

**Consultancy Report**  
**CFC/FIGMDP/16FT**

**Improved Market Access and Smallholder Dairy Farmer  
Participation for Sustainable Dairy Development**



**LESSONS LEARNED STUDY - PAKISTAN**

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## 1. Executive Summary

Agriculture accounts for 20.9% of the total GDP and employs 43.4% of the total workforce in Pakistan. With an almost 50% contribution, livestock is by far the most important sub-sector. The share of livestock in agricultural growth has jumped from 25.3 percent in 1996 to 49.6 percent in 2006<sup>1</sup>.

Within the livestock sector milk is the largest and single most important commodity. The estimated annual milk production in 2004-2005 was approximately 29 million tons, making Pakistan one of the world's top milk producers.

The country's production base is highly fragmented and dairy enterprise is dominated by the private sector, with the government playing a regulatory role. According to the Livestock Census held in 2006, among the 8.4 million reported dairying households, 51% own a herd size of just 1-4 animals.

Various regulatory measures towards price control on milk coupled with continuous increase in input prices<sup>2</sup> affect farm profitability. This especially affects large dairy farmers with considerable investments in large dairy herds, using hired labor, purchasing feed and veterinary inputs, and marketing infrastructure. These factors have led to the pulling out of many well established large farmers whereas it also has discouraged new farmer investment in dairy production and marketing.

On the other hand, small and subsistent farmers barely survive this regulatory and economic environment. The primary reasons for their survival are the use of family labor on the farm and access to free grazing, both factors keeping the production costs relatively low. However, this is only an artificial calculation of costs since no price is put on family labor. Similarly, marketing costs are minimized through localized sales and non-use of any sophisticated equipment.

Approximately, 80% of the milk is produced in rural areas, with peri-urban and urban areas accounting for another 15% and 5%, respectively. Only 3-5% of total production in the country is marketed through formal channels. The remaining 97% is produced and marketed in raw form by informal agents in the marketing chain.

The smallholder dairy producers are faced with daunting challenges in the areas of infrastructure, financial insecurity, quality assurance, price regulation, untrained manpower, and seasonality. A fragmented farm base coupled with low productivity makes collection practices inefficient. Access to proper infrastructure such as cold chains is limited and leads to post harvest losses of up to 20% in some areas. And, disparity between input and output prices has inverse affects on farm profitability. These challenges pose a serious threat to the development of the dairy industry in Pakistan.

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<sup>1</sup> Pakistan Livestock Census, 2006

<sup>2</sup> Inflation in Pakistan averaged at 7.8% in FY 2007.



On the other hand, recently the private corporate sector has demonstrated keen interest by investing heavily in dairy processing. The government and donors have also been providing unprecedented assistance to the sector. However, most of this support is targeted to the medium and large scale dairy farmers, which only represent a small portion of the milk producers.

To ensure development of the country's dairy sector, it is important that critical support is provided to the promotion of smallholder producers. Key issues for promoting smallholder based dairy development would be to organize farmers, integrate production with marketing, enhance access to credit, upgrade milk marketing chains through adoption of modern technology, enhance market information, and improve farm profitability.

Moreover, in the interest of enhanced profitability, a thorough legal review is needed to examine the impact of laws that allow the government to regulate the price of milk. The local government is authorized to fix retail prices of milk under the preamble of protecting public interest by controlling the supply, distribution, movement of, and trade and commerce in essential foodstuffs, including milk. The two major laws governing the price control are i) The Balochistan/NWFP/Punjab/Sindh Foodstuff (Control) Act – 1958, and ii) The Price Control and Prevention of Profiteering and Hoarding Act, 1977. Conversely, the prices of dairy production inputs such as feed, live animals, and veterinary care are uncontrolled and escalating with the growing inflation.

## 2. Background

APHCA, CFC and FAO are collaborating to implement a project with the aim to develop a regional strategy for smallholder-based dairy development in the Asia-Pacific region. As a first step, the project has commissioned consultants in nine countries in the region to document Lessons Learned Studies (LLSs)<sup>3</sup>.

The objective of the LLSs is to identify factors that have been inclusive of smallholder participation in the dairy food chain. The studies will also identify prospects and options for sustainable participation of small producers in dairy food chains.

In July 2007, Ms. Umm e Zia, a Rural Development and Agri-Marketing consultant from Pakistan was commissioned by the project to carry out the LLS for Pakistan.

### 2.1 Methodology

The outline for the report was provided by FAO and can be found in Annex 1 as part of the Terms of Reference.

To document the Lessons Learned Study for Pakistan, the consultant has drawn on her experiences and findings while investigating dairy value chains in the country. Of specific importance was a nationwide study conducted by her for the FAO, titled 'An Analysis of Milk Marketing Chain'<sup>4</sup>. To get an update of the current developments, a detailed literature review and one on one meetings with some prominent stakeholders in the dairy industry were conducted.

Additionally, a detailed case study of an ongoing project 'Milk Packaging Project in Central and Southern Districts of NWFP', and a review of Community Empowerment through Livestock Development and Credit (CELDAC) project were undertaken to support the findings in chapter 4.

It is also important to note that this study is informed by the results of the 'Pakistan Livestock Census, 2006'. Since the Census is held every ten years, most of the recently published literature on the subject is based on statistics dating back to 1996.

### 2.2 Introduction

Pakistan is the sixth most populous country in the world with an estimated population of over 160 million<sup>5</sup>, growing at a rate of over 1.8% per annum. Agriculture being the

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<sup>3</sup> The nine countries for which LLSs are proposed are Bangladesh, China, India, Mongolia, Pakistan, Philippines, Sri Lanka, Thailand, and Vietnam

<sup>4</sup> The study was concluded in August 2006 and covers rural, urban, and international marketing chains

<sup>5</sup> Population Census Organization, 2007

mainstay of the economy, the sector generates 20.9% of the total GDP and employs 43.4% of the total workforce<sup>6</sup>.

With an almost 50% contribution, livestock is by far the most important sub-sector in agriculture. In the past ten years this sub-sector has grown by an average of 5.8%<sup>7</sup>. The share of livestock in agriculture growth has jumped from 25.3 percent in 1996 to 49.6 percent in 2006<sup>8</sup>. The higher growth in the livestock sector has been mainly attributed to growth not only in the headcount of livestock, which is commercially important, but also in the milk production.

### 2.3 Key Terms Defined

Some key terms found in this LLS and related to the dairy sector in Pakistan can be found in Annex 2.

### 2.4 Overview of the Milk Economy

Within the livestock sector, milk is the largest and single most important commodity. Despite decades of oversight by the government, Pakistan is the fifth largest milk producer in the world<sup>9</sup>.

According to the Pakistan Livestock Census held in 2006<sup>10</sup>, overall, milk production increased by 35.6 percent since 1996. **Table 1** depicts relative increase in milk production over the past two decades.

Table 1 - Milk Production Per Annum	between 1986-1996 & 1996-2006				
	Gross Annual Production ** (Billion Liters)				% Change Between
	1986	1996	2006	1986 & 1996	
Cows	7.07	9.36	13.33	32.4	42.4
Buffaloes	14.82	18.90	25.04	27.5	32.5
Total	21.89	28.26	38.37	29.1	35.6

\*\* Worked out by using average annual lactation length of 250 and 305 days for cows and buffaloes, respectively.

Source: Economic Survey of Pakistan, 2007

<sup>6</sup> Economic Survey of Pakistan, 2007

<sup>7</sup> Economic Survey of Pakistan, 2006

<sup>8</sup> Pakistan Livestock Census, 2006

<sup>9</sup> Husnain & Usmani, 2006

<sup>10</sup> A national Livestock Census is held every decade. Therefore, the recently conducted census of 2006 is of particular importance.

## 2.5 Production Base

Despite being the most lucrative livestock product, milk production is the least commercialized enterprise in the agricultural economy. The majority of national livestock herd is distributed in small units throughout Pakistan. About 55 million landless/small land holding farmers are responsible for the bulk of milk production produced in the country.

Buffalos and cows are major milk producing animals. According to a study on Milk Marketing conducted by FAO in Pakistan in 2003, 80% of the milk in the country is collectively produced by rural commercial and rural subsistence producers. The peri urban producers account for 15% of the milk production, whereas urban producers contribute 5% to the total milk production in the country<sup>11</sup>. Annex 3 shows the distribution of milk as it moves along the various nodes in the overall supply chain.

According to the Livestock Census held in 2006, among the 8.4 million reported dairying households, 51% own a herd size of just 1-4 animals. Another 28% households maintain herd sizes of 5 to 10 animals. Whereas, only 14.23% of the herd sizes are composed of 11 to 50 animals. Only 6.72% of the farms in the country come under the large category where more than 50 animals are kept. Table 1 breaks down the percentage ownership by herd size.

Table 1: Herd Size by Household	
Number of Animals	Percentage Ownership by HH (%)
01 TO 02	27.32
03 TO 04	23.73
05 TO 06	14.32
07 TO 10	13.68
11 TO 15	6.29
16 TO 20	2.65
21 TO 30	2.58
31 TO 50	2.71
51 AND ABOVE	6.72
<b>TOTAL</b>	<b>100.00</b>

**Source:** Pakistan Livestock Census 2006

<sup>11</sup> SSI-NARC, 2003



## 2.6 Supply and Demand

As a food item, all milk (both milk and milk equivalents) is second only to cereals in level of per capita consumption in Pakistan<sup>12</sup>. The annual per capita consumption level at the national level is 190 liters<sup>13</sup>. Province wise, per capita consumption stands at 246 Kg in Sindh, 132 Kg in Punjab, 86 Kg in NWFP, and 108 Kg in Baluchistan.

Due to rising inflation and high poverty levels, the majority of Pakistani consumers are price conscious. Therefore, demand for open, raw milk is high compared to processed milk. Hence, raw milk is the primary dairy product marketed in the country. Over 90 percent of the marketed milk is collected and marketed unprocessed through the informal market by a multi tiered layer of marketing agents.

The supply of milk to meet domestic demand has usually lagged. To meet this gap, powdered milk is imported every year. During July 2006– November 2007, dairy products<sup>14</sup> worth Rs. 2320.42 million (\$38.6 million)<sup>15</sup> were imported. The Statistics Division lists the product only as 'Milk and Milk Food for Infants'.

There are too many cumulative statistics presented at all levels without much consideration for the ground realities. This only creates confusion when designing long term effective strategies for development of dairy by both the private sector and the donors. That is why strategies are recommended to address issue 5 related to data availability (5.2.5).

## 2.7 Milk Markets

Milk markets in Pakistan can be classified into three categories, namely Rural, Urban, and International Markets.

## 2.8 Marketing Chains

The three marketing chains in Pakistan are rural, urban, and processed marketing chains. An overview of these is given below:

### 2.8.1 Rural Marketing Chain

A significant proportion of the milk produced in rural areas is consumed at source within the hamlet or village, either through farmstead consumption or in some cases, direct sales by the farmer to the neighborhood. The remaining 30-40% is marketed through an intricate marketing chain consisting of multiple layers of intermediaries.

