

Chapter 6

Major Socio-economic and Livestock Sector Profiles of Sindh

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6.1 Demography, Area, and Economy of the Province

In Sindh Province there are 23 Districts, 160 Talukas and 1,094 Union Councils. The province supports a population of 42.4 million people (projected population in 2010) in the total area of about 140,914 km². The area and population of each district are shown in Table 6-1-1, and those at Taluka level are indicated in Appendix B.

Table 6-1-1 Area and Population (projected in 2010) of Each District

Districts	Area (km ²)	Population (1,000)	Districts	Area (km ²)	Population (1,000)
Ghotki	6,290	1,352	Thatta	17,350	1,551
Sukkur	4,800	1,256	Matiari	1,420	718
Khairpur	15,730	2,154	TandoAllahyar	1,730	652
Naushero Feroze	3,020	1,515	Hyderabad	1,010	2,088
Shaheed Benazirabad (Nawabshah)	4,510	1,536	Tando Muhammad Khan	1,950	614
Kashmore	2,610	952	Badin	6,120	1,538
Shikarpur	2,840	1,236	Sanghar	10,180	1,845
Jacobabad	2,670	1,033	Mirpurkhas	3,530	1,395
Kamber Shadadkot	5,410	1,287	Umerkot	5,010	926
Larkana	2,010	1,397	Tharparkar	20,170	1,273
Dadu	6,670	1,542	Karachi	3,530	13,729
Jamshoro	12,350	811	Total	140,910	42,400

Source: Development Statistics of Sindh 2009

The population growth rate has been decreased as 4.57%, 3.56%, and 2.80% respectively computed at the time of the population census in 1972, 1981, and 1998. Approximately 75% of this population are Sindhi, and speak the Sindhi language. Another 11% of the population speaks Urdu¹ and it is predominant in Karachi, the capital city of Sindh and the largest city in Pakistan. Karachi is located on the Arabian Sea with a population of 11 million people (Projected population in 2001). Further inland is the city of Hyderabad with a population of 2 million people and other smaller cities such as Sukkur and Larkana. For this reason the percentage of urban dwellers in Sindh is 48.8%, which is higher than the national ratio of 32.5%. A total of 91% of Sindhis are adherents of Islam, while a further 7.5% are Hindu. Hindu accounts for about 20 to 40% of total population in Badin, Sanghar, Mirpurkhas, Umerkot and Tharparkar districts. Hindu in Sindh represents 95% of the total Hindu population in Pakistan.

As indicated in Table 6-1-2, Sindh economy is well diversified to various sectors such as mining, manufacturing, agriculture, livestock, etc. Sindh is a center of heavy industries, commerce, and finance in the country, particularly Karachi being the economic center of Pakistan. The port of Karachi also performs the role as the Pakistan's gateway to imports and exports. Agriculture is also significant in Sindh with irrigated farming along the Indus River, and produces cotton, rice, wheat, sugarcane, bananas, mango, etc. Livestock and dairy production is very prosperous with the large number of various livestock breeds. Furthermore, Oil, natural gas, petrol, and coal are abundant natural resources of Sindh.

¹ The data was obtained from the website of the Ministry of Agriculture, Government of Sindh (<http://sindhagri.gov.pk/history-sindh.html>)

In Sindh 46.9% of employed population are engaged in the primary sector as shown in Table 6-1-3. This is followed by construction (13.1%), wholesale and retail trade and restaurants and hotels (10.7%).

As for literacy, the 45% literacy rate of Sindh is close to the national average of 43%. Higher ratios are observed in districts encompassing large cities such as Karachi, Hyderabad, Sukkur, and Larkana.

Table 6-1-4 shows the poverty rates of the 4 provinces in Pakistan. That of Sindh Province was lower than the national level and decreasing². However, close to 30% of the rural population in Sindh were forced to live below the poverty line. The poverty rate in the rural Sindh is more than double that in the urban areas while in other provinces such gap is less than that. From this perspective, poverty reduction in Sindh Province is an important issue.

Table 6-1-2 Sindh Economy (1999-2000)

Item	Value of Production (Rs. million)	Share to National Total (%)
GDP	196,240	30.2
Manufacturing	42,204	38.9
Agriculture	46,412	27.6
Livestock	13,535	23.0
Mining	1,527	50.7

Source: Regional Account of Pakistan: Methodology and Estimate 1973-2000

Table 6-1-3 Ratio of Employed Population

Categories	Ratio (%)
Agriculture, livestock, forestry, hunting, and fishing	46.87
Mining and quarrying	0.07
Manufacturing	8.58
Electricity, gas and water	0.40
Construction	13.06
Wholesale and retail trade and restaurants and hotels	10.67
Transport, storage and communication	3.17
Financing, insurance, real estate and business services	1.47
Community, social and personal services	5.49
Activities not adequately defined	10.22

