

CLUSTER PROFILE

DAIRY SECTOR As A POTENTIAL INVESTMENT SECTOR OF BALOCHISTAN



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1 DESCRIPTION OF CLUSTER

1.1 Introduction, History & Background

The domestication of animals during the Neolithic Revolution led to humans consuming the milk of other mammals. This practice developed independently in different regions, starting as early as 9000-7000 BC in Mesopotamia and ending around 3500-3000 BC in the Americas. The domestication of cattle, sheep, and goats occurred in Southwest Asia, with dairy farming beginning later in the fourth millennium BC alongside the use of animals for labor and other secondary products. Recent findings contradict the belief that dairying started later, indicating its practice in Southwest Asia by at least the seventh millennium BC.

Domestic dairy animals spread from Southwest Asia to Europe and South Asia, with Central European and British farmers being the first to milk their animals. Pastoral and nomadic economies developed as European farmers moved into the Pontic-Caspian steppe. African cattle may have been domesticated independently, while camels were used as dairy animals in North Africa and the Arabian Peninsula. Milk and dairy products were not commonly consumed in East and Southeast Asia, the Americas, and Australia until European colonialism introduced these practices in the last 500 years.

Balochistan is Pakistan's largest province, accounting for approximately 44% of the country's total geographical area. The majority of the land is rangeland, with only 5% arable. The livestock industry is vital, with the province housing roughly 20% of the national stock. However, the province's economy lags far behind the rest of the country due to a lack of manufacturing and underdeveloped infrastructure. Nature has blessed this province with a diverse animal genetic resource as well as moderate rangelands. Approximately 80% of the province's inhabitants rely directly or indirectly on the activities related to this commodity. The total amount of milk produced is insufficient to meet the province's milk needs. The demand will be greater than the rate of population growth and rapid urbanization. This chasm between supply and demand can only be bridged by the improved productivity and through modernization. A large amount of milk is produced in remote areas, but it rarely reaches consumers on this basis, and milk quality is deteriorating. A significant portion of the milk is converted into other products such as ghee. A better collection system is required and should be prioritized so that milk can be brought into the

main streams of the food chain, which is otherwise underutilized. Because of poor feed quantity and quality, a lack of breeding and management skills, inadequate veterinary coverage, and a lack of government interest, production per milch animal is lower.

1.2 Defining the Product

Milk is the normal mammary secretion obtained from complete milking of a healthy milch animal with no additions or extractions. It must be colostrum-free. This document discusses milk of various classes and designations, but the primary focus will be on milk produced by cows.

- **Toned Milk**

Toned Milk is a product made by combining cow or buffalo milk or both with fresh skimmed milk or by combining cow or buffalo milk or both that has been standardized to the fat and solids-not-fat percentages given in the table below by milk solids adjustment. It must be pasteurized and have a negative Phosphatase Test result. When fat or dry nonfat-milk solids are used, it must be ensured that the product remains homogeneous and that no solids deposition occurs while standing.

- **Double Toned Milk**

Double Toned Milk is a product made by combining cow or buffalo milk or both with fresh skimmed milk, or by combining cow or buffalo milk or both that has been standardized to the fat and solids-not-fat percentages given in the table below in. It must be pasteurized and have a negative Phosphatase Test. When using fat or dry nonfat milk solids, it must be ensured that the product remains homogeneous and that no solids deposition occurs while standing.

- **Standardized Milk**

Standardized milk is defined as cow milk, buffalo milk, sheep milk, goat milk, or a combination of any of these milks that has been standardized to the fat and solids-not-fat percentages shown in the table below through milk solids adjustment. Standardized milk must be pasteurized and have a negative Phosphatase test result.

- **Flavored Milk**

Flavored Milk, by whatever name called, may contain nuts (whole, fragmented or ground) chocolate, coffee or any other edible flavor, edible food colors and cane sugar. Flavored milk shall be pasteurized, sterilized or boiled. The type of milk shall be mentioned on the label.

- **Full Cream Milk**

Full Cream Milk is defined as milk or a combination of buffalo or cow milk, or a product prepared by combining both, that has been standardized to the fat and solids-not-fat percentages given in the table below, by adjustment/addition of milk solids. Full Cream Milk must be pasteurized. It must pass the phosphatase test. It must be packed in clean, sound, and sanitary containers that are properly sealed to avoid contamination.