Figure 1 elaborates the rural milk marketing chain and the price of milk at each node in the chain.

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<sup>12</sup> SSI-NARC, 2003

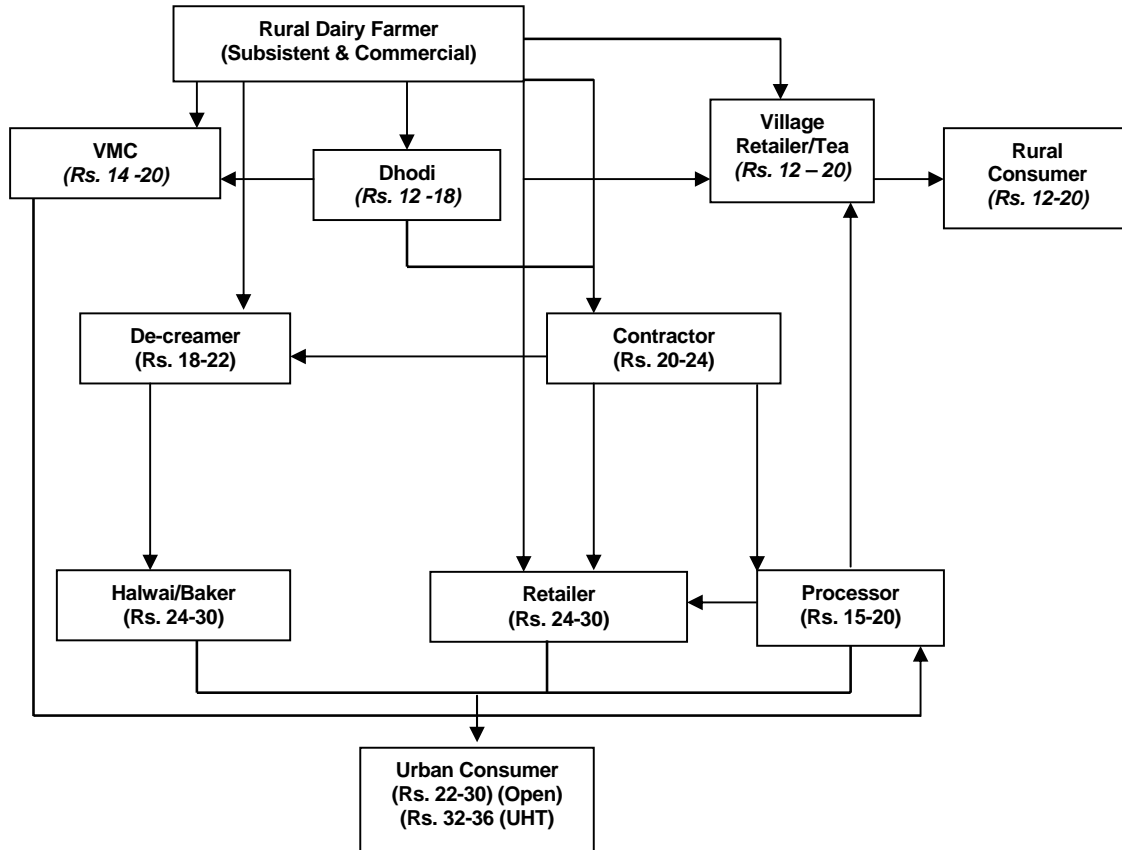
<sup>13</sup> PDDC, 2006

<sup>14</sup> Milk, Cream, and Milk Food for Infants

<sup>15</sup> Statistics Division, 2007



**FIG. 1 – Rural Marketing Chain - (Estimated procurement prices represented at Rupees**



Source: Market Information, 2007



## 2.8.2 Urban Marketing Chain

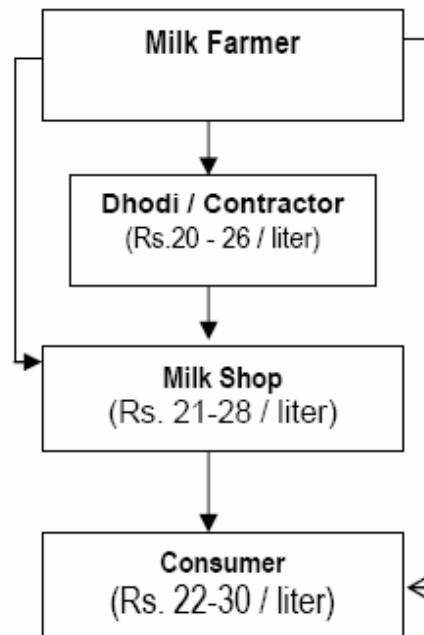
An estimated 9 to 12 million liters of milk every year are consumed by the urban consumers in Pakistan. To satisfy some of this urban demand, milk is produced in urban and peri-urban areas of the country, accounting for 5% and 15% of the total milk production, respectively. Since this milk is not sufficient to meet the entire urban demand, the deficit is met by rural producers, as explained in the analysis of the 'Rural Milk Marketing Chain' above.

Peri urban dairy farms are located on the outskirts of major cities. These are usually owned by market oriented farmers and, owing to the scale of their operations, can be classified into two general groups. Most of the farmers operate on relatively small scales by keeping 10 to 50 dairy animals. On the other hand, larger farmers usually keep up to 500 livestock heads. This later category of farm can be either owned and operated by a progressive farmer individually or it can be a part of the peri-urban cattle colonies that have been established on the outskirts of major cities.

In the Urban Milk Marketing Chain, the producer has relatively more control over the supply chain as the consumer is easily accessible and is also willing to pay a high price for milk. Hence, in many instances, farmers in the Urban Milk Marketing Chain integrate production and marketing functions in their operations, and instead of relying on a middleman, the milk is directly sold by the farmer.

Figure 2 depicts the peri-urban marketing chain

**FIG. 2 – Peri-Urban Marketing Chain - (Estimated procurement prices represented at Rupees per liter)**



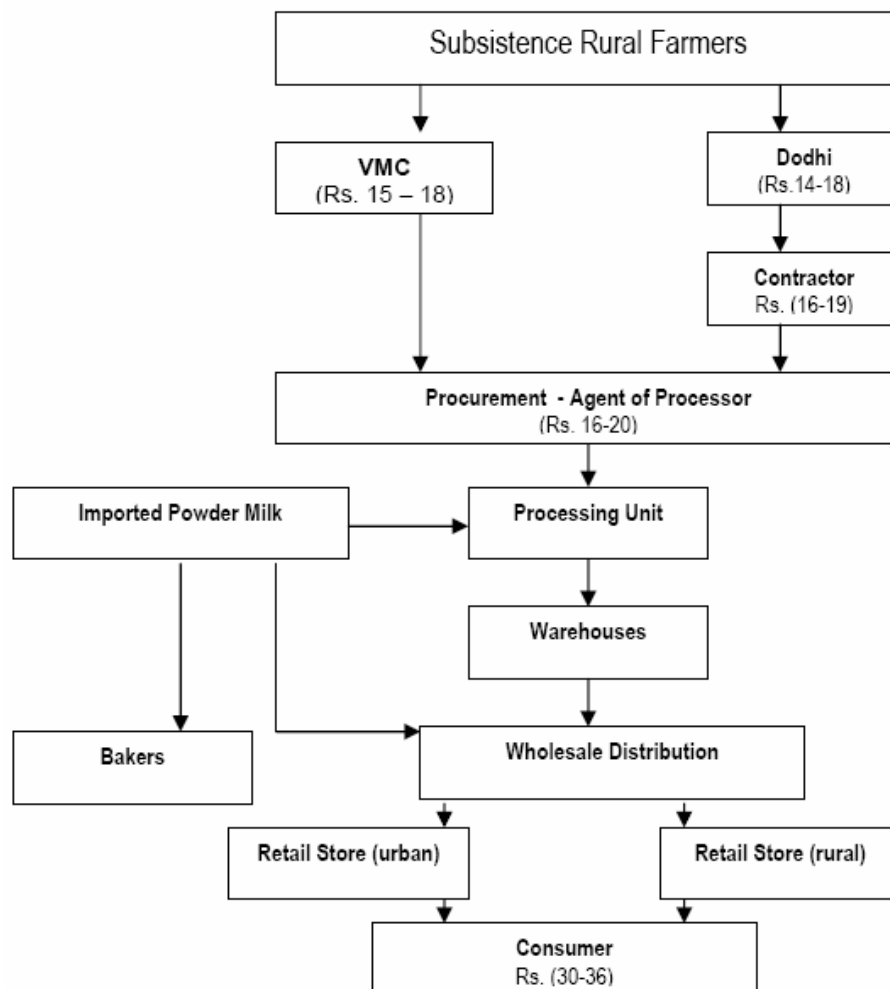
Source: Analysis of Milk Marketing Chain, Pakistan - FAO, 2006

### 2.8.3 Processed Marketing Chain

Most of the milk in the country is marketed in raw, liquid form. According to industry estimates, only 3-5% of the milk is marketed as processed milk. Currently, there are more than 20 dairy processing plants operating in the country. The major product produced by these processing plants is UHT or Pasteurized milk. Other products include powdered milk, butter, cream, and lassi, etc. However, UHT milk is the most predominant form of product produced by these plants.

Figure 3 depicts the marketing chain of UHT Milk

**FIG. 3 –Marketing Chain of UHT Milk - (Estimated procurement prices represented at Rupees per liter)**



Source: Analysis of Milk Marketing Chain, Pakistan - FAO, 2006



### 3. Situation Analysis

Milk production and marketing in Pakistan is exclusively dominated by the informal private sector, consisting of various agents, each performing a specialized role at the relative node in the supply chain. These consist of producers, collectors, middlemen, processors, traders, and consumers.

Only 3-5% of total production in the country is marketed through formal channels. The remaining 97% is produced and marketed in raw form by informal agents in the marketing chain. To get a comprehensive understanding of the opportunities and problems associated with the dairy enterprise in Pakistan, it would be important to give here an overview of the role being played by both the informal and formal channels.

#### 3.1 Informal Production & Marketing Channel

Subsistent farmers constitute the majority of dairy farmers in the country and are responsible for 70%<sup>16</sup> of the milk produced. They keep 1-5 milk producing animals on the farm. The following paragraphs give an overview of the defining factors of the informal production and marketing channels.

##### 3.1.1 Productivity

Due to lack of proper management practices and poor breeding, animal production tends to be very low. This results in low farm profitability and reduced national productivity. For instance, when compared with Germany, Pakistan houses thrice as many dairy animals, but milk yield is one fifth of Germany<sup>17</sup>.

##### 3.1.2 Seasonality

Production and consumption of milk in Pakistan are faced with seasonal fluctuations that are at relative odds with each other. Milk production is associated with the availability of green fodder and is at its maximum between January and April and hits a low from May to August. Alternatively, milk consumption is low during the winters and is at its peak during the summer due to higher intake of consumer intake of milk products such as lassi, yogurt, and ice cream. **Figure 4** demonstrates the seasonal fluctuation in supply and demand.

