

## Sector Brief

# Dairy and Livestock Sector of Pakistan



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## 1. Dairy and Livestock Sector of Pakistan

Pakistan is an agriculture-based economy and agriculture continues to be the largest sector and a dominant driving force for economic growth. It is the main source of livelihood for the rural population and ensures food availability to both rural and urban inhabitants. It is a key sector of the economy as it provides raw materials to main industrial units e.g. textile, sugar, leather, feed mills etc. of the country and also plays a major contribution in export earnings of the country.

Livestock sector is a component of agriculture contributing 60 to 70% to value added agriculture and 11.53% to GDP<sup>1</sup>. It is relatively less volatile as compared to other agriculture subsectors. It does not depend on heavy mechanical, energy and other developed infrastructure and being labour intensive and household nature contributing in socioeconomic wellbeing of the rural population. It's share in agriculture is more than combined shares of cotton and wheat. The sector has registered increasing growth rate of 3.06% in year 2020-21 against 2.10% during the previous year.

More than 8 million rural families are engaged in livestock production and deriving more than 35-40 percent of their income from this source. Gross value addition of livestock at constant cost factor of 2005-06 has increased to Rs. 1,505 billion (2020-21) from Rs. 1,461 billion (2019-20), an increase of 3 % over the same period last year. This shows impressive growth on the trade front in the recent past.

Pakistan ranks among top five milk producing countries globally. Dairy and livestock sector consists of approximately 80 million heads of cows and buffaloes and 100 million heads of sheep and goats, producing more than 60 million tons of milk besides producing other products such as meat, skins etc. Within the livestock sector, milk is the most important commodity with demand growing at 10-15% annually, yet production increasing by only 3–4% per annum. Due to the milk supply gap of 3.5 billion litres in 2020-21, value added products such as cheese, butter and powdered milk are imported to meet rapidly rising domestic demand.

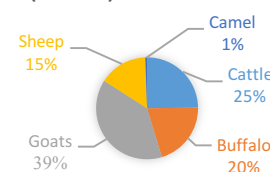
## 2. Important Production and Trade Statistic

Pakistan has a large livestock population which is not only well adapted to local conditions but also has some of the best tropical livestock breeds contributing to milk production as well as meat production. Current estimated livestock population (2020-21) includes:

**Table 1: Livestock Population (Million Heads)<sup>2</sup>**

Species	2016-17	2017-18	2018-19	2019-20	2020-21
Cow	44.4	46.1	47.8	49.6	51.5
Buffalo	37.7	38.8	40.0	41.2	42.7
Sheep	30.1	30.5	30.9	31.2	31.9
Goat	72.2	74.1	76.1	78.2	80.6
Camel	1.1	1.1	1.1	1.1	1.2

**Fig1: Pakistan's Livestock Population (2020-21) 207.90 M**



<sup>1</sup> Economic Survey of Pakistan, 2020-21

<sup>2</sup> Note: Estimated figures based on inter census growth rate of Livestock Census 1996 & 2006, Economic Survey of Pakistan, 2020-21.

**Table 2 : Milk Production & Consumption<sup>3</sup> (Million Tons)<sup>4</sup>**

Species	2016-17	2017-18	2018-19	2019-20	2020-21
Cow	20.14	20.90	21.70	22.51	23.36
Buffalo	34.12	35.14	36.18	37.26	38.36
Others (sheep, goats, camel)	1.82	1.85	1.88	1.93	1.96
Gross Milk Production	56.08	57.89	59.76	61.70	63.68
1. Milk for Human Consumption (80%)	45.23	46.68	48.18	49.36	50.94
2. Wastage during transportation and storage (15%)	8.41	8.68	8.96	9.24	9.55
3. Milk for calves (5%)	2.80	2.89	2.99	3.10	3.18

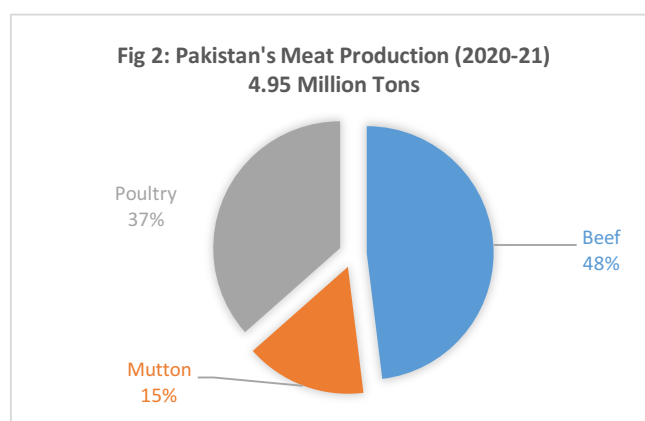
The following table indicates percentage of animals slaughtered every year from existing population;

**Table3: Livestock Population and percent slaughtered (Year 2020-21)**

Species	Population (Million Heads)	Percent Slaughtered/ year (% Species Population)
Cattle	51.5	10.0
Buffalo	42.7	15.5
Sheep	31.9	41.5
Goats	80.6	42.0
Camel	1.2	3.0

Slaughtered animals are either a result of culling or are raised for the purpose of Eid-ul-Azha as sacrificial animals. The slaughtered animals are producing millions of tons of meat every year with an upward trend in the previous years.

Pakistan produces large quantities of beef and mutton with total annual production estimated at 4.95 million tons which includes 2.38 million tons of beef (48 %), 0.77 million tons of mutton (15 %) and 1.81 million tons of poultry meat (37 %) in year 2020-21.