- **Boiled Milk**

Boiled Milk means milk which has been brought to boil.

- **Mixed Milk**

Mixed Milk means a combination of milk of cow, buffalo, sheep, goat or any other milch animal and may be a combination of any of this milk which has been made and conforms to the standards given in the table below.

- **Recombined Milk**

Recombined Milk means the homogenized product prepared from milk fat, non-fat-milk solids and water. Recombined milk shall be pasteurized and shall show a negative Phosphatase test.

- **Skimmed Milk**

Skimmed Milk means the product prepared from milk from which almost all the milk fat has been removed mechanically.

Table 1

Class of milk	Designation	Minimum percent	
		Milk Fat	MSNF
Buffalo Milk	Raw, pasteurized, boiled, flavored, sterilized	6	9
Cow Milk	Raw, pasteurized, boiled, flavored, sterilized	4	8.5
Goat or Sheep Milk	Raw, boiled, pasteurized, flavored and sterilized	3.5	9
Toned Milk	Pasteurized, flavored and sterilized	3	8.5

Double Toned milk	Pasteurized, flavored and sterilized	1.5	9
Standardized milk	Pasteurized, flavored and sterilized	4.5	8.5
Full Cream Milk	Pasteurized and sterilized	6	9
Mixed Milk	Raw, pasteurized, boiled, flavored and sterilized	4.5	8.5
Recombined Milk	Pasteurized, flavored and sterilized	3	8
Skimmed Milk	Raw, boiled, pasteurized, flavored and sterilized	Not more than 0.5 percent	8.7

1.3 Geographical Locations

Dairy sector represents the best opportunity in the rural areas of Pakistan. The country has large amount of favorable conditions and climate for dairy farming in rural area of the country, for instance Balochistan provides perfect weather conditions moreover demand for dairy products has been on rise considering population growth in the region. Areas like Punjab, Sindh, and Khyber-Pakthunkhwa may also represent the best opportunity of investment in this sector since population has been rising in the country; however, quality of milk and location of the dairy farms are critical factor that should be taken into consideration.

1.4 Core Cluster Actors

1.4.1 Size of Sector

The global dairy market is valued at 893 billion U.S. dollars in 2021 and is projected to grow to about 1243 billion U.S. dollars by 2028. <https://www.statista.com/statistics/502280/global-dairy-market-value/>. Link may be visited for updated stats.

1.4.2 Current Cluster Scenario

Balochistan government is striving to enhance its dairy production and to move from subsistence to market-oriented dairy farming with its main focus on milk sector. It plans to tap its enormous

potential in milk sector both for domestic consumption and export to foreign markets. Livestock contributes Rs20 billion in terms of production of meat, milk, eggs, skin, hides and wool and provide livelihood to over 70 per cent of population. Milk contributes 35 per cent of the total earning from livestock. However, the local experts are of the view that proper milk let-down is only possible through milking machines, as hand-milking by dairy farmers is also causing different diseases in the animals. Generally, mastitis is caused by hand-milking. “Mastitis is the inflammation of animal’s udder, which is caused by infected hands of the dairy farmers”, said Syed Khurram Farid, a researcher in the Centre for Advanced Studies in Vaccinology & Biotechnology (CASVAB) in Quetta. The animals are kept under unhygienic conditions and the rough surface cause hooves’ injury in cattle and buffaloes. Mr Farid said other diseases which were caused by mismanagement in dairy farms. The experts stress the need for establishing milk pasteurization plants in various districts of the province. There is an urgent need to improve extension services to increase dairy production in the province. The local dairy farmers should be provided overall technical support including automated milking machines and herd management. They should also be given feeding recipes for the animals in different seasons.