##### 3.1.3 Unorganized Farmers

Small dairy holders in Pakistan are unorganized and mostly carry out production and marketing in isolation from each other. This particularly hampers farm profitability in a scenario where production base is highly fragmented. On the other hand, collective marketing can enable individual farmers to reach farther markets and result in increased revenue.

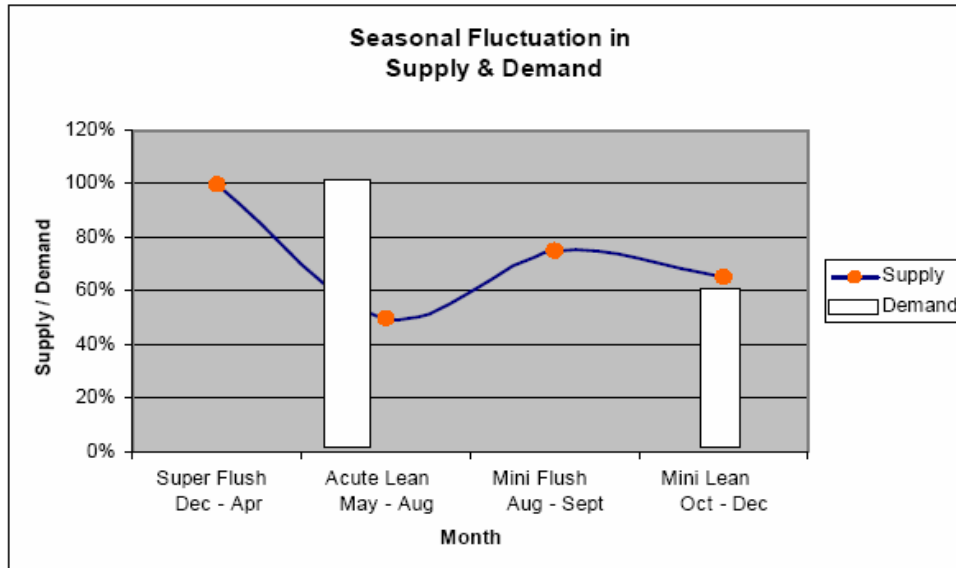
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<sup>16</sup> R.H.Raja, 2003

<sup>17</sup> IFCN, 2003



Figure 4



Source: Analysis of Milk Marketing Chain- Umm e Zia, 2006

Source : Market Information

### 3.1.4 Financial Services

For small holders, milk sales are a way of regular cash flows and the livestock owned by them constitutes an invaluable asset<sup>18</sup>. But, in the absence of financial services such as insurance and credit, they do not have a financial recourse in times of emergency such as livestock disease or mortality. Similarly, smallholders do not have ready access to credit that can enable them to improve their enterprise, e.g. addition of improved marketing infrastructure.

### 3.1.5 Market Exploitation

Smallholders have to rely on middlemen to market their produce. Drawing on their monopolistic role, middlemen can exploit farmers by paying low prices, executing binding sales contracts, and not passing on gains when prices are seasonally high in response to lower supply.

On the other hand, in their capacity, middlemen also fill the gap of essential support services such as provision of credit and veterinary care.

### 3.1.6 Infrastructure

To ensure product quality, proper transportation of milk also requires an interconnected cold chain. But, agents in the marketing chain in Pakistan rarely have access to cold

<sup>18</sup> The average price of a buffalo is about Rs. 50,000 (\$833.33) and of a cow is Rs. 35,000 (\$583.33)



storage facilities and a major portion of milk is lost. According to an ADB report<sup>43</sup>, milk losses due to unavailability of cold storage are estimated at about 15-20 percent of the total milk production in some areas.

Primary reasons behind unavailability of cold chain facilities are the high costs that are required to operate a cold chain. For instance, the purchase cost of a 1000 liter capacity FCT is approximately Rs. 300,000 (\$5,000), a sum well beyond the reach of a small farmer. Also, FCTs are affected by absence of electricity in rural areas of the country. Where electric power is available it is supplied at high rates by the government as dairy farmers do not get subsidies similar to the ones given to agricultural farmers on equipment such as tube wells, etc.

### Box 1

1. **The Balochistan/N.W.F.P/ Punjab/ Sindh Foodstuff (Control) Act, 1958:**

**Preamble:** Whereas it is expedient in the public interest to provide for the continuance of powers to control the supply, distribution, and movement of, and trade and commerce in foodstuffs in Balochistan / N.W.F.P / Punjab / Sindh.

**Application: Section 3 –** The government so far as it appears to be necessary or expedient for maintaining supplies of any foodstuffs or for securing its equitable distribution and availability or prohibiting storage, movement, transport, supply, distribution, disposal, acquisition, use or consumption thereof and trade and commerce therein....may provide...:

(b) for controlling the prices at which any foodstuffs may be bought or sold.

**Penalties: (i)** Imprisonment for a term which may extend to three years

(ii) or with fine

(iii) or with both (imprisonment and fine)

2. **The Price Control and Prevention of Profiteering And Hoarding Act, 1977**

**Preamble:** Whereas, it is expedient to provide for price control and prevention of profiteering and hoarding.

**Application: Section 3 –** The Federal Government, so far as it appears to it to be necessary or expedient for securing equitable distribution of an essential commodity and its availability at fair price may, by notified order, provide for regulating the prices, production, movement, transport, supply, distribution, disposal, and sale of the essential commodity and for the price to be charged or paid for it at any stage of transaction therein....

(a) for controlling the price, at which any essential commodity may be bought or sold in any area.

**Delegation of Powers:** The Federal Government may, by notified order, direct that any power conferred on it by or under this Act shall, in relation to such matters and subject to such conditions, if any, as may be specified in the direction, be exercisable also by:

(a) such officer or authority subordinate to the Federal Government, or

(b) such Provincial Government or such officer or authority subordinate to a Provincial Government, as may be specified in the direction.

**Schedule:** A schedule of 'essential commodities' listed by the Act includes:

(i) Milk

(ii) Powdered Milk &

(iii) Milk food for infants

**Penalties: (i)** Punishable with imprisonment for a term which may extend to three years and

(ii) with fine which may extend to one lac rupees.

Provided that, if a person convicted for an offence punishable under this sub section is again convicted for such offence, the term of imprisonment awarded to him shall not be less than one year.

**Source:** Food Laws Manual, 2006



### 3.1.7 Input-Output Price

Through regulating the price of milk, the government plays a significant role in milk marketing<sup>19</sup>. As the law generally gives broad authority to the local government in setting of foodstuff prices, the specific law followed can be different from one locality to another within a province. The two common laws observed by the consultant to have been referred to in regulating milk prices are explained in below box 1.

Under the law, the Provincial Food Department can declare various commodities, including milk, to be foodstuffs. After the issuance of the notification by the Food Department and/or the Ministry of Industries & Production, a District Price Review Committee is set up by the District Coordination Officer (DCO) to regularly review and set the price of milk. The committee is comprised of various stakeholders in the milk trade, including representatives from the livestock department, dairy farmers, milk retailers, and consumers. The Committee may fix different prices for different localities in the district.

Once the decision of the DPRC is finalized, a notification pertaining to the new price is circulated to relevant stakeholders, including various government agencies. These may include Provincial Secretary, District Nazim, District & Session Judge, Chief of City Police, Information Department, Food Department, Department of Agriculture, Rationing Controller, Town Nazims, TMOs, Official Gazette, and President Sheer Farosh in the city.

Interestingly, in some instances, the local government has been seen to quote the wrong law while fixing prices. An example in order is the case of district Narowal (Annex 14), where the 'Punjab Essential Articles (Control) Act, 1973' is cited. In the commodity schedule provided in the said Act, milk is not listed.

The price set by districts studied varies between Rs. 16 – Rs. 30 per liter.

In contrast, prices of inputs used by farmers for dairy production are not regulated. On the contrary, the prices of some essential inputs have increased by 100-200% in the past five to six years. *Table 2* shows increase in average input prices as compared to the price of fresh milk.

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<sup>19</sup> The two most common laws in this regard are the "Balochistan/N.W.F.P/ Punjab/ Sindh Foodstuff (Control) Act, 1958" and the "The Price Control and Prevention of Profiteering And Hoarding Act, 1977".

**Table 2.** Price Increase in Basic Inputs in Dairy Farm as compared to Milk:

Input	Price (Rs.) Year 2000	Price (Rs.) Year 2007	Increase (%)
Milch Animal	20,000	60,000	200 %
Cotton Seed Cake	270 <sup>44</sup>	560	107.4 %
Wheat Bran	170 <sup>45</sup>	380	123.5 %
Maize Cake	370 <sup>46</sup>	680	83.78 %
Fresh Milk	20 <sup>47</sup>	32	60 %

This imbalance between gains in production and output costs has an inverse affect on farm productivity as farmers are barely able to recover their production cost. With growing inflation, this price imbalance has recently led to the pulling out of many well established large farmers whereas it also has discouraged new investment in dairy production.

### **3.2 Formal Production & Marketing Channel**

Formal marketing is carried out by corporations which only control 3-5% of the milk supply in the country. In the past 2-3 years, private sector has shown keen interest in dairy industry. This has led to large scale investment in refurbishing old plants and in some instances, setting up new processing units.

Currently, there are more than 25 dairy processing plants operating in the country, producing UHT milk, butter, cream, and lassi, etc. UHT milk is the most predominant form of product produced by these plants.

Sind and Punjab are the major milk producing provinces. However, with the exception of one investor, Engro Foods, all dairy processors are operational in Punjab<sup>20</sup>.

#### **3.2.1 Supply Constraints**

Dairy processing units collect milk from small holders situated in far flung rural areas of Punjab<sup>21</sup>. This has led to saturation of supply in the province. The competition has

<sup>20</sup> Collection operations in Sind are problematic due to socio-economic constraints such as security and road conditions. This has even led Engro to also shift its operations to Punjab by setting up an additional processing unit in the province.

<sup>21</sup> To ensure profitability, the processing industry is forced to purchase milk at low prices from far flung areas. In these areas, farmers do not have access to the urban fresh milk retail market which tends to be more profitable for the farmstead.



resulted in price wars in collection zones and establishment of additional processing units by some of the major corporations such as Nestle.

Moreover, factors such as lack of cold chains, fragmented farm base, and distance to dairy farmers affect processing operations. Consequently none of the processing units is operating at optimal capacity.

Hence, many processors have been eyeing options to reduce or eliminate their reliance on individual small holders for their supply. Two of the favored options being mulled are i) vertical integration of activities by piloting corporate farming, an idea new to the national dairy practices; and ii) providing additional support services to medium and large farmers in return for selling bulk quantities of fresh milk to the processors. Large corporations have had no choice but to rely on small farmers. However, as detailed here, these corporations want to shift to the two alternative options mentioned.

### 3.2.2 Government Support

The government and international donors have been very facilitative of the processing industry. This is evident from the fact that in the 2006-2007 budget, the government announced numerous subsidies and tax breaks for the dairy processing industry. This includes exemption of sales tax on packaged milk and subsidized import of processing and other equipment.