Source: Population census 1998, Sindh

Table 6-1-4 Poverty Rates in Each Province

	2000 ~ 2001 (Fiscal Year)			2004 ~ 2005 (Fiscal Year)		
	Urban	Rural	Total	Urban	Rural	Total
Punjab	22.1	32.8	29.7	20.5	32.3	26.6
Sindh	19.9	47.1	36.5	13.6	28.1	21.9
NWFP	29.0	42.8	40.8	24.7	40.7	38.1
Balochistan	26.3	38.2	36.1	21.2	34.6	31.8
National Total	22.0	37.9	33.3	18.4	32.9	28.3

Source: World Bank staff estimation based on PHIS 2000-1 and PSLM 2004-5 taken from Poverty Profile of The Islamic Republic of Pakistan (JBIC 2007)

² However, in 2000-01 there was a severe drought in Sindh that caused serious damage. In 2005 the opposite case occurred with torrential rainfall, and as a result, it contributed to harvest plentiful crops and narrow considerably the gap between rural and urban populations.

The average monthly household income in Sindh is Rs.14,819; Rs.19,185 for the urban and Rs.10,410 for the rural (54% of the urban) while the national average household income is Rs.14,456 per month.³ This income comes largely from agricultural products (41%) and wages (34%) while 7% are from livestock. On the other hand, the rural household's expenditure in Sindh is Rs.9,576.72/month, 60% of the urban households. Food (53%) is the main expense of the rural household. In addition, the average number of family members is 7.57 for the rural household and 6.53 for the urban household. However, in reality, an extended family⁴, including nuclear families, relatives, same biradari members, is commonly observed in Sindh. In fact, the results of the household survey conducted by the Project Team show that the average number of household members is 11.8 (median is 11), which is 1.5 times larger than the number of the family members.

In Sindh 46.9% of the employed population engaged in the primary sector. This is followed by construction (13.1%), wholesale and retail trade and restaurants and hotels (10.7%)⁵. In the rural areas particularly, the primary sector is predominant, accounting for 74.7% of the employed population.

6.2 Livestock Holdings and Productions

6.2.1 Livestock Holdings

Sindh has a livestock population of 46.28 million⁶ which accounts for 21% of the nation's total according to Livestock Census 2006. As shown in Table 6-2-1, the number of cattle in Sindh is 6.93 million (23% of the nation's total), 7.34 million buffaloes (27%), 3.96 million sheep (15%), 12.57 million goat (23%) and 0.28 million camel (30%).

Table 6-2-1 Number of Livestock Holdings in Each Province

	Cattle	Buffalo	Sheep	Goat	Camel	Horse	Mules/Asses	Poultry	Total
Pakistan	29,558,812	27,334,985	26,487,741	53,786,988	920,868	344,253	4,424,170	73,647,888	216,505,705
	100%	100%	100%	100%	100%	100%	100%	100%	100%
Sindh	6,925,022	7,340,162	3,958,508	12,572,221	278,424	44,999	1,024,437	14,135,540	46,279,313
	23%	27%	15%	23%	30%	13%	23%	19%	21%
Punjab	14,412,323	17,747,474	6,361,767	19,831,039	198,964	163,107	2,295,052	25,905,928	86,915,654
	49%	65%	24%	37%	22%	47%	52%	35%	40%
NWF	5,967,886	1,927,495	3,363,249	9,599,017	63,952	76,174	626,483	27,695,116	49,319,372
	20%	7%	13%	18%	7%	22%	14%	38%	23%
Balochistan	2,253,581	319,854	12,804,217	11,784,711	379,528	59,973	478,198	5,911,304	33,991,366
	8%	1%	48%	22%	41%	17%	11%	8%	16%

Source: Livestock Census 2006

³ Household Integrated Economic Survey (HIES) 2007-08, Pakistan Federal Bureau of Statistics.

⁴ Refer to Chapter 9 for the details.

⁵ 1998 Provincial Census Reports of Sindh

⁶ Livestock Census 2006 covers following animals: cattle, buffaloes, sheep, goats, camels, horses, mules, asses, and poultry.

Livestock are well distributed throughout the province as shown in Table 6-2-2. The most populous district of cattle is Tharparkar followed by Shikarpur, Jacobabad, Khairpur, Dadu and Thatta. Buffaloes are found most numerous in Shikarpur on a scale similar to Larkana, Naushero Feroze, Khairpur, and Badin. Tharparkar has the largest population of not only cattle but also sheep, goats, and camels.