ANALYSIS OF BUSINESS OPERATIONS

- **Selection of Breed:** Selection of dairy cattle breeds such as Holstein Friesian with proven pedigree and high genetic worth from elite/ superior and renowned sires.
- **Housing:** Housing, Good housing leads to good management practices and ultimately Optimum production.
- **Feeding:** The lactating Holstein cows are fed 1 kg of Dry Matter (DM) feed per 1.75 liters of milk produced. The ration allows nutritionally balanced feed in 24 hours. It includes dry matter with 60% concentrate and 40% roughages containing 16% Crude Protein (CP) and energy to increase animal productivity. It is better to use Total Mixed Ration (TMR) wagon for feeding the cows
- **Watering:** Supply of clean drinking water in clean troughs i.e. 50 to 80 liters 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 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 proposed 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 period is taken as 305+ 5 days. This pre-feasibility study has taken 50-65% 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 liters.
- **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:** Proper storage of milk should be done preferably at temperature of 4 0c.
- **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 vaccines from reliable sources should be sought.

1.5 *Market Mechanism*

The demand for milk has been on rise ever since the rise in population. Cow milk has been used for decades and is far more acceptable and can be seen sold at commercial level. Moreover, demand for pure cow has considerably risen considering the fact it's considered as liter and more nutritious than the milk obtained from buffalo's. Moreover, it's considered to have low level of fat when compared with milk types obtained from other animals. Demand for the product exists not only locally but internationally in Arab countries likewise UAE, KSA, Kuwait and Qatar. Through government intervention new market may be explored and government assistance may be provided to potential investor.

1.6 Human Resources

Human resource is locally available however advance techniques and technology may be adopted through government interventions.

2 INSTITUTIONAL SETUP

2.1 Associations

Balochistan Dairy Farmers Association & DCFA Balochistan Region is one of the key associations, indulged in development activities for this sector with a moto to provide 100 percent pure milk, welfare of farmers and protection of their rights.

2.2 Government Support Institutions / Educational Institutions

Livestock and Dairy Development Department plays a vital in development of this sector.

3 SWOT ANALYSIS

4.1. Strengths.

- Market demand for pure and hygienic product
- Availability of human resource locally
- Medical value of cow milk.
- High profitability margins.

4.2. Weaknesses

- Access to financing
- Low genetic potential dairy animals.
- Lack of dairy development initiatives
- Diseases in animals
- Lack of government attention towards the sector
- High initial investment cost
- Less awareness likewise lacks of modern knowledge.

4.3. Opportunities

- Less competition
- Employment creation
- Poverty eradication
- Availability of different breeds locally

4.4. Threats

- Role of middle man when selling milk
- Animal health and lack of access to veterinary health.
- Animal cruelty and abuse
- Poor nutrition contribution factor in low yields by the animals.
- Poor housing and hygiene

4 INVESTMENT OPPORTUNITIES

The dairy cluster itself is very lucrative sector for investors in Pakistan and is fast emerging as a profitable business and about a dozens of farms are now operating across Pakistan. However as reported by different investors already involved in this sector, there's still market gap between demand and supply. Moreover, there is great demand internationally. Through government intervention investors may be supported and awareness may spread.

5 STRATEGIC RECOMMENDATIONS TO UPLIFT THE QUALITY & PRODUCTIVITY

- Private investors need to be mobilized through PPP mode (Public Private Partnership) by formulating a legal framework for investment.
- The government may finance investors through commercial banks and on subsidized rates.
- Awareness sessions may be conducted by the government and potential investor may be motivated to invest in this sector.
- Through government intervention new international markets may be explored and information may be passed to the investors.

- In Pakistan milk production and marketing is controlled mainly by the unorganized private sector, comprising of dairy farmers, middlemen, milk processing-units and consumers. Less than 5% of milk produced is marketed through proper channels, remaining more than 95% is marketed without chilling and pasteurization by local milk marketing system. Prime factors affecting milk marketing system include absence of organized marketing-chain, unorganized farmers, seasonal fluctuations, low investment, and middleman role, lack of infrastructure, price fixation, and legislative measures. Two of the favored options being mulled are
 - i) Piloting idea of corporate farming
 - ii) Providing additional support services to small, medium and large farmers, in order to exploit full potential of dairy sector in Pakistan, strong action must be taken to strengthen the regulatory framework governing dairy marketing, improving market linkages, support for dairy farmers from the government, encourage private sector investment, developing value-added products, limit the role of middlemen, and promote commercialization in the dairy sector.