-	-	-	-	-	-
Other liabilities	-	-	-	-	-	-	-	-	-	-	-
Total Current Liabilities	-	3,870,319	5,721,277	7,485,741	9,805,241	13,409,424	16,511,295	23,624,847	31,800,060	44,421,449	60,011,087
Other liabilities											
Lease payable	-	-	-	-	-	-	-	-	-	-	-
Deferred tax	-	-	-	-	-	-	-	-	-	-	-
Long term debt	42,424,911	40,776,764	39,465,951	37,770,631	35,578,016	32,742,233	35,535,528	30,635,384	24,297,862	16,101,329	5,500,474
Total Long Term Liabilities	42,424,911	40,776,764	39,465,951	37,770,631	35,578,016	32,742,233	35,535,528	30,635,384	24,297,862	16,101,329	5,500,474
Shareholders' equity											
Paid-up capital	98,991,459	98,991,459	98,991,459	98,991,459	98,991,459	98,991,459	114,066,915	114,066,915	114,066,915	114,066,915	114,066,915
Gain / Loss on Net value of Animals	-	(7,855,313)	33,376,350	61,223,276	119,092,361	192,662,312	262,083,324	407,794,945	581,163,131	848,332,292	1,174,775,191
Retained earnings	-	4,999,863	5,755,500	19,966,521	25,904,207	44,008,020	117,510,628	219,774,465	381,795,816	593,909,219	917,407,171
Total Equity	98,991,459	96,136,009	138,123,308	180,181,256	243,988,027	335,661,791	493,660,867	741,636,324	1,077,025,862	1,556,308,425	2,206,249,276
TOTAL CAPITAL AND LIABILITI	141,416,369	140,783,092	183,310,536	225,437,628	289,371,283	381,813,448	545,707,690	795,896,555	1,133,123,784	1,616,831,203	2,271,760,837

Note: Total assets value will differ from project cost due to first installment of leases paid at the start of year 0

12.3 Cash Flow Statement

Statement Summaries **SMEDA**

Cash Flow Statement

Rs. in actuals

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Operating activities											
Net profit	-	9,999,725	6,511,137	34,177,543	31,841,893	62,111,833	73,502,608	102,263,837	162,021,351	212,113,403	323,497,952
Add: depreciation expense	-	3,964,610	3,964,610	4,000,910	4,034,185	4,114,711	4,154,973	10,134,378	10,251,301	10,379,917	18,409,243
amortization expense	-	48,000	48,000	48,000	48,000	48,000	-	-	-	-	-
Deferred income tax	-	-	-	-	-	-	-	-	-	-	-
Accounts receivable	-	(1,543,500)	(348,660)	(983,998)	(534,144)	(1,651,736)	(655,353)	(2,923,327)	(3,330,505)	(4,307,234)	(6,577,555)
Finished good inventory	-	-	-	-	-	-	-	-	-	-	-
Equipment inventory	-	-	-	-	-	-	-	-	-	-	-
Raw material inventory	(905,407)	(566,880)	(646,912)	(934,642)	(1,540,484)	(1,629,371)	(3,570,936)	(4,709,574)	(7,781,356)	(10,833,281)	33,118,843
Pre-paid building rent	-	-	-	-	-	-	-	-	-	-	-
Pre-paid lease interest	-	-	-	-	-	-	-	-	-	-	-
Advance insurance premium	-	-	-	-	-	-	-	-	-	-	-
Accounts payable	-	3,870,319	1,850,958	1,764,464	2,319,500	3,604,183	3,101,872	7,113,551	8,175,213	12,621,389	15,589,638
Other liabilities	-	-	-	-	-	-	-	-	-	-	-
Cash provided by operations	(905,407)	15,772,275	11,379,134	38,072,276	36,168,950	66,597,619	76,533,164	111,878,866	169,336,004	219,974,194	384,038,120
Financing activities											
Change in long term debt	42,424,911	(1,648,146)	(1,310,814)	(1,695,320)	(2,192,615)	(2,835,783)	2,793,295	(4,900,144)	(6,337,522)	(8,196,533)	(10,600,855)
Change in short term debt	-	-	-	-	-	-	-	-	-	-	-
Change in export re-finance facility	-	-	-	-	-	-	-	-	-	-	-
Add: land lease expense	-	-	-	-	-	-	-	-	-	-	-
Land lease payment	-	-	-	-	-	-	-	-	-	-	-
Change in lease financing	-	-	-	-	-	-	-	-	-	-	-
Issuance of shares	98,991,459	-	-	-	-	-	15,075,456	-	-	-	-
Purchase of (treasury) shares	-	-	-	-	-	-	-	-	-	-	-
Cash provided by / (used for) financing	141,416,369	(1,648,146)	(1,310,814)	(1,695,320)	(2,192,615)	(2,835,783)	17,868,751	(4,900,144)	(6,337,522)	(8,196,533)	(10,600,855)
Investing activities											
Capital expenditure	(139,300,932)	-	(363,000)	(332,750)	(805,255)	(402,628)	(78,516,228)	(1,169,230)	(1,286,153)	(105,212,483)	-
Acquisitions	-	-	-	-	-	-	-	-	-	-	-
Cash (used for) / provided by investing	(139,300,932)	-	(363,000)	(332,750)	(805,255)	(402,628)	(78,516,228)	(1,169,230)	(1,286,153)	(105,212,483)	-
NET CASH	1,210,030	14,124,129	9,705,320	36,044,206	33,171,080	63,359,209	15,885,687	105,809,492	161,712,329	106,565,178	373,437,266
Cash balance brought forward		1,210,030	10,334,296	14,284,116	30,361,801	37,628,674	56,979,862	72,865,549	178,675,041	340,387,369	446,952,547
Cash available for appropriation	1,210,030	15,334,159	20,039,616	50,328,322	63,532,881	100,987,882	72,865,549	178,675,041	340,387,369	446,952,547	820,389,813
Dividend	-	4,999,863	5,755,500	19,966,521	25,904,207	44,008,020	-	-	-	-	-
Cash carried forward	1,210,030	10,334,296	14,284,116	30,361,801	37,628,674	56,979,862	72,865,549	178,675,041	340,387,369	446,952,547	820,389,813