Table 6-2-2 Number of Livestock Holdings in Each District of Sindh

No	District	Cattle	Buffalo	Sheep	Goat	Camel	Horse	Mules/Asses
1	Ghotki	281,697	246,801	73,503	374,908	10,137	2,045	26,794
2	Sukkur	211,623	196,505	47,472	249,589	8,266	794	11,516
3	Khairpur	493,427	527,875	109,174	900,463	18,229	2,884	45,544
4	Naushero Feroze	334,758	530,530	51,564	820,422	3,711	627	36,797
5	Shaheed Benazirabad (Nawabshah)	339,188	390,259	101,810	877,509	4,577	3,527	42,753
6	Kashmore	190,872	195,704	138,344	148,022	1,411	2,587	35,997
7	Shikarpur	511,040	549,631	293,468	342,054	1,080	1,846	58,611
8	Jacobabad	507,241	469,182	369,693	524,396	1,588	1,975	84,532
9	Kamber Shadadkot	229,617	375,132	159,938	351,413	883	1,418	72,908
10	Larkana	216,199	531,329	52,237	248,057	608	521	82,268
11	Dadu	468,802	385,983	283,729	800,064	42,027	3,475	40,890
12	Jamshoro	163,732	118,740	171,748	414,191	4,078	870	29,493
13	Thatta	410,614	367,117	162,131	351,366	10,702	3,036	19,703
14	Matiari	266,906	234,683	51,865	330,003	876	690	20,397
15	Tando Allahyar	58,149	139,224	17,124	212,633	539	488	11,766
16	Hyderabad	76,484	309,163	29,134	295,962	1,075	1,638	16,165
17	Tando Muhammad Khan	57,416	157,934	24,233	136,266	2,429	83	8,468
18	Badin	315,369	498,253	223,072	578,299	8,672	1,714	19,131
19	Sanghar	370,235	323,543	83,579	696,584	6,406	1,600	46,807
20	Mirpurkhas	201,533	234,348	67,922	666,012	3,066	925	15,219
21	Umerkot	197,308	97,842	149,006	536,387	6,459	491	28,693
22	Tharparkar	752,265	46,328	1,185,122	2,217,876	135,356	8,519	248,132
23	Karachi	270,547	414,056	112,640	499,745	6,249	3,246	21,853
	Sindh Total	6,925,022	7,340,162	3,958,508	12,572,221	278,424	44,999	1,024,437

Source: Livestock Census 2006

Table 6-2-3 shows the number of livestock divided by human population in each district. It reveals that Tharparkar is outstanding in the province since it has the biggest numbers of cattle, sheep and goats as well as the biggest ratios in their numbers per person. Regarding buffaloes, Shikarpur is outstanding in this regard.

The varieties of the breeds of cattle and buffaloes are shown in Table 6-2-4. The largest proportion of cattle in Sindh is Red Sindh, 38% of the total, and followed by Thari (23%). Regarding buffalo, Kundhi accounts for 72% of the total, followed by Nili-Ravi.

As shown in Table 6-2-5, the most dominant herd size of cattle and buffalo is “1 to 6 heads” per household which accounts for around 75% of the household for both animals. Meanwhile, more than 90 % of household have a herd size of “1 to 30 heads” for sheep and goat.

Table 6-2-3 Number of Livestock Holdings per Person in Each District of Sindh

No	District	Cattle	Buffalo	Sheep	Goat	Camel	Horse	Mules/Asses
1	Ghotki	0.21	0.18	0.05	0.28	0.01	0.00	0.02
2	Sukkur	0.17	0.16	0.04	0.20	0.01	0.00	0.01
3	Khairpur	0.23	0.25	0.05	0.42	0.01	0.00	0.02
4	Naushero Feroze	0.22	0.35	0.03	0.54	0.00	0.00	0.02
5	Shaheed Benazirabad (Nawabshah)	0.22	0.25	0.07	0.57	0.00	0.00	0.03
6	Kashmore	0.20	0.21	0.15	0.16	0.00	0.00	0.04
7	Shikarpur	0.41	0.44	0.24	0.28	0.00	0.00	0.05
8	Jacobabad	0.49	0.45	0.36	0.51	0.00	0.00	0.08
9	Kamber Shadadkot	0.18	0.29	0.12	0.27	0.00	0.00	0.06
10	Larkana	0.15	0.38	0.04	0.18	0.00	0.00	0.06
11	Dadu	0.30	0.25	0.18	0.52	0.03	0.00	0.03
12	Jamshoro	0.20	0.15	0.21	0.51	0.01	0.00	0.04
13	Thatta	0.26	0.24	0.10	0.23	0.01	0.00	0.01
14	Matiari	0.37	0.33	0.07	0.46	0.00	0.00	0.03
15	Tando Allahyar	0.09	0.21	0.03	0.33	0.00	0.00	0.02
16	Hyderabad	0.04	0.15	0.01	0.14	0.00	0.00	0.01
17	Tando Muhammad Khan	0.09	0.26	0.04	0.22	0.00	0.00	0.01
18	Badin	0.21	0.32	0.15	0.38	0.01	0.00	0.01
19	Sanghar	0.20	0.18	0.05	0.38	0.00	0.00	0.03
20	Mirpurkhas	0.14	0.17	0.05	0.48	0.00	0.00	0.01
21	Umerkot	0.21	0.11	0.16	0.58	0.01	0.00	0.03
22	Tharparkar	0.59	0.04	0.93	1.74	0.11	0.01	0.19
23	Karachi	0.02	0.03	0.01	0.04	0.00	0.00	0.00
	Sindh Total	0.16	0.17	0.09	0.30	0.01	0.00	0.02