Another proof of Government & donor support to the processing industry is the fact that almost all mega projects initiated to improve dairy development are designed to immediately support medium to large farmers with minimal practical interventions for small holders. These include projects such as the Pakistan Dairy Development Company (PDDC) and the Livestock and Dairy Development Board (LDDDB).

### 3.2.3 Expected Future Developments

Despite maximum support by the government in form of loans<sup>22</sup>, subsidies, tax breaks, and project support, it is feared that this renewed interest in corporate dairy may be short lived. This apprehension is based on several underlying factors including 1) scarcity of supply and increasing prices of input for small holders, 2) inability of processors to collect milk required due to transport and cold chain problems, 3) reliance of processors on limited and undiversified products<sup>23</sup>, 4) lack of sustainable farmer development policies, and 5) the history of dairy processing Pakistan when in the 1970's, with the help of ADB, as many as 22 processing units were initiated and failed in a few years due to similar problems.

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<sup>22</sup> It is believed that most local investors have borrowed heavily from state run banks to set up dairy processing. This practice was carried out in the industry during 1970s and led to the failure of most processors, leading to massive defaults and closures.

<sup>23</sup> Experience shows that large scale dairy processing, being not a very cost effective enterprise, is only profitable if the company has investments in other lucrative yet low cost products. E.g. Nestlé's biggest source of cash flows in Pakistan is its bottled mineral water

## 4. Smallholder Dairy Farmer

The present environment of the dairy sector has seen unprecedented investment by government and international donors. However, apart from a few exceptions, most of these programs are geared towards the development of medium and large scale dairy farmers.

Two case studies are presented in this chapter to assess the impact of recent support programs to dairy farmers.

### 4.1 Case Study – Milk Packaging Project,

A provincial effort in the North West Frontier Province (NWFP) at promoting the dairy industry is based on the idea of support to groups of small holders with the objective of sustainable poverty reduction.

The project titled 'Milk Packaging Project in Central & Southern Districts of NWFP' is an innovative initiative of the Government of NWFP's Livestock & Dairy Development Department. This four year project (2005-2009) is worth Rs. 13.367 million (USD 222,783) and adopts a bottom up approach to development of the province's dairy industry through cooperation between the public and private sectors.

The main objective of the project is to reduce poverty in remote areas of central and southern Districts of N.W.F.P through increasing livestock productivity via provision/ establishment of milk marketing channels in milk producing areas. Project activities include technical and management support services in the form of breed improvement, animal health, feed enhancement, management for women, training of village extension workers and farmers, establishment of milk collection and processing units, and developing marketing links.

Under the project, dairy farmer groups have been formed in selected villages with the purpose of promoting organized milk production and marketing. Upon formation of a farmer association in any targeted village, a small milk collection center equipped with a Farm Cooling Tank (FCT) is established in the area. The terms of membership for a farmer association are outlined in **Box 2**:

#### **Box 2 - Terms of Membership of Farmer Association**

1. Every farmer would sell at least 2 liters of milk per day to the milk collection center.
2. Membership Fee for each member is Rs. 100 / year.
3. 50 Paisas / liter of profit is considered compulsory saving for the association
4. Purchase price of milk by the Association will be based on mutual recommendation of the farmer association & Livestock Department.
5. The project is to provide support services, including animal health, breed improvement, training of members / farmers on livestock management, and introduction of improved fodder variety and feed supplements.



The project was initiated with the three partially operational Associations, on the average collecting 550 liters of milk per day. These initial associations received four FCTs and two power generators to be operated and managed by the respective Association.

However, in a period of just two years intensified farmer interest in the area led to project expansion and resulted in the number of associations increasing to 36, with a total representation of 873 members and daily collection of 7275 liters per day. The number of FCTs has also risen to 12. As mentioned above, the project will finish in 2009. Some ongoing support would be inevitable until the project ends.

The project has also resulted in exponentially increased incomes for farmers as now they can market their produce outside the village for Rs. 30-32 per liter vs. the prices in the village of Rs. 26-28 per liter.

Based on this tremendous success, the Government of NWFP is planning to establish milk-processing plant near these localities. Additionally, there are plans to expand project activities to neighboring districts.

**Lessons Learned:** A critical lesson learnt is that organizing local farmers around a profitable initiative is a possible goal to achieve within the current context of the Pakistani dairy industry. However, such an initiative requires comprehensive measures instead of a limited focus on production. These measures range from encouraging farmers to form groups by providing support in the areas of technology transfer, market linkages, and enterprise management, etc.

## **4.2 CASE STUDY – UNDP ‘Community Empowerment Through Livestock Development & Credit’ Project**

Another project in the country active for the support of small holders is the UNDP funded project titled ‘Community Empowerment through Livestock Development and Credit’. This three year, \$6.1 million project is being implemented by UNDP in partnership with two major private dairy processing corporations, Nestle and Engro. UNDP is bearing 82% of the project cost with the remaining being provided the private partners in the form of cash and kind.

The project objective is to promote women’s role in livestock development by creating a cadre of community livestock health workers. Technical support in training master trainers and women livestock health workers is being provided through the University of Veterinary Animal Science (UVAS), a leading public sector institute in the country. This will be attained by training 3600 women in livestock extension services. The project area is limited to the milk collection zones of each corporation involved.

Although, a heavily funded effort, the project is rather limited in scope. Moreover, it tends to be biased in favor of large corporations, as through the project it is expected that animal productivity will be enhanced in the milk sheds accessed by the private partners, thereby increasing the amount of supply available to these corporations. Hence, the corporations as profit making private entities will get major long term economic benefits through minimum investment in social sector initiative. .

**Lessons Learned:** Although, the project has only started its activities on the ground, the lessons learned from this initiative are that:



- 1) It is possible to develop the dairy sector through successful public-private partnerships (Partnership between the project, corporations, and a public university).
- 2) Women in dairying households are responsible for most activities related to animal management, including feed, shelter, and some veterinary care. However, developing their capacity is often looked over by projects. The CELDAC project has set out to train a cadre of women livestock workers despite the stereotypical belief that women cannot be formally trained due to the social barriers imposed on them.
- 3) As the name indicates, besides providing trainings to women livestock extension workers, a major project component in the project design was the provision of credit for enterprise development through linkages with financial institutions in the country. However, thus far, the project has had difficulties in finding a partner in the finance industry for such support.
- 4) It would only be possible to draw further lessons, especially things that have not worked well, once the project makes some progress in implementation. However, a large criticism of the project has been the negligible amount of contribution provided by the corporate sector despite the long term foreseeable economic benefits for the companies involved.

## 5. Conclusion & Recommendations

Small holder dairying in Pakistan has inherent weaknesses and is faced with various threats. At the same time however, the sector can build on its strengths and utilize opportunities to satisfy the increasing demand. A Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis is presented in Annex 4.

### 5.1 Dairy Strategy Prospects

Based on the current situation and SWOT analysis of small holder dairy producers in Pakistan, the following national and regional strategic initiatives are recommended to be undertaken by the public and private stakeholders

### 5.2 National Dairy Strategy

At the national level, the following issues will need a concerted response from the government and private sector in order to enable the participation of smallholder dairy farmers in dairy markets and help them competitively supply expanding consumer markets:

#### 5.2.1 Issue 1

Lack of proper livestock management practices and inaccessibility to support services leads to low animal productivity.

##### 5.2.1.1 Strategies

To enhance productivity, the following measures need to be undertaken:

- 1) Strengthen extension services to reach and educate maximum number of farmers
- 2) Launch mass scale awareness campaigns on management and production issues
- 3) Improve farmer access to financial services
- 4) Initiate sustainable long term breed improvement programs

#### 5.2.2 Issue 2

In the absence of an integrated cold chain, adulteration is rampant and also smallholder access to market is hampered.

##### 5.2.2.1 Strategies

To improve provision of quality milk as well as enhanced market access for small holders, the following strategies are recommended:

- 1) Offer equipment and facilities related to cold chain at subsidized rates.
- 2) Provision of credit to improve access to infrastructure such as cold chains



- 3) Provide utility tariffs (what does this mean? to dairy farmers at par with those provided to other farmers. Currently, most peri-urban and commercial farms are charged the industrial or residential tariff for electricity and water consumption. This is in stark contrast to the main agricultural sector where farm usage of electricity and water is charged on the basis subsidized agricultural rates. This can be a discouraging factor for many farmers to upgrade their farms and policies governing supply of public utilities to the dairy sector must be revised.
- 4) Promote local manufacturing of storage and processing equipment
- 5) Encourage establishment of integrated cold chains instead of piecemeal approaches where focus is only on FCTs.

### 5.2.3 Issue 3

Support to Small holder dairy farmer groups will ensure that farmers are organized to reap maximum market benefits.

#### 5.2.3.1 Strategies

- 1) Policy environment conducive to the formation of Milk Producer Organizations (MPOs) should be formulated. Laws governing MPOs should be formulated with an approach to encourage the formation and functioning of MPOs. This includes tax incentives for collective marketing; and subsidized provision of inputs such as veterinary services, feed, and electricity etc.
- 2) Access for MPOs to financial services such as credit should be ensured.
- 3) Link various groups to organizations like SMEDA to provide guidance in designing detailed feasibility of forming an MPO. No such practical examples at the moment.
- 4) Provide management training to MPOs in various areas including production, marketing, value addition, and financial and business management techniques.
- 5) Guide MPOs in forming market linkages by ensuring a sound marketing infrastructure.
- 6) Middlemen should be encouraged to integrate their operations with MPOs. There can be many modalities for this. For instance, in milk deficit areas, middlemen can have exclusive contracts with MPOs. In other instances, in return for fees and trade concessions, members of MPOs can play the role of middlemen by linking producers to markets. Etc.

### 5.2.4 Issue 4

The local government is authorized to fix the price of milk on the pre text that as an essential commodity, it is available to all citizens. However, the prices of inputs are not regulated in the same manner and keep increasing with the growing inflation.

#### 5.2.4.1 Strategies

To ensure parity between input and output prices towards profitable dairying, the following strategies are recommended:



- 1) Review of laws governing price control and their implementation in regards to milk should be reviewed.
- 2) Alternative measures, such as setting of a control price, incentives for increased production to meet demand, etc. should be explored.
- 3) To provide a level playing field, apply similar pricing regulations to both packaged and non packaged milk.

## 5.2.5 Issue 5

Data on dairy sector is often outdated and/or unreliable. Improved Market Information is a must to facilitate effective planning and investment by all stakeholders.

### 5.2.5.1 Strategies

To improve information based planning and decision making, the following strategies are recommended:

- 1) Conduct the National Livestock Census more often and/or devise reliable ways of providing updated interim information.
- 2) Conduct detailed analytical studies to guide improved decision making at macro and micro levels, e.g. assess production of milk in various systems, proportion of milk hauled by various intermediaries, and actual urban and rural demand, forecast in demand for raw and processed milk, reliable economic and technical feasibility studies on dairy farming and marketing, etc.
- 3) Develop a central repository of information on dairy sector.
- 4) Consider innovative use of modern information technology such as mobile phones to improve access to market information.