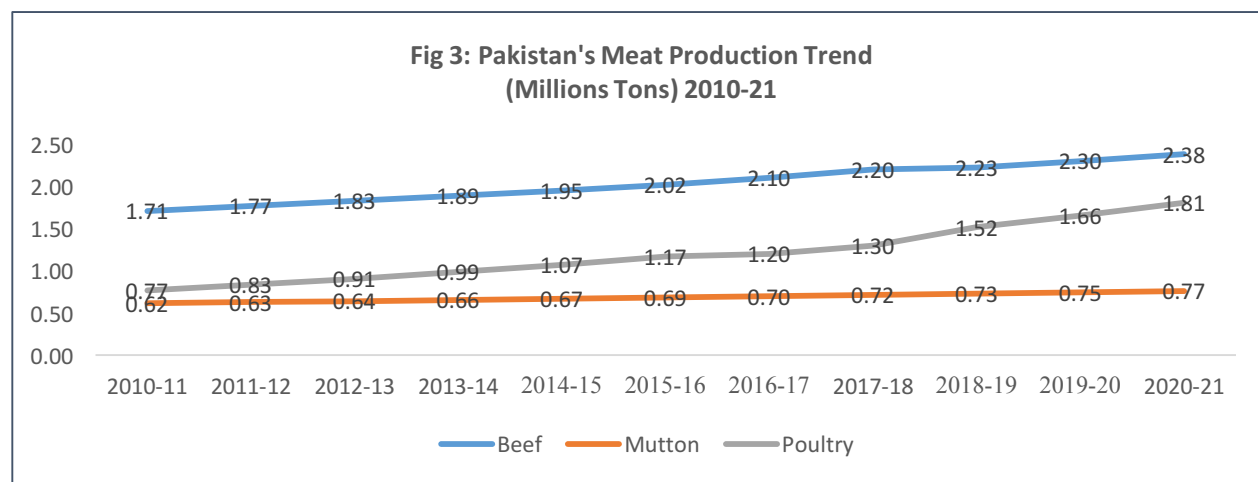


<sup>3</sup> The figures for milk production for the indicated years are calculated by applying milk production parameters to the projected population of respective years based on the inter census growth rate of Livestock Census 1996 & 2006. Milk for human consumption is derived by subtracting 20% (15% wastage in transportation and 5% in calving) of the gross milk production of cows and buffalo.

<sup>4</sup> Estimated figures based on inter census growth rate of Livestock Census 1996 & 2006. Economic Survey of Pakistan, 2020-21

**Table 4: Total Meat Production in Pakistan 2012-21 (Million Tons)**

Description	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
<b>Beef</b>	1.83	1.89	1.95	2.02	2.10	2.20	2.23	2.30	2.38
<b>Mutton</b>	0.64	0.66	0.67	0.69	0.70	0.72	0.73	0.75	0.77
<b>Poultry</b>	0.91	0.99	1.07	1.17	1.20	1.30	1.52	1.66	1.81
<b>Total Meat <sup>5</sup></b>	3.38	3.53	3.70	3.87	4.00	4.22	4.48	4.71	4.95

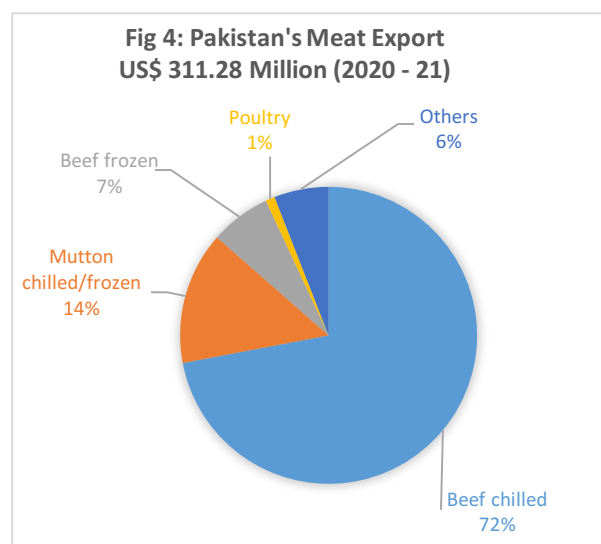


In 2020-21, Pakistan exported meat valued US\$ 311.2 million, of which 72% was Beef fresh or chilled, 7% Beef frozen, 14% Mutton, 6 % red meat edible offal and 1% Poultry meat offal.<sup>6</sup>

In beef category, beef fresh, chilled is leading in terms of export followed by red meat edible offal, mutton fresh, chilled or frozen, beef frozen and poultry meat and offal. The share of Pakistan's total red meat export is less than one percent (1%) in world market.

Figures from previous two decades show that beef remains the highest consumed form of meat, especially in rural areas; however, its quality is poor as it comes largely from culled dairy animals. Similarly, consumption of mutton has declined, most likely, due to high prices as well as availability. Mutton and beef have a great potential to be the source of economic growth and income generation with small and medium livestock farmers as major beneficiaries.

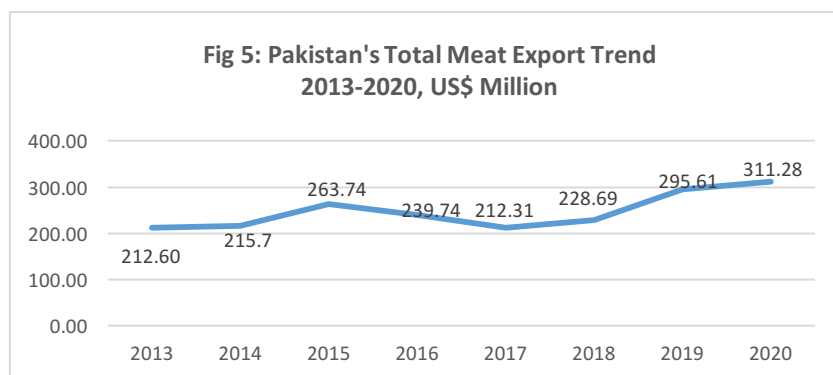
Pakistan has a comparative advantage in production of high value, traditional livestock farming especially sheep and goat raising. This potential is not being fully



<sup>5</sup> The figure does not consist of edible offal.

<sup>6</sup> Trade Map

exploited especially at the various levels of the vertical of meat production such as farm level, livestock markets, abattoirs, storage and transportation etc.



### 3. Pakistan's Important Livestock Breeds

Indigenous cattle also known as humped or zebu, belong mainly to following three types based on the animal's purpose and performance. According to an estimate, about 15-20% of the cattle population is pure-bred, 5-10% crossbred or exotic while the rest 70-75% are non-descript animals. There is a negligible number of imported pure foreign breeds such as Holstein, Jersey, Swiss Brown and their crosses with local animals, thereby providing negligible contribution to meat sector (Please see Annex 14.8 for pictures of important livestock breeds).

**Table 5: Important Cow and Buffalo Breeds in Pakistan**

Cow Breeds		Local Buffalo Breeds
Local	Foreign	
Milch Breeds such as Sahiwal , Red Sindhi	Holstein, Jersey, Swiss Brown	Nili-Ravi
Draught Breeds such as Bhagnari, Dajal, Dhanni, Lohani, Rojhan, Tharparkar		Kundi
		Azi Kheli

Pakistan has 14% of total world buffalo population. Two famous breeds exist in the country; Nili-Ravi (heavy weight) found in Punjab and Kundi (light weight) in Sindh whereas Azi-Kheli breed is mainly localized in the Swat valley in KPK. These breeds were also included in the 2006 livestock census for the first time.