Source: Calculated based on Livestock Census 2006 and Development Statistics of Sindh 2009

Table 6-2-4 Number of Cattle and Buffalo by Breed

Cattle			Buffalo		
Sahiwal	139,527	2%	Nili-Ravi	344,302	5%
Red Sindhi	2,638,435	38%	Kundhi	5,298,957	72%
Thari	1,597,469	23%	Others	1,696,906	23%
Bhag Nari	252,800	4%			
Rojhan	70,141	1%			
Dhanni	134,031	2%			
Kankraj	93,711	1%			
Lohani	48,896	1%			
Foreign/Cross	131,920	2%			
Others	1,818,102	26%			

Source: Livestock Census 2006

Table 6-2-5 Distribution of Heard Size by Household and Livestock

Number of Livestock per Household	Cattle		Buffalo	
	Percentage of Household	Percentage of Livestock	Percentage of Household	Percentage of Livestock
1-6	74.1%	36.8%	75.2%	42.5%
7-20	23.6%	39.7%	22.8%	40.7%
21-50	1.9%	8.6%	1.6%	8.2%
51-	0.4%	14.9%	0.4%	8.6%

Number of Livestock per Household	Sheep		Goat	
	Percentage of Household	Percentage of Livestock	Percentage of Household	Percentage of Livestock
1-30	91.2%	63%	96.2%	76%
31-100	8.0%	26%	3.5%	17%
101-350	0.7%	7%	0.2%	3%
351-	0.1%	4%	0.0%	3%

Source: Livestock Census 2006

6.2.2 Livestock Productions

Table 6-2-6 shows the changes in the numbers of major livestock in Sindh since 1976 to 2006. All livestock have been constantly increasing during this period; cattle have increased by 2.4 times, buffalo by 4 times, sheep by 2.1 times, goats by 3 times, and camel by 2 times from 1976 to 2006.

Table 6-2-6 Number of Livestock in Sindh between 1976 and 2006 (Million)

Year	Cattle		Buffalo		Sheep		Goat		Camel	
	Heads	Periodical	Heads	Periodical	Heads	Periodical	Heads	Periodical	Heads	Periodical
		Growth Rate (%)		Growth Rate (%)		Growth Rate (%)		Growth Rate (%)		
1976	2.85	-	1.83	-	1.83	-	4.24	-	0.14	-
1986	3.87	35.8	3.22	75.9	2.62	43.2	6.76	59.4	0.22	57.1
1996	5.46	41.1	5.62	74.5	3.71	41.6	9.73	43.9	0.23	4.5
2006	6.92	26.7	7.34	30.6	3.9	6.7	12.57	29.2	0.28	21.7

Source: Livestock Census

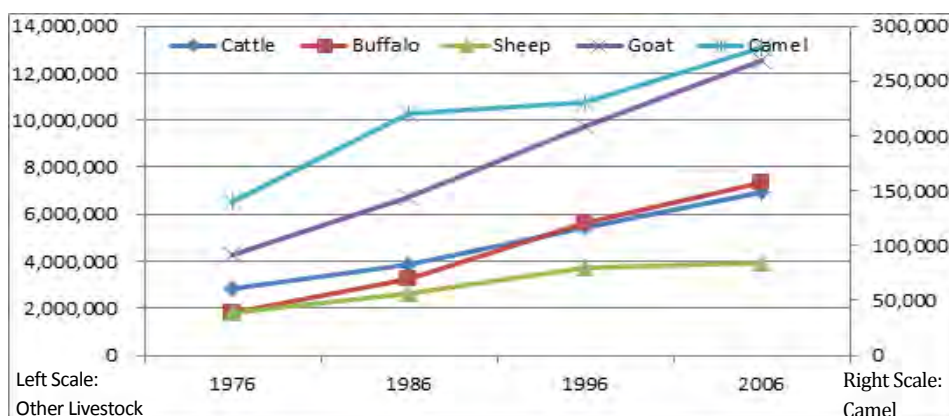


Figure 6-2-1 Number of Livestock in Sindh between 1976 and 2006

Source: Livestock Census

As shown in Figure 6-2-2, milk production has also been on increase in Sindh as well as Punjab; however, the production volumes of milk in Sindh are always less than half of Punjab.