13. KEY ASSUMPTIONS

13.1 Operating Cost Assumptions

Description	Unit	Details
Machinery Maintenance	Rs./ Month	20,000
Office vehicle running expenses	Rs./ Month	20,000
Total Administration Expense	Rs./ Month	30,000
Travelling Expense	Rs./ Month	25,000
Office Expenses (entertainment, janitorial, stationery etc.)	Rs./ Month	900
Communication Expenses	Rs./Month	15,000
Promotional Expenses	Rs./ Month	13,500
Professional Fee	Rs./ Month	3,500

13.2 Production Cost Assumptions

Description	Unit	Details
Annual Installed Capacity	No. of Cows	75
Initial Capacity Utilization	%	75
Maximum Production Capacity Utilization	%	90
Total Milk Production (One Lactation Cycle)	Litres/ Cow	12,000
Birth Ratio of Female: Male Calves	Ratio	70:30
Avg. Lactation Period (Individual Cow)	No. of Days	305±5
Avg. Dry Period (Individual Cow)	No. of Days	60
Purchase Price of Pregnant Cow (As of June 2023)	Rs./ Cow	997,500
Cost of Artificial Insemination (AI)	Rs/Cow/ Yr.	20,000
Cost of Vaccination & Medication	Rs./Animal/Yr.	1,000
Mortality- New Born Calves	% of Total Calves/ Yr	5
Mortality - Adult Cows	% of Total Cows/Yr.	1
Mortality- Heifers (Age 1 Year+)	% of Total Heifers/ Yr.	1
Shed Space per Cow	Sq. ft. per Cow	80
Open Paddock Space per Cow	Sq. ft. per Cow	160

13.3 Revenue Assumptions

Description	Unit	Details
Total Milk Production on Farm	No. of Liters/ Yr	574,875
Sale Price of Milk (Farm Gate)	Rs./ Litre	140
Sale Price Growth Rate	% per Annum	10
Capacity Utilization	%	75
Maximum Capacity	%	90

13.4 Financial Assumptions

Description	Unit	Details
Debt: Equity Ratio	Ratio	70:30
Interest Rate	% per Annum	12
Debt Tenure	Years	10

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