## 5.3 Regional Dairy Strategies

Based on the analysis of small holder dairy in Pakistan, the consultant recommends the following regional dairy strategies that can enable dairy farmers to competitively supply growing regional markets in the future:

### 5.3.1 Issue 1

Despite proximity to milk deficit regions, including Central Asia and the Middle East, Pakistani producers do not export their produce

#### 5.3.1.1 Strategies

To promote exports of Pakistani dairy products, the following strategies are recommended:

- 1) Promote exports within region since quality standards are at par as compared to other international markets.
- 2) Enhance animal and enterprise productivity to satisfy domestic and international demand.
- 3) To improve milk, make integrated cold chains an integral part of the dairy sector.



- 4) Introduce economical small scale processing

### **5.3.2 Issue 2**

Currently, most equipment for storage and processing is being imported from Western countries in Europe, etc. This leads to greater need for in-country expertise for the purposes of operations and maintenance

#### **5.3.2.1 Strategies**

- 1) Facilitate technology transfer options within the region, especially between countries where operational standards as well as pricing and affordability are at par.
- 2) Where livestock imports are required to improve the domestic seed stock, animals from countries with similar climate and ecology should be imported.

### **5.3.3 Issue 3**

Often, lessons learned from countries with different socio-economic scenarios are tried to be replicated in Pakistan resulting in unanticipated outcomes. Recently, an international corporation has mobilized medium to large farmers for purchase of imported high yielding cattle from Australia. Notwithstanding heat and climate stress, many animals perished and resulted in losses of more than Rs. 100,000 (\$ 1666.67) per animal. Since the initiative was not insured, the farmers had to bear the brunt directly. Similarly, an international donor has been promoting the use of automated milking, without considering the almost impossible break even numbers on equipment costs, since cheap labor is readily available for such operations.

#### **5.3.3.1 Strategies**

- 1) Implement lessons learned from countries only with similar socio-politico-economic profiles.



## References

- Afzal, M. 2003, Plan of Action for the Development of Dairy Colonies Around Karachi, FAO Islamabad.
- Afzal, M., 2003. Livestock Its Role in Poverty Alleviation. Farming Outlook January – March 2003.
- Ahmad, A. (2003). Milk Collection – Linkages & Development. CDL Foods Ltd. Pakistan.
- Akhtar, N., Athar, I.H. Value Addition Opportunities in Dairy Sector of Pakistan in National / Global Perspective. National Agricultural Research Council. Pakistan.
- Akhtar, Nasim AND Athar, M. Izhar 2003, Value Addition Opportunities in Dairy Sector of Pakistan in National/Global Perspective.
- Asian Development Bank (2005). Report and Recommendation of the President RRP: PAK 33364.
- Athar, I.H. (2004). National Demonstrations on the Lactoperoxidase System of Milk Preservation. National Action Plan Pakistan. AG:TCP/RAS/3001. Ministry of Food, Agriculture, and Livestock & FAO. Islamabad.
- Austin, J.E. A. (2006). The White Revolution: Strategic Plan for the Pakistan Dairy Industry. PISDAC-USAID Pakistan.
- Awan. E. A (2006). Food Laws Manual. Revised Edition 2006. Nadeem Law Book House.
- Burki, M., Khan, M., Bari, F., (2005). The State of Pakistan's Dairy Sector: An Assessment. CMER Working Paper No. 05-34. Lahore University of Management Sciences.
- Crawford, I.M. (1997). Agricultural and Food Marketing Management, I. FAO Rome.
- Experts Advisory Cell. (2003). Dairy Sector Profile. Ministry of Industries & Production, Government of Pakistan. Islamabad.
- Fakhr, H. et al. (2006). The White Revolution – White Paper on Pakistan's Dairy Sector. Pakistan Dairy Development Company.
- FAO (1994). Experiences in Dairy Development. World Animal Review. -79 1994/2. FAO Rome.
- FAO Stats. (2007). Food and Agriculture Organization of the United Nations. 2007. <<http://faostat.fao.org/default.aspx> >.
- Garcia, O., K. Mahmood, and T. Hemme (2003). A review of milk production in Pakistan with Particular Emphasis on Small-scale Producers. PPLPI Working Paper No. 3. Rome: Food and Agricultural Organization of the United Nations.
- Government of Balochistan. (2005). Concept Paper: Provision of Milk Chillers to Farmers for Collection, Preservation and Marketing Quality Milk. Department of Livestock and Dairy Development, Balochistan.
- Government of Balochistan. (2005). Establishment of Milk Collection, Preservation and Marketing Center for the Supply of Quality Milk to the Public in Quetta. Department of Livestock and Dairy Development, Balochistan.



Government of N.W.F.P. (2006). Khyber Dairy: An Overview. Department of Livestock and Dairy Development, NWFP.

Government of Pakistan (2006). Agricultural Statistics of Pakistan 2005-2006.

Islamabad: Ministry of Food, Agriculture and Livestock, (Economic Wing) Islamabad.

Government of Pakistan (2006). Pakistan Economic Survey 2005-2006. Islamabad: Finance Division, Economic Adviser's Wing.

Government of Pakistan (2007). Pakistan Economic Survey 2005-2006. Islamabad: Finance Division, Economic Adviser's Wing.

Government of Pakistan. (2003). Milk Production, Processing, and Marketing in Pakistan. Ministry of Food, Agriculture, and Livestock (Livestock Wing).

Government of Pakistan. (2005). Year Book 2004-2005. Ministry of Food, Agriculture, and Livestock. Islamabad.

Government of Pakistan (1998). Livestock Census 1996. Agricultural Census Organization, Statistics Division, Lahore.

Government of Pakistan (2007). Population Census Organization. <http://www.statpak.gov.pk/depts/pc/>

Government of Pakistan (2007). External Trade Statistics, [http://www.statpak.gov.pk/depts/fbs/statistics/external\\_trade/externaltrade\\_statistics.html](http://www.statpak.gov.pk/depts/fbs/statistics/external_trade/externaltrade_statistics.html)  
Federal Bureau of Statistics

Government of Pakistan (2006). Pakistan Livestock Census 2006. Agricultural Census Organization, Statistics Division, Lahore.

Government of Punjab. Livestock Vision 2010. Department of Livestock and Dairy Development, Punjab.

Hanif, M., Khan, S.A., Nauman, F.A. (2004). Agricultural Perspective and Policy. Ministry of Food, Agriculture, and Livestock. Government of Pakistan.

Haque, I., Anwar, M. (2003). Prospects of Dairy Industry in Pakistan: Issues and Policy Interventions. Millac Foods (Pvt.) Ltd.

Hasnain, H.U., Usmani, R. H. (2006), Livestock of Pakistan, Livestock Foundation, Islamabad.

Henriksen, J. Market Orientation of Small Scale Milk Producers. Background and Global Issues. Rome: Food and Agricultural Organization of the United Nations.

Jabbar, M. A., Tambi, E., Mullins, G., 1997 A Methodology for Characterizing Dairy Marketing Systems, International Livestock Research Institute (ILRI).

Jiaqi, W., Lambert, J. (2002). Proceedings of the FAO-China Regional Workshop on Small-scale Milk Collection and Processing in Developing Countries. FAO.

Khalili, M. (2005). Development of Livestock and Dairy Development Board (LDDDB) for a Dairy Development Strategy in Pakistan. TCP/PAK/3004, FAO, Islamabad.

Livestock Information, Sector Analysis and Policy Branch AGAL. (2003). Livestock Sector Brief Pakistan. FAO.

Malik, H.A. Luijckx, M. (2004). Agribusiness Development Project TA. No. PAK 4058. Interim Report. Asian Development Bank. Pakistan.



- Mazari, S.A. (2003). Modern Dairy Technology and Prospects for Growth. Unilever Pakistan Limited.
- Ministry of Finance. (2006). Budget Speech 2006-07. Government of Pakistan
- Mirbahar, K.B., Kalhor, A.B., Soomro, F.M., Junejo, B.M., (2003). Action Plan – Livestock Management in Sindh. Sindh Agricultural University Tandojam & FAO.
- Phelan, J. (2002). Organization and Management of Milk Producers Organizations. FAO.
- Punjab Laws Online. (2006). Provincial Assembly. Government of Punjab. 2006. <<http://punjablaws.gov.pk/>>.
- Punjab Lok Sujjag. (2003). The Political Economy of Milk in Punjab – A people's Perspective. Punjab Lok Sujjag.
- Rafiq, Ch. M. (2002). Manual of Agricultural Produce Markets Committee Laws. Khyber Laws Publishers.
- Raja, R.H. Pakistan Smallholder Dairy Production and Marketing, Ministry of Food, Agriculture and Livestock (Livestock Wing), Islamabad, Pakistan.
- SMEDA. (2000). Strategy Development in Milk Production and Distribution. Small and Medium Enterprise Development Authority. Government of Pakistan.
- Social Sciences Institute, NARC. (2003). Action Plan for Livestock Marketing Systems in Pakistan. TCP/PAK/0168: FAO.
- Staal, S. (2002). Market Opportunities for Milk Producer Organizations. FAO.
- Younas, M 2003. A Study on Livestock Sector in Pakistan. University of Agriculture, Faisalabad
- Zia, U 2006. Analysis of Milk Marketing Chain, Pakistan. FAO



## Annexes

### Annex 1

#### 1 – Terms of Reference

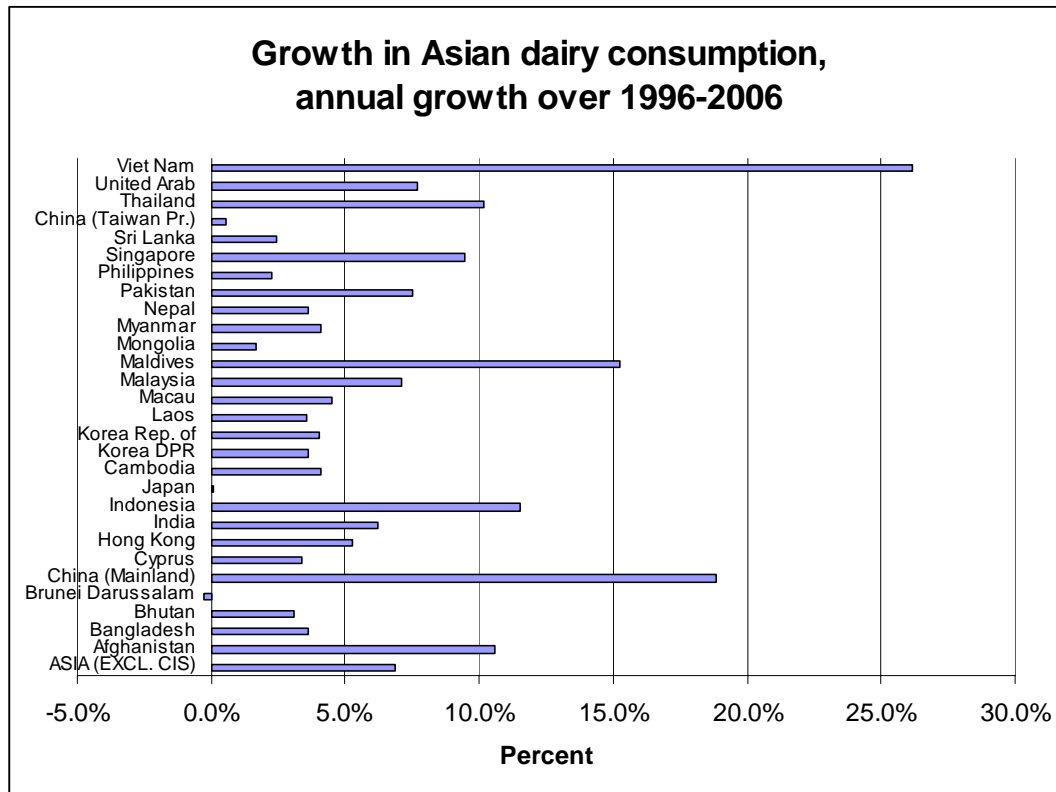
##### Improved Market Access and Smallholder Dairy Farmer Participation for Sustainable Dairy Development (CFC/FIGMDP/16FT)