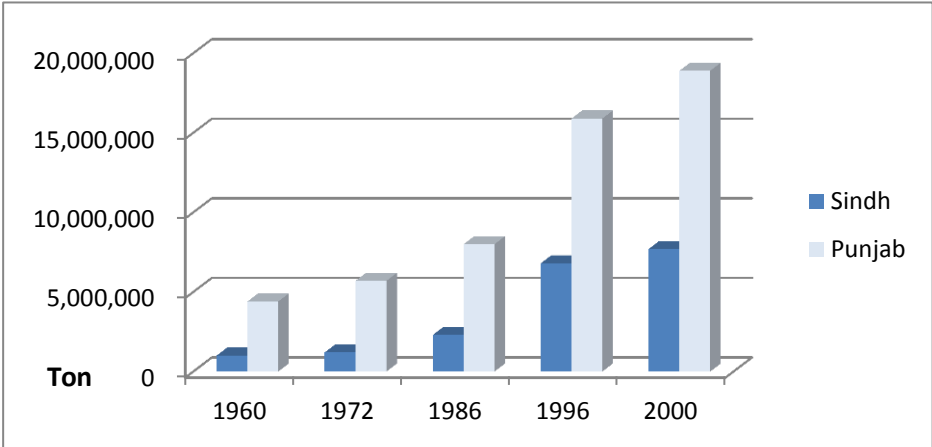


Figure 6-2-2 Milk Production in Sindh and Punjab between 1960 and 2000

Source: “Dairy Development for the Resource Poor Part 3: Pakistan and India Dairy Development Case Studies”, International Livestock Research Institute

Figure 6-2-3 shows the change of per capita consumption of milk and butter in Sindh. Since 1972, both of them have been increasing dramatically, particularly from 1986.

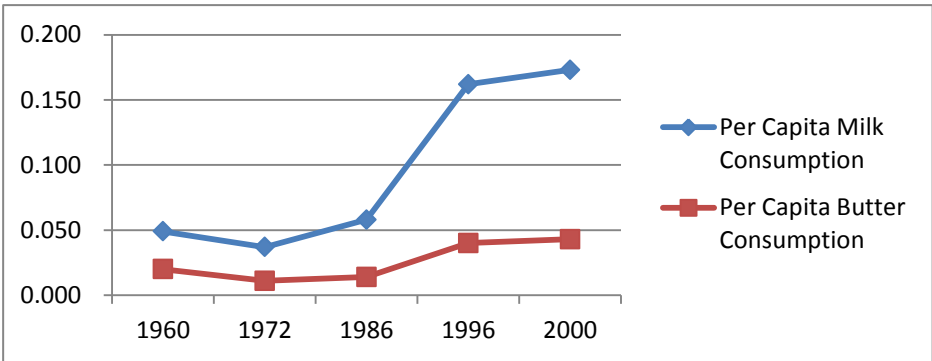


Figure 6-2-3 Per Capita Consumption of Milk and Butter in Sindh between 1960 and 2000

Source: “Dairy Development for the Resource Poor Part 3: Pakistan and India Dairy Development Case Studies”, International Livestock Research Institute

6.3 Supply and Demand of Milk, Dairy Products, and Meat

6.3.1 Trends of Livestock Holding in Pakistan

In Pakistan as a whole, the numbers of many of livestock animals have been steadily increasing. Figures 6-3-1 to 6-3-3 and Tables 6-3-1 to 6-3-2 depict the trends of the livestock numbers in Pakistan in the last 50 years⁷. The number of goats has increased by more than 5 times between 1966 and 2006. Those

⁷ The number of livestock has been surveyed at the livestock census in every 10 years in 1966, 1976, 1986, 1996, and 2006. The numbers in the census years are shown as dots in the figures; and the other figures are the projected numbers made by the concerned officials. There are tendencies of sudden trend changes between the census year and the year before, and therefore these projected figures should be interpreted with care.

of cattle, buffalo, and sheep have increased by more than double during this period. Also, the number of chicken has dramatically increased with the average annual growth rate of 7.1%. The growth rates of ducks and mules are 6.1% and 4.6% respectively. With regard to draft animals, the number of donkey shows a steady increase, but the numbers of horses and camels remains almost constant in the last 50 years.