There are ten distinct breeds of cattle found in Pakistan. Their production characteristics are as follows:

**Table 6: Typical Characteristics of Cattle Breeds of Pakistan**

Breed	Type	Areas of Concentration	Adult Body Weight (Kg)		Age at Maturity (days)	Milk Yield/ 305 days	Lactation length (Days)
			Male	Female			
Red Sindhi	Milch	Western Sindh, Lasbela, Balochistan	530	325	852	1675	270
Sahiwal	Milch	Sahiwal, Okara, Multan, Faisalabad	544	408	861	1852	283

Bhagnari (Kachhi)	Draught	Bhag Territory, Kalat, Northern Sindh	650	480	966	950	262
Dhanni	Draught	Attock, Rawalpindi, Chakwal, Jhelum	412	285	910	800	204
Lohani	Draught	Loralai, D.I. Khan	315	253	900	613	163
Rojhan	Draught	Suleman Range, D.G. Khan, D.I. Khan, Kohat, Bannu	370	267	-	735	192
Tharparkar	Dual	Tharparkar areas	470	285	891	1584	277
Cholistani	Milch	Cholistan area	470	341	609	1471	285
Kankreg	Dual	South West Tharparkar	591	432	-	1200	-
Dajjal	Draught	Dajal area, D.G. Khan	587	400	-	900	257

It is to be noted that breeds mentioned in the afore compiled table represent approximately 30% of the population only; the remaining population is generally classified as non-descript. Crossbreeding of local cattle with exotic semen (particularly Holstein-Friesian and Jersey) for improved milk-production has become a popular practice in the Dairy Sector of Pakistan.

In the category of small ruminants include sheep and goat, there are about twenty-eight (28) sheep breeds classified as thin-tailed sheep, generally found in irrigated areas. There are nineteen (19) breeds found under the category of fat tailed breed mainly found in arid rangelands and mountainous areas of Sindh, KPK and Azad Kashmir. Usually sheep are kept for wool and mutton production. The wool is coarse in quality and is mostly used in the local carpet industry. The following table shows some important classification of sheep breeds;

**Table 7: Sheep Breeds of Pakistan**

Thin Tailed Sheep		Fat Tailed Sheep	
Bakkarwal	Kali	Balkhi	Michni
Buchi	Kajli	Bibrik	Pahari
Cholistani	Kooka	Dumbi	Rakhshani
Damani	Lohi	Gojal	Salt Range
Kacchi	Poonchi	Harnai	Tirahi
Kaghani	Sipli	Hashtnagri	Waziri
Kail	Thalli	Kohai Ghizer	

Goats are kept primarily for milk, meat or mohair production and can be classified as shown in following table;

**Table 8: Goat Breeds of Pakistan**

Milch	Meat	Mohair
Beetal	Barbari	Pak Angora
Dera Din Panah	Chapper	Bikaneri
Kamori	Teddy	Kaghani
		Khurasani



Camels have a unique ability to convert scanty plant resources of the desert into milk, meat and fibre. Two types of camels are found in Pakistan;

- i. Mountain camels (locally known as Pahari or hill camels), found in Northern Punjab and Balochistan
- ii. Riverine camels, found in the deserts and irrigated plains of Punjab and Sindh

There are 20 breeds of camel in Pakistan as shown in following table;

**Table 9: Camel Breeds of Pakistan**

Balochistan	Punjab	Sindh	Khyber Pakhtunkhwa
Kacchi	Bagri	Dhatti	Gaddi
Brahvi	Brela	Kharai	Ghulmani
Kharani	Campbelpuri	Larri	Khader
Makrani	Kala-Chitta	Sindhi	Maya
Lassi	Mareecha	Sakrai	
Pishin			
Rodbari			

Meat is usually a by-product of a camel production system which usually comes from old males and females that have served useful functions such as milking in their earlier life. Only a limited number of castrated males are raised especially for slaughter on the eve of Eid-ul-Azha. In Pakistan, approximately 50,000 tons camel meat is produced annually.

Camel meat markets, except in Sudan, are not well developed, but lucrative export opportunities to Egypt, Libya, Saudi Arabia and Gulf States exist. Camel meat has been scored as high as or better than beef by taste panels in the Arab states. Even outside Arab states, meat from young camels has been graded as having the taste of prime beef. In Pakistan, approx. 70–75 camels are slaughtered daily in various slaughterhouses as it is used occasionally.

### 3.1. Import of Breeding Cattle in Pakistan

During the last ten years, Pakistan has seen a shift towards commercial and corporate farming and several hundred new dairy farms have started operations during this period. Majority of these farms have used Holstein cows imported from Australia. Pakistan imports live cattle every year as reflected under the Trade Map HS Code: 0102, Live bovine animals<sup>7</sup>;



*Figure 6: A typical Dairy Farm*

**Table 10: Pakistan's Import of Live Bovine Animals: HS 0102 (US\$M)**

<sup>7</sup> [www.trademap.org](http://www.trademap.org)



Product Label	HS Code	2013	2014	2015	2016	2017	2018	2019	2020	2021
Pure-bred cattle for breeding	0102-21	16.13	3.52	9.71	6.80	10.70	10.35	10.39	7.80	3.10
Live cattle (excluding pure-bred for breeding)	0102-29	4.62	0.55	0.06	0.00	0.00	0.75	0.75	0.17	0.00
<b>Total</b>		20.74	4.07	9.77	6.80	10.71	11.10	11.14	7.97	3.10

Under category HS 0102-21 of live breeding cattle, Pakistan's import of breeding cattle - heifers dropped from worth US\$ 10.39 Million in year 2019 to US\$3.10 M in year 2021 as many modern dairy farms on ECH system have started selling their purebred heifers in local market.