##### LESSONS LEARNED STUDIES

##### Terms of Reference and Guidance Notes

###### Preamble

Dairying represents one of the fastest returns for livestock keepers in the developing world. It provides regular returns to farmers, especially to women, enhances household nutrition and food security, creates off-farm employment – as many as one job for each 20 litres of milk processed and marketed. The highest growth in demand for milk and dairy products has been, and continues to be, in the Asia-Pacific region where dairy consumption has trebled since 1980, contributing nearly two-thirds of global consumption gains. However, while consumption has grown seven percent annually, gains have been uneven across the region (see figure below). In many countries gains by dairy industry stakeholders have also been uneven and local production has not kept pace with demand. More recently, the prices of internationally traded dairy commodities, upon which many Asia countries still depend, have become very volatile and, in some cases, almost doubled.



Given the clear opportunities for dairying in Asia, the Animal Production and Health Commission for Asia (APHCA) has asked FAO to develop a dairy development strategy for the Asia-Pacific region to lift the involvement of smallholder dairy farmers. The Common Fund for Commodities (CFC) has agreed to fund a fast track project to develop the strategy.

### The Project

APHCA, CFC and FAO are collaborating to implement the project, which aims to develop a regional strategy for smallholder-based dairy development in the Asia-Pacific region. As a first step, the project is commissioning some preliminary work in the form of Lessons Learned Studies (LLSs). The LLSs will identify factors that have been inclusive of smallholder participation in the dairy food chain. Examples of both successful and unsuccessful smallholder ventures into dairying are needed, particularly interventions where local conditions supporting dairy development have been smallholder-friendly.

Conducted by experienced National Consultants, preferably with commercial or project implementation experience, the studies will document the lessons learned where growth in dairy consumption and production has been strong and inclusive of smallholders and visa versa, i.e. strong growth, limited participation by smallholders, or exclusive of smallholders. The studies will also identify prospects and options for sustainable participation of small producers in dairy food chains.

Following review and synthesis by an experienced International Dairy Development Consultant, the findings of the studies will be considered by APCHA members and FAO project implementers during the annual APHCA Session scheduled for November 2007



in Yangon, Myanmar. The project inception report and detailed programme of work will also be tabled for consideration.

### Proposed Country Case Studies

Bangladesh, China, India, Mongolia, Pakistan, Philippines, Sri Lanka, Vietnam, Thailand, Vietnam

### Terms of reference for National Consultants:

Under the supervision of the FAO Lead Technical Unit (AGAP/RAPG), and guided by the International Dairy Development Consultant, each National Consultant will:

- undertake the smallholder dairy farmer-focused LLS in his/her country;
- submit the LLS to FAO in accordance with the table of contents outlined below (Word file, maximum 5,000 words);
- prepare a PowerPoint presentation (max. 5 slides – one for each study chapter) highlighting: (i) lessons learned, (ii) critical factors involved and (iii) prospects and actionable strategies to enhance profitable market access for smallholder milk producers at national and regional level.

### Table of Contents: This forward looking sector assessment should contain:

**Chapter 1. Background:** Brief overview of the dairy sector, its development over the past 15 years, and how it has changed; definition of key terms including, *inter alia*: smallholder milk producer; small dairy farmer; informal and formal markets, dairy value chain, etc.

**Chapter 2. Situation Analysis:** Recent trends and expected future developments in the dairy sector; the socio-politico-economic-cultural-technological and institutional factors, which shape dairy sector development; factors underpinning the growth in the industry; specific demand/policy/institutional reasons supporting this growth; impact of any past and present dairy policies, strategies and investment incentives. The chapter will include milk flow and dairy price charts (see attached examples in annexes I and II).

**Chapter 3. Smallholder Dairy Farmers:** How and why/why not have smallholders been included; the different development models effective in linking small milk producers to markets (marketing systems, institutional arrangements etc.); actual examples demonstrating inclusion of smallholders in sector development (share of smallholders in markets, concrete examples where evolving value chains have included smallholders, dairy development programmes which have been favourably reviewed and resulted in higher returns to dairy households etc).

**Chapter 4. Conclusions:** Using a practical SWOT matrix focused on smallholder dairy farmers, the LLS findings will be summarized, highlighting the **Strengths, Weaknesses, Opportunities and Threats**, which, in turn, point to actions for inclusion in national and regional dairy development strategies. The SWOT analysis will help to draw out the key factors shaping smallholder participation in dairy markets as well as the critical challenges facing the dairy sector in general, and smallholders in particular. An example of an overarching dairy sector SWOT is given in annex III – the study SWOT should focus on



smallholder dairy farmers. The SWOT should be complemented by an assessment of what future threats will be to smallholder dairy.

**Chapter 5: Dairy Strategy Prospects:** The important strategic lessons for the local dairy sector to competitively supply growing markets in the future; the prospects (preconditions, enabling environments, future challenges etc) for beneficial smallholder dairy farmer participation in dairy markets. How can these be translated into focused, actionable, national and regional dairy strategies?

**Annexes:**

- I. Milk flow chart (volumes and percentages)
- II. Milk price chart
- III. Smallholder dairy farmer SWOT
- IV. List of available publications/articles about dairy development in this country/province/zone

**Output:**

Study report in Word file (max. 5,000 word) submitted to: Nancy Morgan, Regional Livestock Economist, FAO Regional Office for Asia and the Pacific, Bangkok – [Nancy.Morgan@fao.org](mailto:Nancy.Morgan@fao.org)

While each National Consultant is encouraged to follow the outline table of contents to facilitate preparation of the synthesis report by the International Consultant, originality is actively encouraged. The four annexes are obligatory.

**Duration:**

1.5 months

**Deadline for study submission:**

End of July 2007

**Honorarium:**

US\$1,500

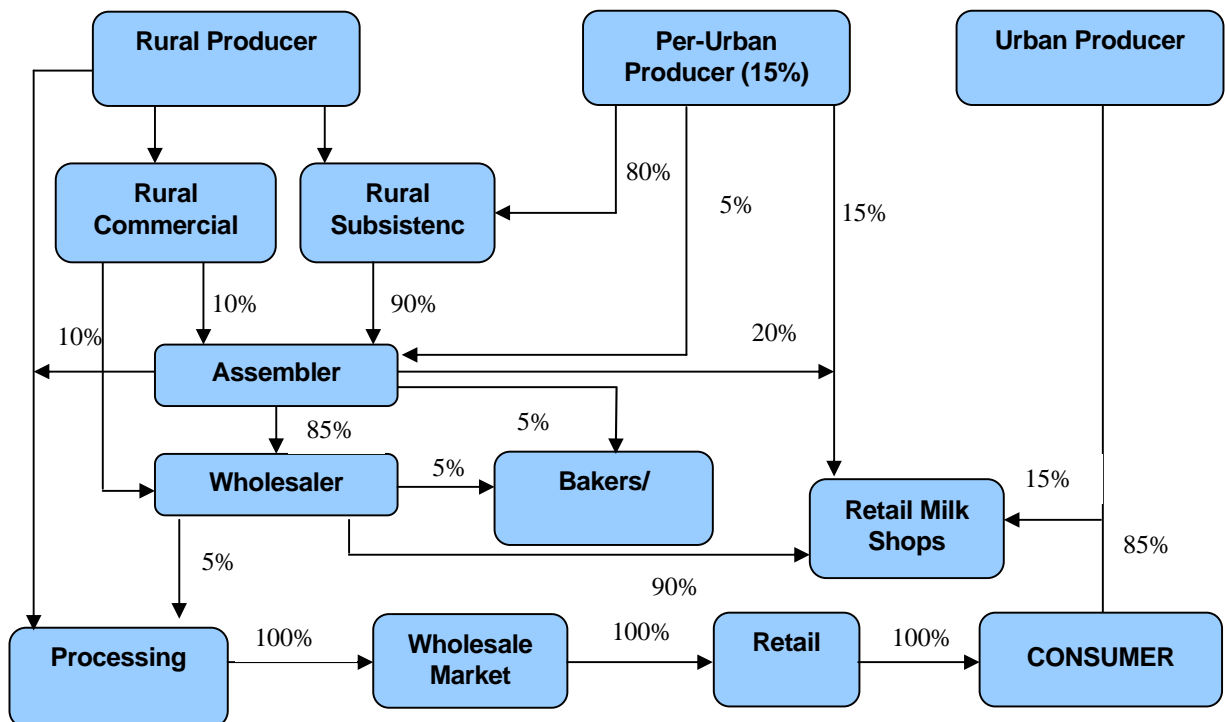
**FAO Contact:**

Nancy Morgan, Regional Livestock Economist, FAO Regional Office for Asia and the Pacific, Bangkok

## Annex I

### **Milk Flow Chart Example (milk volumes as well as percentages to be included)**

**Source:** Pakistan Livestock Marketing Action Plan 2003. (From Analysis of Milk Marketing Chain Report prepared for FAO TCP/PAK/3004 Technical Co-operation Programme Project: Assistance in Up-Scaling Dairy Development in Pakistan (Umm E. Zia, August 2006).