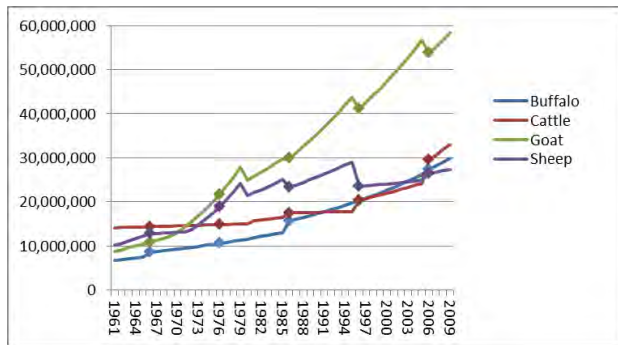


Figure 6-3-1 Number of Livestock Holdings in Pakistan (Heads)

Source: FAOSTAT

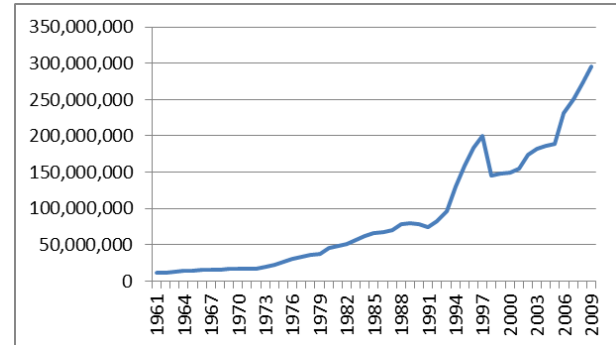


Figure 6-3-2 Number of Chicken Holdings in Pakistan (Heads)

Source: FAOSTAT

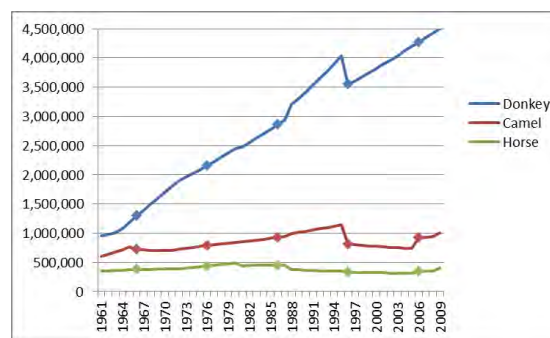


Figure 6-3-3 Number of Draft Animal Holdings in Pakistan (Heads)

Source: FAOSTAT

Table 6-3-1 Number of Livestock Animals in the Census Years in Pakistan

Stocks (Head)	Buffalo	Cattle	Sheep	Goats	Donkey	Camels	Horses	Chickens	Ducks	Mules
1966	8,586,000	14,404,000	12,850,000	10,800,000	1,300,000	720,000	380,000	15,000,000	330,000	26,000
1976	10,611,000	14,855,000	18,937,008	21,693,008	2,157,000	789,000	439,000	31,000,000	692,000	61,000
1986	15,705,000	17,541,008	23,287,008	29,945,008	2,857,000	926,000	452,000	67,000,000	1,216,000	65,000
1996	20,273,000	20,424,000	23,544,000	41,169,000	3,549,000	816,000	334,000	184,000,000	3,500,000	132,000
2006	27,334,985	29,558,812	26,488,000	53,789,000	4,269,000	921,000	344,000	232,000,000	3,500,000	156,000

Source: FAOSTAT

Table 6-3-2 Average Annual Growth Rates for the Number of Animals Between the Census Years

	Buffalo	Cattle	Sheep	Goats	Donkey	Camels	Horses	Chickens	Ducks	Mules
1966-1976	2.1%	0.3%	4.0%	7.2%	5.2%	0.9%	1.5%	7.5%	7.7%	8.9%
1976-1986	4.0%	1.7%	2.1%	3.3%	2.9%	1.6%	0.3%	8.0%	5.8%	0.6%
1986-1996	2.6%	1.5%	0.1%	3.2%	2.2%	-1.3%	-3.0%	10.6%	11.2%	7.3%
1996-2006	3.0%	3.8%	1.2%	2.7%	1.9%	1.2%	0.3%	2.3%	0.0%	1.7%
1966-2006	2.9%	1.8%	1.8%	4.1%	3.0%	0.6%	-0.2%	7.1%	6.1%	4.6%

Source: FAOSTAT

Figure 6-3-4 shows the number of the selected animals per capita. The figure for goats has increased significantly between 1966 and 2006. Those for cattle and sheep show a slight decrease whereas those for buffalo and donkey remained almost the same in this period. Figure 6-3-5 shows the per capita number of cattle & buffalo and sheep & goats. These figures remained almost constant since 1976. Thus, the numbers of these animals have increased at the similar rate of the population growth.

However, as depicted in Figure 6-3-6, the per capita number of chickens and ducks have been increasing over this period; the growth rates for these animals has significantly outpaced the population growth of Pakistan.