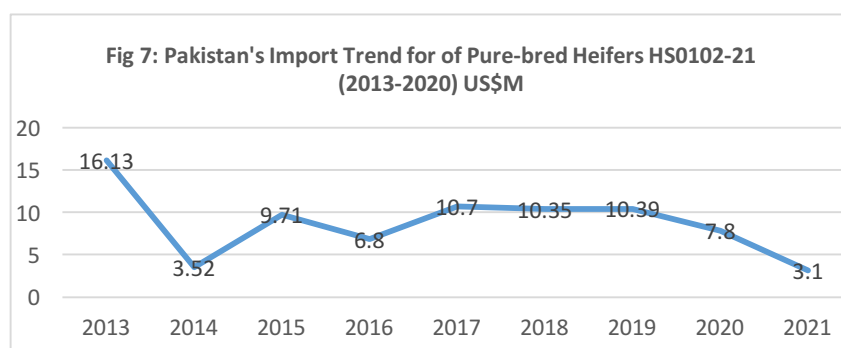
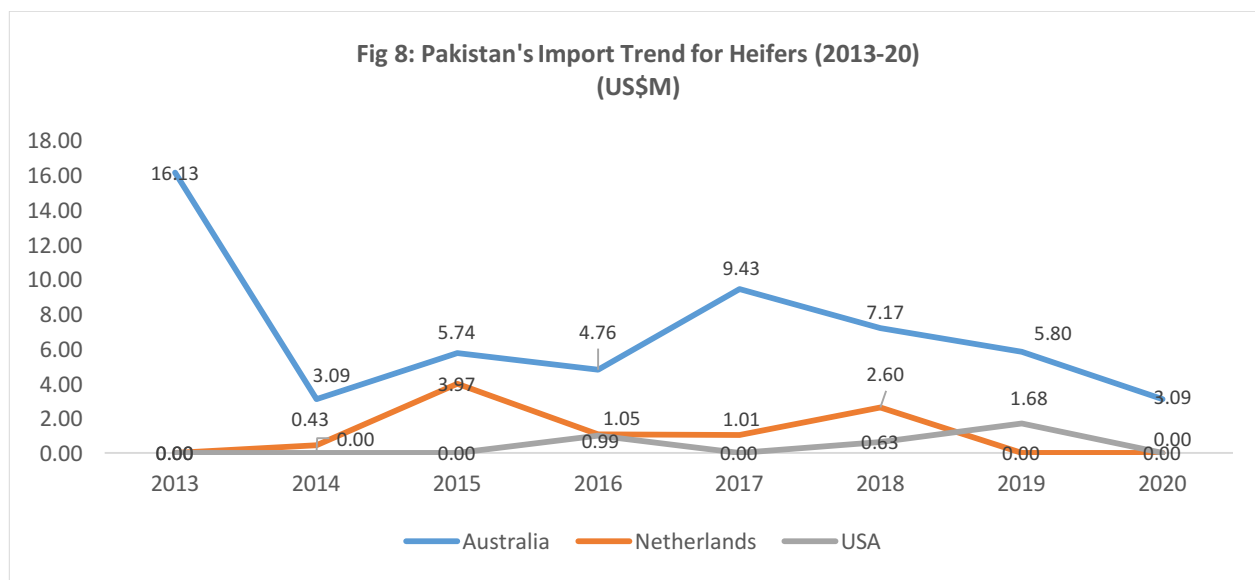


Figure 7: A typical dairy cow

During years 2013-20, Pakistan has imported heifers from Australia, Netherlands and USA. Pakistan's import of heifers from Australia has declined from US\$ 16.13 million in year 2013 to merely US\$ 3.09 million in year 2020 as the modern dairy farms have developed their pedigreed herd themselves so far. However, import of genetically superior heifers from USA have made their way in year 2016 starting with import value of US\$ 1 million to US\$ 1.7 million in subsequent years before the beginning of Covid-19 pandemic.

**Table 11: Pakistan's Import Partner Countries for Heifers (2013-2020) US\$M**

Exporting Countries	2013	2014	2015	2016	2017	2018	2019	2020
Australia	16.13	3.09	5.74	4.76	9.43	7.17	5.81	3.09
Netherlands	0.00	0.43	3.97	1.05	1.01	2.60	0.00	0.00
USA	0.00	0.00	0.00	0.99	0.00	0.63	1.68	0.00
Others	0.00	0.00	0.00	0.00	0.28	0.00	0.32	0.00
<b>Total</b>	16.13	3.52	9.71	6.80	10.72	10.39	7.81	3.09



#### 4. Prevailing Livestock Production Systems

Prevailing livestock production systems in Pakistan include;

##### 4.1. Rural Dairy and Livestock Production

There are three dairy and livestock production systems generally used in rural conditions; Small-holder subsistence (1-5 animals), Small-holder market oriented (5-15 animals) and Rural Commercial with more than 50 animals (usually 90% buffaloes & 10% cows).

In all above-mentioned systems, the farming families consume milk and sell surplus milk, i.e. leftover after domestic consumption, to other consumers. With respect to the animal herd, usually male and female calves suckle the dams and are retained during lactation period. Traditionally, male calves with best breed characteristics are kept for breeding while other male calves are culled and considered for beef production. Due to the un-organized and scattered nature of the sector, it is difficult for farmers to receive technical assistance and business development services related to improved livestock farming.

##### 4.2. Commercial Dairy Production

This system is adopted in urban or peri-urban areas around big cities to fulfil the demand of consumers for milk and meat. The large commercial dairy herds range from 100 to 500 buffaloes and cows. The animals in production are kept in farm premises only. Unproductive animals and male calves are sold for beef production. Mostly, animals are sold for slaughter, after one lactation they are replaced by high yielding animals.

##### 4.3. Commercial Calf Fattening Farming

This system is adopted in urban or peri-urban areas around big cities to fulfil the demand of meat. Large commercial calf fattening farms range from 100 to 500 calves, preferably males. Since these are raised on formulated feed that is high in energy and protein in feedlots for 100-120 days, their live body-weight gains are improved.

#### 4.4. Desert / Rangelands Livestock Production

Rangelands constitute approximately 60% of the total 80-million-hectare area of the country. In deserts, livestock including sheep, goats, cows and camels are kept in base areas with water and grazing facilities to fulfil needs for milk and meat production, draught animal power<sup>8</sup> and transport. Livestock is kept either as nomadic or transhumant<sup>9</sup> system. Nomadic flocks keep on moving constantly in search of free grazing areas however in the winter season, the farmer may need to buy feed from other sources due to scarcity of forage. The nomads sell their animals during the period of feed scarcity, therefore in winter the price of sheep and goats is slightly lower than prevailing in the rainy season.



Figure 9: Desert Nomads

In transhumant system, the human population along with their livestock wealth migrates from desert areas or cold regions of northern parts of the country to the nearest irrigated or low-lying lands. This migration always creates stress towards feed resources and affects the grazing capacity of the lands, hence affecting the feed and meat prices in the prevailing market.

### 5. Value Chain

#### 5.1. Dairy Value Chain

Milk is a primary commodity of dairy sector with almost 15% annual increase in demand within the organized dairy industry which requires milk production and supply to keep pace with the growing demand of the population through maintaining efficient supplies. Since more than 83% of milk animals in the national herd are raised and bred by subsistence farmers with limited interest in increasing productivity and limited networking with the support institutions in public and private sector, the overall goal of achieving higher productivity in milk production seems to be a difficult task.

Not only milk but other dairy products extracted are also necessary to fulfil nutritional requirements of consumers. These include butter, cheese, ghee, yogurt, khoya, and flavoured milk made through the use of traditional as well as modern methods. Traditional methods are mostly employed by farmers to fulfil their subsistence needs. They also sell these products to support their household income. In the organized sector, these products are produced and packed through the use of industrial processes and sold on commercial scales to the consumers located in various parts of the country. These dairy manufacturers are located mainly in the province of Punjab and have efficient distribution networks across the country.