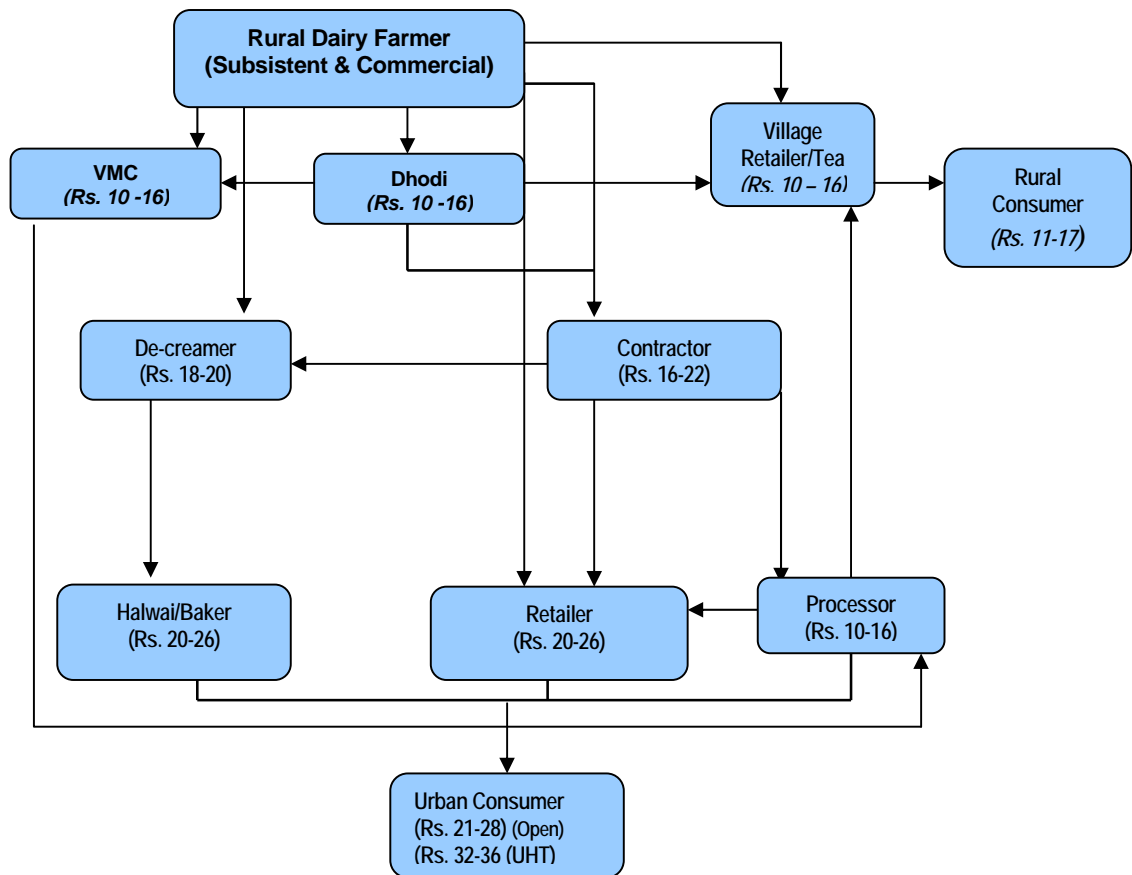




## Annex II

### Milk Price Chart Example

**Source:** Pakistan Livestock Marketing Action Plan 2003. (From Analysis of Milk Marketing Chain Report prepared for FAO TCP/PAK/3004 Technical Co-operation Programme Project: Assistance in Up-Scaling Dairy Development in Pakistan (Umm E. Zia, August 2006).



## Annex III

### Smallholder Dairy Farmer SWOT Example

**Source:** Inception Report. Mongolia-Japan-FAO/UN FAO Special Programme for Food Security project: *Increasing the Supply of Dairy Products in Mongolia by Reducing Post-Harvest Losses and Re-stocking: GCSP/MPN/001/JPN* (Tsetsgee Ser-Od and Brian Dugdill, May 2005).

#### Provisional Mongolia Dairy Sub-sector SWOT

Analysis of recent developments and issues highlights a number of strengths, weaknesses, opportunities and threats (SWOT) for the dairy sub-sector and the project, which in turn point to actions for inclusion in the project implementation strategy and programme of work. The following preliminary SWOT analysis will be updated when the project consultants have completed SWOTs for their subject matter specialties.

<b>Strengths</b>	<b>How to Build on Them</b>
<ul style="list-style-type: none"> <li>Milk availability/consumption (135 kg per capita per year) is high by Asia standards.</li> </ul>	<ul style="list-style-type: none"> <li>Continue to build milk and dairy product consumptions levels, especially in urban areas.</li> </ul>
<ul style="list-style-type: none"> <li>Long tradition of cattle and livestock keeping; large base of cattle, yaks, camels, sheep and goats for milk production.</li> </ul>	<ul style="list-style-type: none"> <li>Focus milk production activities on enhancing productivity and hence profitable investments at herder/farm level.</li> </ul>
<ul style="list-style-type: none"> <li>Investment in 10 to 40 cow dairy farm units is profitable by Mongolian farming standards.</li> </ul>	<ul style="list-style-type: none"> <li>Use farmer-to-farmer extension methods to publicize success stories.</li> </ul>

<b>Weaknesses</b>	<b>How to Correct Them</b>
<ul style="list-style-type: none"> <li>Milk marketing: (i) relatively small dairy market; (ii) rural people consume four times as much milk as urban people, who are wary of the quality of local milk and dairy products, especially traditional dairy products; (iii) poorly developed cold chain.</li> </ul>	<ul style="list-style-type: none"> <li>Focus on improving the quality and attractiveness of Mongolian milk and dairy products.</li> <li>Start a national milk promotion campaign than focuses on: (i) improved food security (ii) the nutritional quality of Mongolian milk and dairy products</li> <li>Set up school milk nutrition scheme (children are tomorrow's milk consumers).</li> </ul>
<ul style="list-style-type: none"> <li>Post harvest milk losses are very high: - estimated at 40 kg per capita per year.</li> </ul>	<ul style="list-style-type: none"> <li>Focus project on restoring milk collection and processing infrastructure.</li> <li>Provide more model demonstration units.</li> <li>Introduce Quick-fix scheme in 2005 for immediate restoration of existing milk collection and processing infrastructure.</li> </ul>
<ul style="list-style-type: none"> <li>Milk collection and processing: (i) infrastructure fragmented and very run down; (ii) inadequate number of milk chilling and processing centres; (iii) obsolete equipment and technologies; (iv) fragmented and weak financial standing of main dairy</li> </ul>	<ul style="list-style-type: none"> <li>Increase number of model dairy demonstration units.</li> <li>Find more funds for restoring milk collection.</li> <li>Provide more resources for capacity building and training.</li> </ul>



enterprises (v) chronic lack of technical and management skills.	
<ul style="list-style-type: none"> <li>Milk production: (i) is highly seasonal; (ii) limited experience in modern dairy farming and lack of technical skills; (iii) chronic lack of improved, adapted dairy cows; (iv) general unwillingness among dairy farmers to co-operate.</li> </ul>	<ul style="list-style-type: none"> <li>Encourage winter milk production through price incentives, staggered breeding and fodder conservation.</li> <li>Set up affordable, sustainable dairy cattle breed improvement scheme.</li> <li>Strengthen dairy sub-sector organisations and NGOs.</li> <li>Organize overseas study tour to see successful MPOs in similar situations</li> <li>Mobilize more resources</li> </ul>
<ul style="list-style-type: none"> <li>Dairy training: (i) lack of technical and vocational training (ii) lack of product development/adaptation facilities for dairy operators and milk producers</li> </ul>	<ul style="list-style-type: none"> <li>Set up needs based vocational training programme at National Food Technology College, including training of trainers.</li> <li>Organize outreach training delivery system</li> <li>Set up demonstration dairy for practical training and product development.</li> </ul>
<ul style="list-style-type: none"> <li>Project design is unbalanced in terms of available resources (personnel and budget) to match dairy sub-sector and project implementation needs.</li> <li>Project design does not take account of strong seasonality effect on project implementation.</li> </ul>	<ul style="list-style-type: none"> <li>Priorities and focus activities</li> <li>Adapt workplan and reallocate resources.</li> <li>Mobilize more resources (personnel and budget).</li> </ul>

<b>Opportunities</b>	<b>How to Exploit Them</b>
<ul style="list-style-type: none"> <li>Rapidly growing urban markets.</li> </ul>	<ul style="list-style-type: none"> <li>Focus on urban consumers in main UB market.</li> </ul>
<ul style="list-style-type: none"> <li>Import substitution.</li> </ul>	<ul style="list-style-type: none"> <li>Promote Mongolian milk and dairy products.</li> <li>Additional investment in milk quality improvement and consumer education</li> <li>Regulate against unfair completion.</li> </ul>
<ul style="list-style-type: none"> <li>Increase the number of beneficiaries.</li> </ul>	<ul style="list-style-type: none"> <li>Expand model dairy demonstration units and training programme.</li> </ul>
<ul style="list-style-type: none"> <li>What to do with surplus milk once the Mongolian market is satisfied?</li> </ul>	<ul style="list-style-type: none"> <li>Explore potential to export milk and dairy products to nearby milk-deficit countries, e.g. China where per capita milk availability is just 9 kg per capita per annum and the dairy market growing at an annualized rate of more than 30 percent.</li> </ul>

<b>Threats</b>	<b>How to Avert Them</b>
<ul style="list-style-type: none"> <li>Milk and dairy product imports are accelerating (currently approx 20 kg per capita per year)</li> <li>Many imports are subsidized by the exporting countries and near or past their sell by dates.</li> <li>Disorganized food control and inspection</li> </ul>	<ul style="list-style-type: none"> <li>Work with Government to regulate subsidized imports and introduce measures to control low quality imports.</li> <li>Support equipping of food control laboratories and re-training of food inspectors.</li> </ul>
<ul style="list-style-type: none"> <li>Lack of affordable milk collection and processing equipment of appropriate capacity and employing appropriate technologies.</li> </ul>	<ul style="list-style-type: none"> <li>Encourage local fabrication of appropriate equipment.</li> <li>Set up local procurement channels for importing necessary equipment.</li> </ul>
<ul style="list-style-type: none"> <li>Extremely challenging climatic conditions</li> </ul>	<ul style="list-style-type: none"> <li>Encourage calving for winter milk production</li> </ul>



and limited milk production in winter	<ul style="list-style-type: none"><li>through AI and incentive payments for milk.</li><li>Promote fodder conservation.</li></ul>
<ul style="list-style-type: none"><li>Lack of capital to develop dairy farms and milk processing enterprises; very high interest rates for loans; unfavourable tax regime.</li></ul>	<ul style="list-style-type: none"><li>Set up dairy development fund.</li><li>Work with Government and stakeholders to set up conducive investment environment for developing the domestic dairy sub-sector.</li></ul>
<ul style="list-style-type: none"><li>Government disinvestment in provision of dairy services.</li></ul>	<ul style="list-style-type: none"><li>Set up self-financing Dairy Service Centres close to producers, with full cost-recovery.</li></ul>
<ul style="list-style-type: none"><li>Livestock are perceived in some quarters to degrade the environment through overgrazing, especially goats whose number are increasing.</li></ul>	<ul style="list-style-type: none"><li>Include environment protection issues in training programme.</li><li>Mount campaign to change perceptions.</li></ul>

## Annex 2

### 2 - Key Terms Defined

**i. Marketing** includes all the activities that are involved in moving products from producers to consumers. This includes product exchange activities, physical activities, and auxiliary activities. The functions of marketing can be further divided into buying and selling as exchange activities; storage, transport, processing, and standardization as physical activities; and financing, risk bearing, and market intelligence as auxiliary activities<sup>24</sup>.