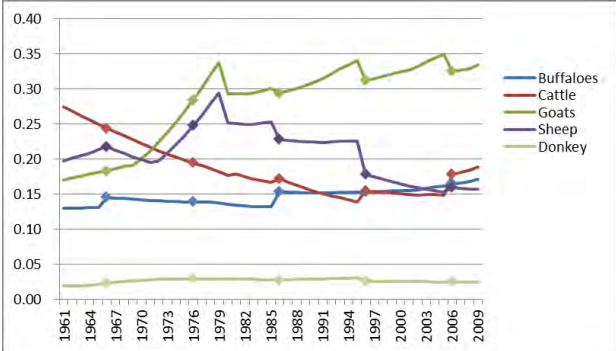


Figure 6-3-4 Number of Livestock Per Capita
Source: FAOSTAT

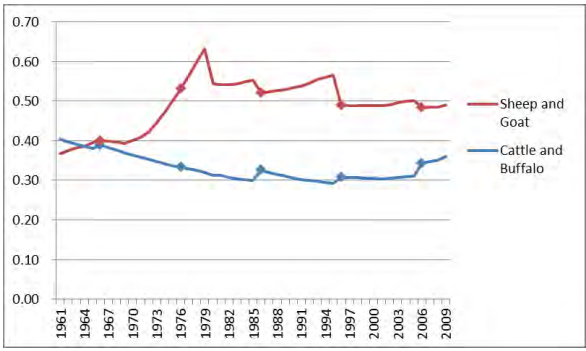


Figure 6-3-5 Number of Livestock Per Capita (2)
Source: FAOSTAT

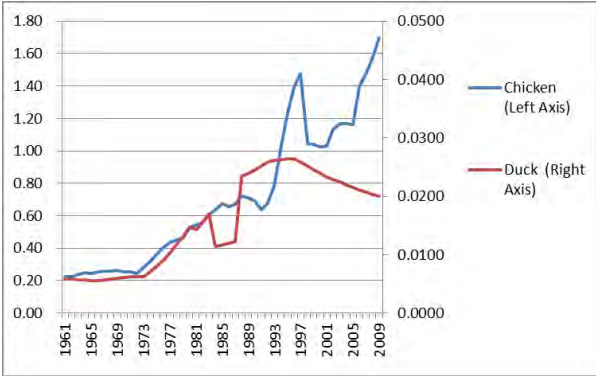


Figure 6-3-6 Number of Chickens and Ducks Per Capita
Source: FAOSTAT

Figures 6-3-7 and 6-3-8 depict the per capita numbers of cattle & buffaloes and sheep & goats in Pakistan in comparison to India and Bangladesh. Both figures for India and Bangladesh have constantly declined since 1960, but those for Pakistan remains almost constant or show slight increase since 1986. In other words, the increases of livestock numbers in India and Bangladesh have not caught up with the population growth. Yet in Pakistan the number of these animals have increased as at least as much as population growth between 1986 and 2006. As the population growth in Pakistan in this period is higher than these two countries, the development of livestock in Pakistan in this period is highly remarkable.

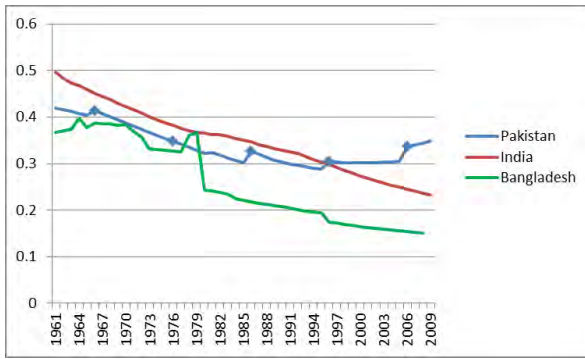


Figure 6-3-7 Comparison of Per Capita Number of Livestock: Cattle & Buffalo

Source: FAOSTAT

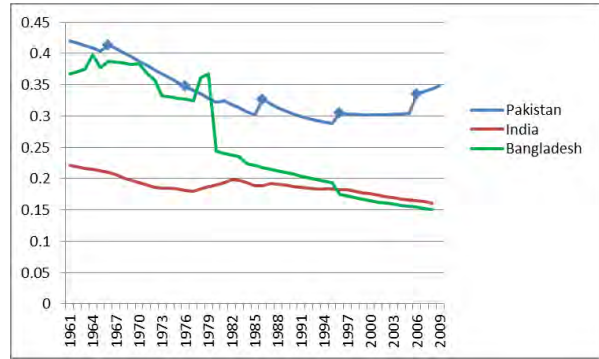


Figure 6-3-8 Comparison of Per Capita Number of Livestock: Sheep & Goat

Source: FAOSTAT

6.3.2 Trends of Meat and Milk Supplies in Pakistan

(1) Total Supply of Meat

Figures 6-3-9 and Table 6-3-3 depict the historical trends of meat supplied in Pakistan and its breakdown by type of meat. Assuming only limited amounts of meats are stocked or spoiled, the figures can be considered as the approximate indicator for total consumption.