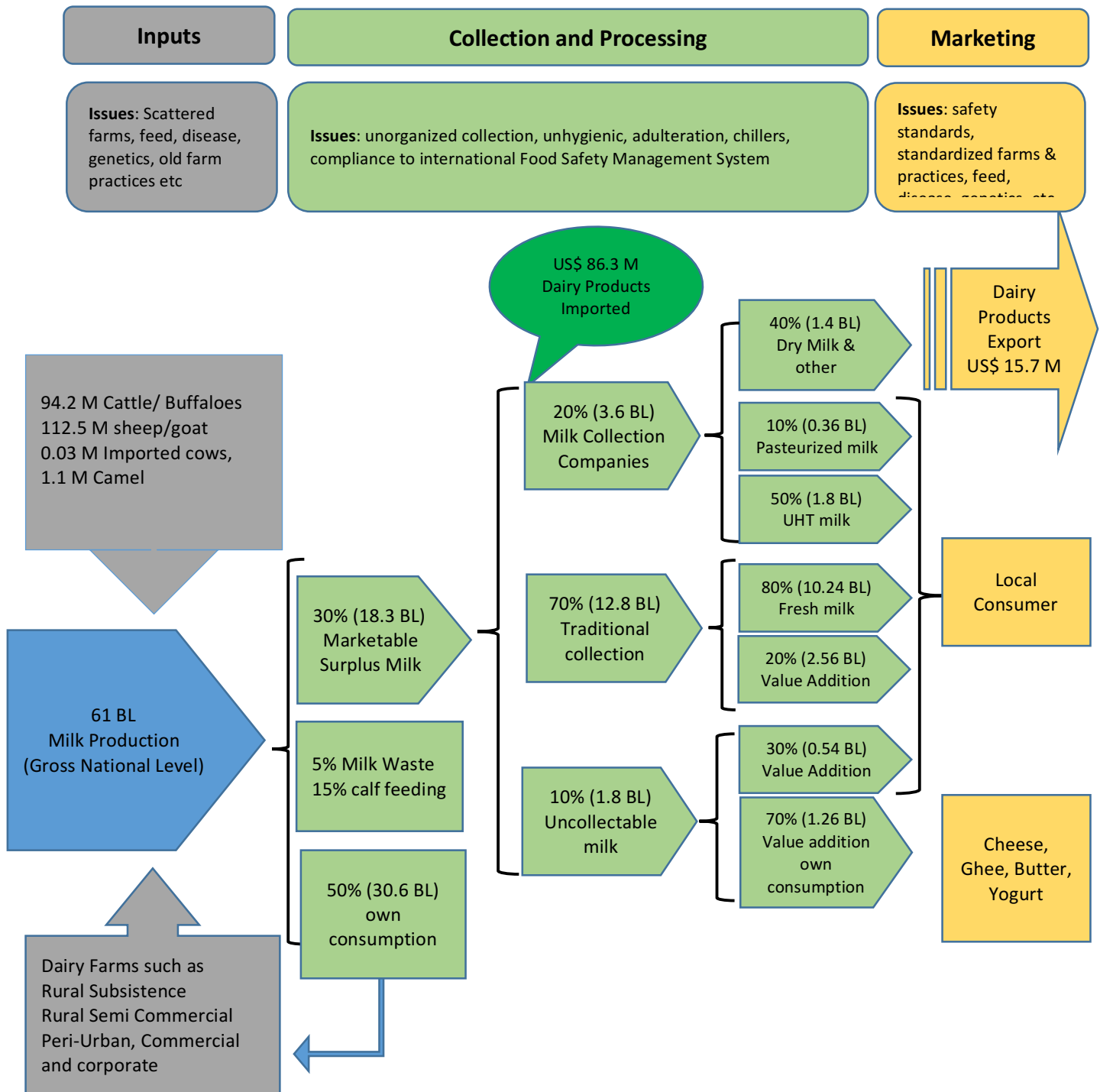
On the other hand, there is much dependence on imported dairy products such as cheese due to the fact that the quantity, quality and variety of locally produced cheeses do not cater to the needs of consumers. Imported cheese, mostly in processed powder form, is consumed as an ingredient by many restaurants and big stores. Besides, imports are used as a balancing tool to bridge the domestic demand and supply gap in cheese consumption.

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<sup>8</sup> Draught animal power (DAP) is an **important output from large ruminants** and on many small-scale farms. Cattle, buffaloes and camels provide power for crop production.

<sup>9</sup> The action or practice of moving livestock from one grazing ground to another one depending on weather and availability of forages.

Figure 10: Dairy Value Chain



## **5.2. Types of Dairy Farms**

In the past, the livestock sector has remained a subsistence level sector where small holders have been raising animals for acquiring meat, milk and dairy products mainly for their own consumption and also to receive cash income through small-scale domestic selling. However, this scenario has lately changed and now farm animals are also raised on semi-commercial and commercial scales to market fresh or pasteurized milk and other related by-products such as cheese, yogurt, cream etc. The dairy sector of Pakistan is a mix of producers including small, medium and large farmers with varying land and animal holdings with different production capacities. These consist of;

- a. Subsistence farmers having less than five animals with low productivity and limited access to resources such as nutritious feed, breeding and veterinary health facilities.
- b. Medium and large size farmers especially located in peri-urban areas with relatively higher access to resources and facilities. These farmers have access to breeding services, better health facilities for their animals, nutritionally balanced feed and better market access through a more structured value chain.
- c. Mega dairy farms established on modern concepts of ventilation systems or Environmentally Controlled Housing (ECH) System for imported pedigreed cows with established genetic worth
- d. Dairy processing companies located near the peri-urban farms and milk producers with developed supply chains producing value added products.

## **5.3. Milk Production and Consumption**

Milk production accounts for approximately 80% of the total production produced in rural areas which are geographically dispersed and scattered throughout the country. The production of milk is labour intensive and involves manual methods of milking the animals. About 50% of total milk production in rural areas is consumed at source while the remaining is marketed through distribution channels of milk traders (dodhis).

Milk is also produced in peri-urban farms operated by medium and large-scale farmers having access to better value chain and distribution systems. Marketable milk is mainly obtained from cows and buffalos and distributed to the consumers through use of various conventional as well as modern marketing channels. It accounts for 96% of total milk produced from cows, buffalos, sheep and camels.

In recent times, there has been a rise in milk production from pure-bred and cross bred imported cows with high milk yields. These cows are raised in structured and organized farms located near the urban areas. Much of the milk produced at these canters is collected by large milk producing plants for commercial sales. This trend has become popular with the passage of time resulting in the import of cows from Denmark, Sweden and Australia. It is pertinent to mention that 30% of the milk is being consumed in urban areas and 67% in rural population; only 3% of total milk production is processed and marketed through formal channels.

## **5.4. Milk Collection**

A variety of marketing channels that are employed are being used to procure and market raw milk. This variation is due to the presence of different production systems at various locations of the country. These marketing channels involve purchase of fresh milk from rural areas or remote milk pockets, and its supply to consumption canters on a daily basis, either for raw milk use or for conversion into milk products at small-scale dairy shops.