**ii. A Marketing Chain** defines the flow of commodities from producers to consumers that brings into place economic agents who perform complementary functions with the aim of satisfying both producers and consumers.

**iii. A Marketing Node** is defined as any point in the marketing chain where an exchange and/or transformation of a dairy product takes place. A marketing chain may link both formal and informal market **Agents**.

**iv. Marketing Agents.** These are individuals, groups of individuals, or organizations that facilitate the flow of dairy products from producers to consumers through various activities such as production, purchase, processing and sale. Examples of market agents include farmers selling dairy products, retailers, wholesalers, dairy cooperatives, importers, and exporters etc.

**v. Milk Producers:** Rural subsistence farmers, rural market oriented farmers, commercial dairy farmers, & city and peri-urban milk producers

**vi. Milk Collectors:** Dhodhis, Contractors, village milk collection centers and dairy cooperatives (MPOs)

**vii. Dairy Processors:** Large scale private dairy processing corporations

**viii. Retailers:** Milk shops, peri-urban farmers-cum-dhodhis, traditional dodhis, rural subsistence and market oriented farmers, retail shops

**ix. FCT:** Farm Cooling Tanks also known as Chillers are refrigerated units used for milk storage

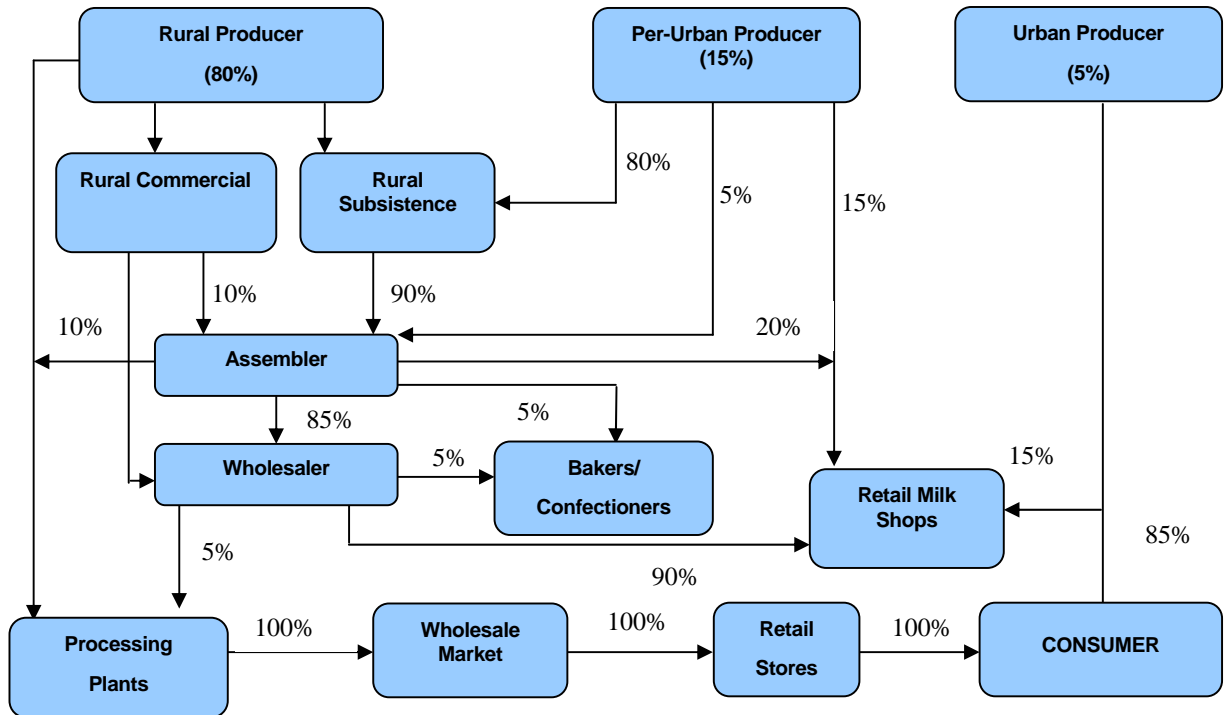
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<sup>24</sup> Crawford, 1997



### Annex 3

### 3 - Milk Flow Chart



Source: Livestock Marketing Action Plan 2003



## Annex 4

### 4 – Pakistan Smallholder Dairy SWOT Analysis

<i>Strengths</i>	<i>How to Build on Them</i>
<ul style="list-style-type: none"> <li>• Pakistan is the Fifth Largest Milk Producing Country</li> <li>• Excellent Local Breeds</li> <li>• Low Labor Costs</li> </ul>	<ul style="list-style-type: none"> <li>• Increase production, processing, and marketing efficiency to satisfy local demand</li> <li>• Promote breeding programs across the country</li> <li>• Export breeds to countries in Africa and South East Asia where productive milch breeds are not available</li> <li>• Promote labor intensive technologies</li> <li>• Compete in international market on the basis of low labor input costs</li> </ul>
<ul style="list-style-type: none"> <li>• Presence of International Level Veterinary and Agricultural Universities in the Country</li> </ul>	<ul style="list-style-type: none"> <li>• Set up Dairy Technology Centers in these universities</li> <li>• Promote <u>applied</u> research related to production and marketing</li> </ul>

<i>Weaknesses</i>	<i>How to Correct Them</i>
<ul style="list-style-type: none"> <li>• Low Animal Productivity</li> <li>• Fragmented Farm Base</li> <li>• Virtual absence of integrated cold chain infrastructure</li> <li>• Milk production is seasonal and supply proportionately counters demand. For instance, production is low in summer and demand is high, and vice versa</li> <li>• Lack of access to financial instruments for small holders</li> <li>• Exploitation by middlemen and processors</li> </ul>	<ul style="list-style-type: none"> <li>• Mass awareness campaigns</li> <li>• Strengthened extension services through public-private partnership</li> <li>• Improve farmer access to financial services</li> <li>• Make efforts to organize farmers through policy and regulatory measures</li> <li>• Develop linkages for Business Development Services for farmer groups</li> <li>• Integrate middlemen in these groups to promote cooperation</li> <li>• Encourage local production of cold chain equipment</li> <li>• Provide agricultural tariffs to dairy farmers</li> <li>• Improve access to financial credit for small farmers and groups</li> <li>• Improve farm management practices to reduce seasonality impact</li> <li>• Strengthen processing capacity for dry powder production so that surplus milk can be preserved for high demand cycles</li> <li>• Link farmers and groups with credit institutions</li> <li>• Policy and implementation measures are needed to encourage the financial industry to invest in instruments designed specially for the livestock sector, e.g. small loans and animal insurance</li> <li>• Integrate middlemen in farmer organizations</li> <li>• Regulate the role of middlemen and processors</li> <li>• Improve market information for small holders, e.g. awareness about change in daily prices at each node in the marketing chain</li> </ul>



<ul style="list-style-type: none"> <li>• Low quality, adulterated milk being sold in the market</li> </ul>	<ul style="list-style-type: none"> <li>• Strengthen implementation of existing laws</li> <li>• Facilitate provision of integrated cold chains</li> <li>• Undertake policy measures to control adulteration and spoilages, e.g. random inspections</li> <li>• Set up quality testing laboratories accessible to the public</li> </ul>
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<i>Opportunities</i>	<i>How to Exploit Them</i>
<ul style="list-style-type: none"> <li>• High demand for fresh milk and other by products</li> <li>• Rapidly growing population</li> </ul>	<ul style="list-style-type: none"> <li>• Improve farm to market access infrastructure such as roads to reach high scale consumer markets</li> <li>• Enhance productivity through better management and marketing practices</li> <li>• Target awareness and marketing campaigns at younger population segments</li> </ul>
<ul style="list-style-type: none"> <li>• Internationally situated in milk deficit zone</li> </ul>	<ul style="list-style-type: none"> <li>• Incorporate production and processing practices to produce milk and other products that meet international quality specifications</li> </ul>

<i>Threats</i>	<i>How to Avert Them</i>
<ul style="list-style-type: none"> <li>• Local Government is authorized to fix prices of livestock outputs such as milk and meat. However, these prices are unrealistic and are determined without considering the ever escalating prices of inputs for which the prices are not fixed.</li> <li>• Dry milk powder is being increasingly imported to constitute for fresh milk.</li> <li>• Lack of Market Information is a major hindrance for planning, investment, and other decision making at all levels in the dairy industry</li> <li>• Government's support to corporate farming and processing is overshadowing its development contribution to small holders</li> </ul>	<ul style="list-style-type: none"> <li>• Review laws governing the price control for essential commodities</li> <li>• Allow market forces of demand and supply to regulate and fix prices</li> <li>• Where setting prices is mandatory, influencing factors such as production costs should be given thorough consideration.</li> <li>• Set up processing units in the country that can absorb surplus milk during flush periods to convert into dry milk powder.</li> <li>• Compete with international prices by providing support measures to the processors of dry milk</li> <li>• Undertake regular and reliable studies at the national, regional, and local levels to assess critical factors such as quantities produced and marketed; demand trends; etc.</li> <li>• Use information technology such as mobile phones and radios to disseminate market information e.g. daily milk prices at each node in the marketing chain.</li> <li>• Carry out Livestock census on a regular basis instead of every ten years. Or undertake reliable revisions to the recent census.</li> <li>• Review policies and large scale initiatives to ensure a more active contribution to the development of small holder dairy.</li> </ul>
<ul style="list-style-type: none"> <li>• Increasing market in urban and remote milk deficit for high value processed milk such as UHT and powdered milk</li> </ul>	<ul style="list-style-type: none"> <li>• Increase consumer confidence through provision of quality fresh milk by setting up integrated cold chains</li> <li>• Improving livestock productivity and marketing in remote milk deficit areas such as the northern mountainous regions</li> </ul>



## **Abbreviations**

<b>APHCA</b>	Animal Production and Health Commission for Asia and the Pacific
<b>FAO</b>	Food & Agriculture Organization of the United Nations
<b>CELDAC</b>	Community Empowerment through Livestock Development and Credit
<b>CFC</b>	Common Fund for Commodities
<b>LLS</b>	Lessons Learned Studies
<b>NWFP</b>	North West Frontier Province
<b>TOR</b>	Terms of Reference
<b>GOP</b>	Government of Pakistan
<b>LDDDB</b>	Livestock & Dairy Development Board
<b>MPO</b>	Milk Producer Organization
<b>PDDC</b>	Pakistan Dairy Development Company
<b>SMEDA</b>	Small & Medium Enterprise Development Authority
<b>UNDP</b>	United Nations Development Program

## **Acronyms**

**Dodhi:** Traditional name for a Milk Collection Agent

**FCT:** Farm Cooling Tank

**Gawala:** Milkman