### 5.5. Informal Channels

Approximately 70% of marketable surplus milk (which is only 30% of total milk production) is collected and marketed through informal channels, mainly dominated by the traditional milk collection agents (Dodhi). They serve as a main source of procuring milk and have proven to be the most reliable link between farmers and the consumers so far. On the basis of scale of operations, they can be categorized in following groups;

- a. Small Milk Collection Agent (Katcha dodhi) performing door-to-door collection of up to 100 litres milk
- b. Medium Milk Collection Agent (Pakka dodhi) involved in daily milk collection and distribution of 400-800 litres
- c. Large Milk Collection Agent or Contractors involved in milk collection mainly from medium-sized dodhis with daily average collection and distribution of 40-70 mounds<sup>10</sup>.

Small and medium milk collection agents sell more than 80% of milk collected to contractors, 10% to collection and procurement canters of processing plants and about 5% to local confectioners and bakers. On the other hand, large contractors sell 90% of milk to milk retail shops, milk processing plants and large-size bakers and confectioners. However, the variation in the quality of milk and loss of milk during transportation reduces the quantity of high quality milk required by dairy processors, which ultimately results in increased retail price to consumers.

### 5.6. Formal Channels

As quality of milk is the main yardstick for production of value added processed milk (in UHT or pasteurized form), the milk processing units, wherever convenient, prefer to have direct procurement channels. However, as milk production is geographically dispersed, these companies have to rely on conventional milk collection and distribution agents.

Large milk and dairy producing companies are now moving towards an integrated dairy value chain. This experience has greatly ensured consistent supply of desired quality of milk that holds key importance in satisfying customer needs and increase in their market share. These companies have set out quality criteria and therefore the suppliers including small and medium milk collection agents (dodhi) and large milk collection contractors are bound to conform to these standards. This approach has enabled contractors to adopt measures including use of refrigerated containers and farm cooling tanks that has helped in use of systems to ensure appropriate storage and preservation of fresh milk. Primary results of the formal processing industry are visually attractive as tetra-packaged UHT/ pasteurized milk and other dairy value added products such as cheese, butter, yogurt etc. are considered more hygienic and safer for use by consumers. These products are stored in warehouses and supplied to retail outlets throughout the country by employing an advanced and well-managed distribution network.

## 6. Challenges in Dairy Sector

Despite the fact that Pakistan's ranking in top milk producing countries is amongst the highest in the region and the world, the country has not been able to make efficient use of resources to fill up its demand and supply gap for dairy products, hence the focus remains on import of these products rather than exporting to global markets. Some of the main reasons for this prevailing gap include; efficiency losses in production, lack of awareness in farmer and producer communities for increasing milk yield, limited

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<sup>10</sup> One mound is equal to 40 kgs weight.

integration within the dairy value and supply chain, policy issues and resource constraints to implement initiatives at a macro level.

The current scenario of dairy sector does not promise much to meet existing and anticipated domestic demands unless certain major reforms are introduced within the sector. Conventional milk production, collection and distribution do not meet quality and hygiene standards, which are further aggravated by improper facilities of storage and transportation and adulteration of milk. Major limitations of the sector include:

- Limited outreach of public sector initiatives to facilitate distant locations
- Limited awareness of farm productivity, milk safety and quality issues and standards for milk production, handling and processing / value addition of milk etc.
- Lack of awareness of Pre-Requisite Programs (PRPs) such as Good Husbandry Practices, Good Manufacturing Practices, Good Hygienic Practices etc. as per minimum standards set by Codex Alimentarius.
- Low milk output per animal on farm level due to conventional animal husbandry practices and poor farm management resulting in inadequate feeding, poor breeding and Artificial Insemination cover, insufficient disease cover, failure to control mastitis etc.
- Limited implementation and adherence to standard food safety management systems and regulations in milk production, processing and marketing
- Lack of knowledge and trainings of skilled and semi-skilled workers on food safety standards for value addition of milk through churning (butter, butter milk fat products, Ice cream etc.), evaporation (dry or condensed milk), pasteurization/UHT (fermented products, yogurt, buttermilk, cheese, sour cream) and homogenization (skimmed milk, fortified milk, flavoured milk, whipped cream etc.).
- Absence of proper pricing structure as farm gate price of milk varies with seasons (summer, winter) in the traditional marketing systems (milk traders have advance milk supply commitments with farmers as well as processors)
- Lack of knowledge for packaging and branding to make products distinct from others and fetch premium prices due to their likeness by consumers
- Lack of knowledge regarding the potential of export markets

These issues make it difficult to achieve desirable growth and trade targets, unless policy measures are taken to improve the sector's over all performance and growth. There are numerous opportunities available in the sector to integrate and produce high value added products that can not only cater to domestic demand of a large customer base but may also provide openings for exporting them to the international markets where food security is a rising concern.



## 7. Red Meat Production Value Chain

The red meat processing industry of Pakistan is primarily dependent on availability of indigenous raw material i.e. livestock including buffaloes, cows, sheep and goat. Keeping in mind the importance of livestock, the industry has created backward linkages with farmers, growers and allied vending industry for consistent supply of raw materials. Number of direct and indirect work force employed in meat production and processing industry has also considerably increased in the last two decades. The red meat processing industry comprises of the following verticals;

### 7.1. Livestock Farming

Rearing of livestock such as large (buffaloes, cows, camels) and small (sheep and goats) ruminants.

Figure 11: Livestock Sector in Pakistan

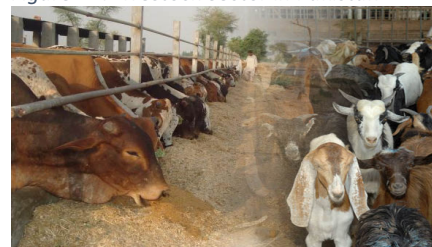
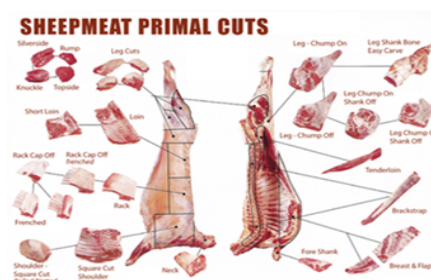


Figure 12: Meat Processing



### 7.2. Meat Processing

Slaughtering of animals and preparation of meat by products in modern abattoirs and meat processing units; extending the shelf life for consumers.

### 7.3. Marketing and Distribution

Marketing is primarily done through promotion of fresh/processed meat products through branding, packaging, labeling, advertisement, public relations, trade exhibitions etc. Distribution includes wholesale; warehousing, transportation and logistics and retail; super market chains, store, restaurants, etc.

### 7.4. Red Meat Export

Beef and mutton in fresh, chilled or frozen form (carcass, boneless and with bone), edible meat offal (such as heart, kidneys, tongue etc.) and processed food commodities such as ready to cook and ready to eat meat items are exported to different countries.

Figure 13: Premium meat cuts



Although, there are many types of meat produced in the world depending upon the availability of livestock, this document focuses on the 'Red Meat' segment in meat processing industry including buffaloes, cows, sheep, goats and camels only.

### 7.5. Current Situation of Red Meat Market

Pakistan's meat processing industry is continuously growing due to the use of processed and hygienic meat becoming common and popular, especially in metropolitan cities. Due to this, the number of skilled and trained manpower employed is increasing rapidly. The size of the industry is fairly large and most of the processing units are based in or around the major cities and towns of the country. These processing units produce processed beef, mutton and other by-products such as edible offal. Presently, the meat

processing industry consists of small to medium scale, well organized processing units, consisting of abattoirs and chillers supported by highly fragmented small to medium scale livestock farming.

Geographically, data indicates that meat processing and its related commercial activities are increasing in Punjab and Sindh as both provinces favour agro-based industry. In Punjab, the advantage lies in that the dairy industry on commercial lines is flourishing from where animals for meat are procured and Lahore is the centre of meat processing industry. Sindh also has great potential as many processing units are established around Karachi.

Meat processing industry is directly dependent on the supply of livestock. Currently, livestock in Pakistan is raised in agricultural lands spread over an area of 263,000 sq. km. approximately; one fifth of this land is used as pasture land to raise animals. Although, in major production systems, the animals are raised mainly for milk production, whereby, procurement of meat is considered as a secondary activity, which in turn affects the supply position of meat products for meeting domestic and international demand. Livestock breeds for acquiring meat specifically are rarely developed.

The meat production and processing industry is also a source of raw material to auxiliary industries such as poultry feed by providing meat meal, blood meal, bone meal etc., detergent soaps and edible oil etc. besides providing valuable raw material to leather industry. Since, Pakistan has not developed any beef breed both in small as well as large ruminants, the meat is procured primarily from the existing population mainly used for dairy and dual purpose breeds.



*Figure 14: Cattle herds in local livestock markets*



*Figure 15: Goats in traditional farming*

## **7.6. Traditional Meat Production & Processing**

Pakistan's red meat industry remains underutilized as large ruminants such as cows and buffaloes (usually male calves) are not provided quality feeding, particularly by subsistence farmers, which results in low quality of beef. As a result, exporters are unable to fully capitalize on advantages of the processed meat industry due to limitations of indigenous breeds and lack of corporate farming.

Livestock farming as a whole, from farm to markets remains unorganized due to subsistence conditions. Subsistence farmers do not have enough resources to adopt modern technologies, thus, feeding and farming methods are conventional and modern management practices are rarely followed. In comparison, feedlot fattening aims at providing specialized protein-rich ration to animals for improved daily weight gains and quality of meat. The animals are kept in purpose built sheds as per husbandry practices. Feedlot system is practiced preferably to raise the animals for sacrifice on the eve of Eid-ul-Azha. Costly fodders

and fattening concentrates are fed to premium sacrificial animals to get highest possible daily weight gains and beauty so that they fetch good prices.

With the increase in human population, farmers face problems such as decreasing area under fodder crops cultivation. Likewise, other problems include shortage of irrigation water, less and erratic rainfalls, barren rangelands, low priorities to fodder production and preservation. At present, the area under fodder production is approximately 3.35 million hectares out of total cropped area of 21.85 million hectares producing more than 60 million tons of fodder with average yield of 22 tons/ hectare. This production is not sufficient to meet maintenance requirements of the livestock causing malnutrition in animals. This is one of the reasons that productivity of livestock, despite their known genetic potential, continues to remain low.

Rabi and Kharif are two main fodder seasons. The major Rabi fodder crops are barseem, alfalfa, oat, mustard and barley. The major Kharif crops are maize, sorghum, millet, cowpeas, guar, sada bahar etc. Despite abundant production, there is always a shortage of green fodder between seasons as it is not available in sufficient quantities especially in extreme hot (June-July) and cold months (December-January) making animals under-fed. This shortage is met by wheat straw, which has limited nutritional value. Quality concentrates are not used efficiently. Straws of the cereals and other by-products are commonly used to overcome feed shortages. High energy and protein rich concentrates are considered expensive and thus avoided.

### **7.7. Modern Meat Processing Industry of Pakistan**

International buyers are increasingly demanding compliance to safety, environment, ethical and social standards along with demands for product quality and reliability. Non-compliance to International Standards is one of the key bottlenecks in export enhancement of Red Meat from Pakistan. It is critical that issues pertaining to compliance be addressed in a holistic manner.

Many companies in Pakistan are processing mutton and beef. The supply chain is fragmented where traders and market agents play a key role from the farm to livestock markets, abattoirs and export. Quality and types of meat processed for different markets also varies. The value chain identifies a comprehensive list of compliance and standards requirements at different stages of the potential meat market. Certification requirements are essential for greater integration in global supply chains through compliance.



*Figure 16: A modern Abattoir*

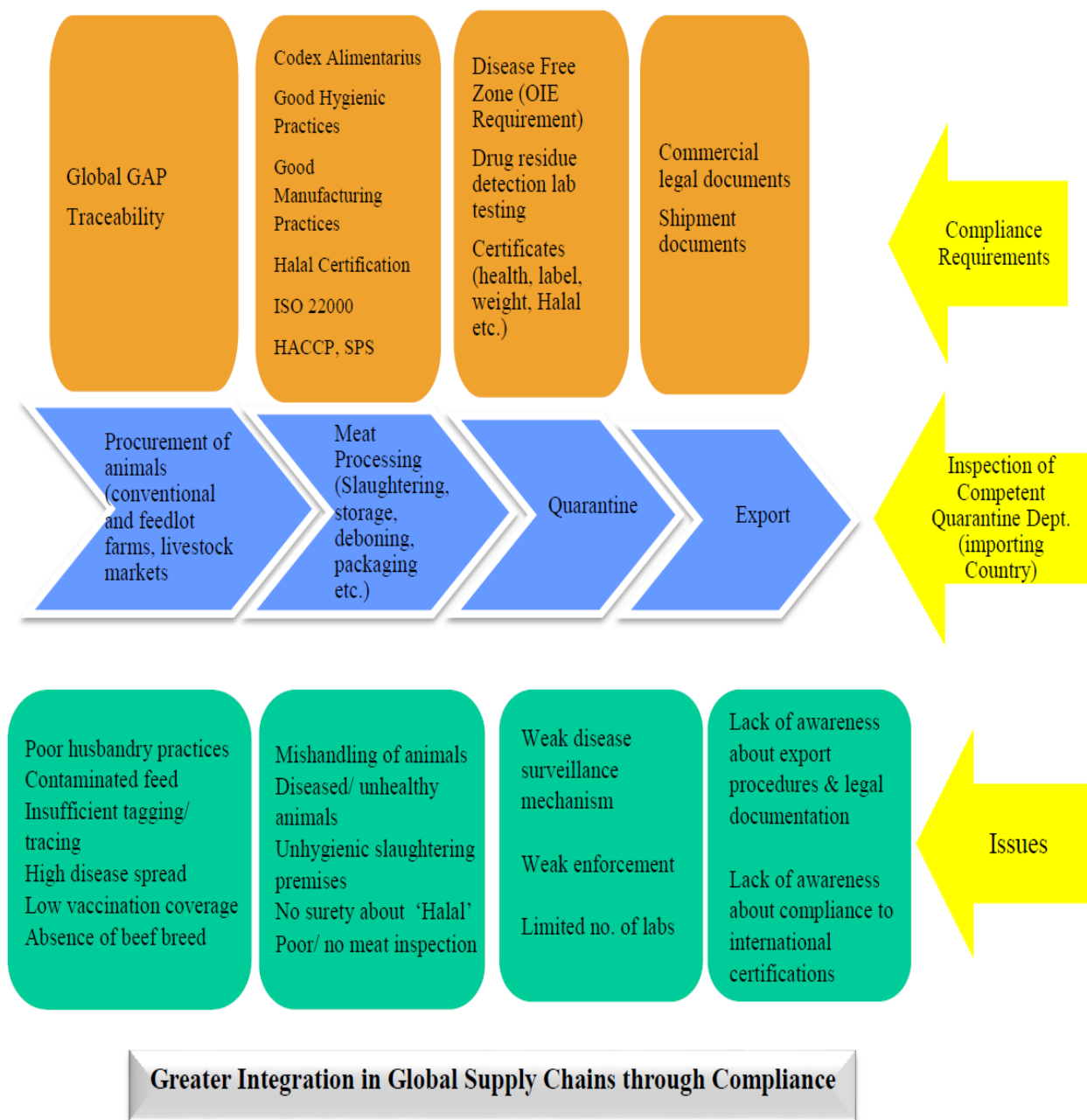
While procuring animals, the certifications required by meat exporter are usually Global GAP and Traceability (Please see Annex 14.1 for more about traceability). Animals of different breeds are mainly procured from livestock markets where animals from different surrounding farms are brought. Health of the animal may be affected by poor husbandry practices, diseased conditions due to lack of or low vaccination, parasitic infestations due to unhygienic farm conditions and contaminated feed etc. However, the animals from feedlot farms are healthy and properly vaccinated, kept as per Good Husbandry Practices. These are properly tagged, hence may be easily tracked through any tracing system. At meat processing units, the certifications required are Halal, ISO 22000 and HACCP etc. At this stage, unhygienic abattoir premises, mishandling of animals during transportation, no surety of Halal slaughtering method, poor meat inspection strategy etc. directly affects the meat quality, texture and taste.

Prior to export, quarantine procedure for drug residues and various certifications pertaining to health, label, weight, Halal etc. takes place, however, the issues here are insufficient number of testing laboratories at quarantine check and insufficient enforcement of laws pertaining to meat exports.

Due to insufficient and weak disease surveillance mechanism, there is no declared Disease Free Zone (DFZ) as per required for FMD Free status declared by OIE (Please see Annex 14.4 to read more about DFZ). Since, Pakistan has no declared FMD-Free Status, the meat exports to other potential destinations suffer substantially. Similarly, required shipment and commercial legal documents at the time of export as per requirements of importing countries are also important.

The existing linkages along with required certifications are shown in following value chain;

Figure 17: Traditional Value Chain of Meat Processing and Export



There are approximately 30-35 meat processing units producing fresh chilled beef carcass, mutton and edible meat offal for local consumption and export. Most meat products are consumed in both fresh and chilled form. These units are concentrated around major cities e.g. PK Livestock Company (Karachi), Zenith Associates (Lahore), Tazij Meat & Foods (Lahore), Syed Traders (Lahore) etc.

## **8. Challenges and Opportunities in Red Meat Sector**

Developing countries like Pakistan are dependent on agricultural products for a major portion of their export earnings; red meat is one of them. Pakistan is facing greater challenges to access not only developed markets but also some developing countries as it faces compliance problems with SPS standards due to limited SPS management and food safety capacity. Pakistan must have a certain minimum level of SPS management capacity in order to access high value markets for meat and meat products.

The domestic meat market is largely unregulated and accounts for a major part of total slaughtered animals. Majority of slaughterhouses have limitations regarding shortage of basic utilities such as water and electricity. The butchers lack training especially in the area of personal hygiene, while basic infrastructure and equipment is inappropriate for hygienic operations, pre and post mortem inspection is non-existent and the regulatory framework and its enforcement is ineffective. Transportation used is mainly not refrigerated and the entire supply chain is unhygienic with the incidence of salmonella infection in raw meat being common.

The private sector has established few animal stock holdings and yards to control quality and consistency of raw material supply. The private sector has improved the process of animal slaughtering as per 'Code of Practice for slaughterhouses' developed by PSQCA.

Pakistan has not been a traditional exporter of livestock and livestock products. Ironically from 1997 onwards, the country was able to gain a foothold in some markets at a time when European exporters had SPS problems of their own, namely Bovine Spongiform Encephalopathy (BSE) commonly known as Mad Cow Disease. Pakistan has felt the effect of quality/SPS standards in the meat and livestock sector; animal casing exports witnessed a rapid decline in 2003-04 due to Pakistan's placement in Category II List by the EU regarding the export of sheep casing, because of the country's uncertain status of BSE presence. Similarly, Romania placed a ban on Pakistani animal casing import as there were fears that the casings were contaminated with insecticide. In 2001, exports of meat to the country's main destination markets i.e. Saudi Arabia and UAE were banned, caused by concerns over hygiene in the country's slaughterhouses. After satisfying the standards required, the ban has been now lifted. In comparison to the world trade of meat and livestock, Pakistan's share has been very limited for meat and livestock in comparison to by-products such as leather goods. Opportunities do exist if SPS measures can be improved, especially for meat in Muslim countries.

There is growing concern among developing countries like Pakistan that stringent quality and SPS standards can potentially impact their trading opportunities in food and agricultural products. Inadequacies in the institutional and regulatory framework make developing countries like Pakistan especially vulnerable to trade interruptions and the emergence of negative reputations for compliance with international standards. Pakistan must enhance its capability in addressing current and prospective challenges relating to international compliance particularly in SPS measures, in order that existing and potential export markets will accept the entry of the country's products based on quality, uniformity, health and hygiene.



## 9. Important Livestock Species/ Breeds of Pakistan



Figure 18: Lohi Sheep (Thin-tailed breed)



Figure 19: Baluchi Sheep- Fat- tailed breed



Figure 20: Brela Camel



Figure 22: Dhanni Breed Cow



Figure 21: Neeli Ravi Buffalo



Figure 23: Sahiwal Breed Cow



Figure 24 : Beetal Breed Goat



Figure 25: Nachi Breed Goat