From these figure and table, one can see that the total amount of meat supplied has increased by more than 5 times between 1966 and 2006. The amount of net imports has been the negligible portion to the total amount, thus not clearly appearing in the figure, suggesting that Pakistan has been self-sufficient for the supply of meat. The quantity of beef supplied is larger than any other types of meat, and its ratio to the total supply of meat shifts around 50 to 60% since 1966. Mutton and goat meat and poultry meat account for significant parts of the total supply. However, the ratio of mutton and goat meat to the total meat has been decreasing, whereas that of poultry meat has been increasing.

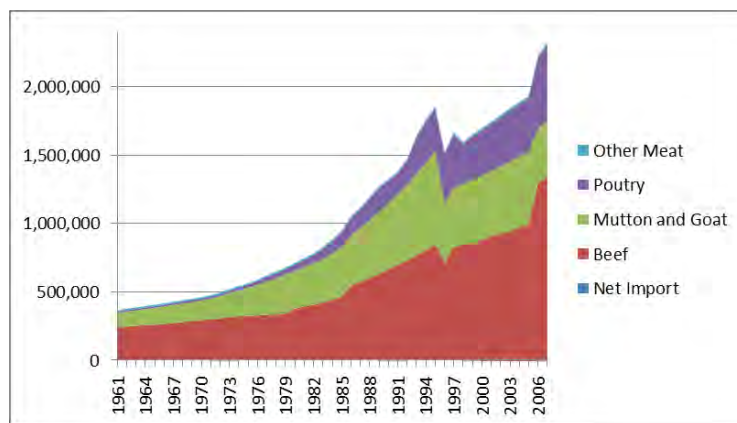


Figure 6-3-9 Quantity of Meat Supplied in Pakistan by Type (ton)

Source: FAOSTAT

Table 6-3-3 Domestic Production of Meat by Type in Pakistan (Ratio to Total Quantity of Meat Supplied)

	Production of Beef	Production of Mutton and Goat	Production of Poultry Meat	Production of Other Meat	Net Import	Quantity of Domestic Supply (Ton)
1966	63.50%	31.04%	2.98%	2.40%	0.07%	416,988
1976	55.67%	38.07%	4.38%	1.86%	0.01%	590,945
1986	51.76%	34.98%	12.10%	1.16%	0.00%	1,054,824
1996	47.02%	28.40%	23.59%	0.97%	0.02%	1,524,798
2006	58.29%	17.89%	23.18%	0.71%	-0.07%	2,230,271

Source: FAOSTAT

Figure 6-3-10 shows the trends of total meat supplied in comparison to the population in Pakistan. Meat supply has been increasing more than the rate of population growth. Figure 6-3-11 depicts the total meat supplied per capita in comparison to the income per capita in Pakistan. These two figures show the similar trends, indicating that the per capita consumption of meat is closely related to the growth rate of per capita income. As depicted in Table 6-3-4, the per capita consumption of meat is higher for the households with higher income. Thus, the income level would be a good indicator for predicting the demand of meat.

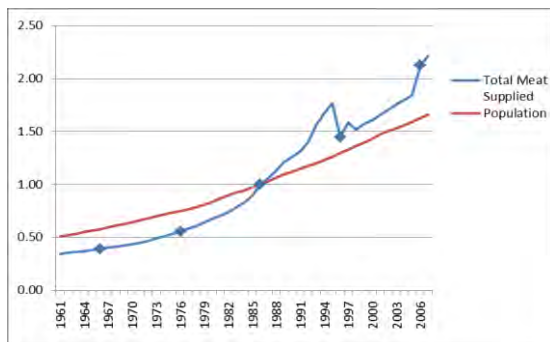


Figure 6-3-10 Total Meat Supplied and Population in Pakistan: Index (1986=1.00)

Source: FAOSTAT

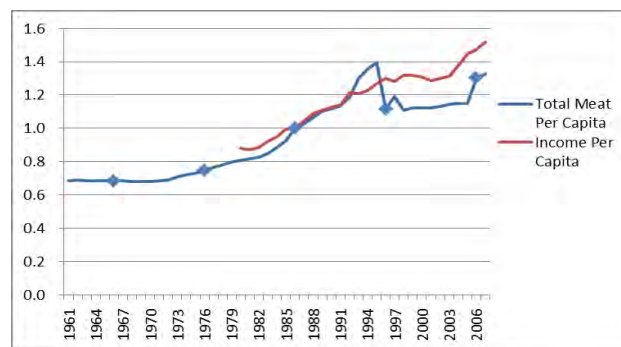


Figure 6-3-11 Total Meat Supplied per capita and Income Per Capita in Pakistan: Index (1986=1.00)

Source: FAOSTAT, World Bank

Table 6-3-4 Per Capita Consumption of Meat and Milk by Income Level (2007)

	Average	1st Quintile	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile
Average Monthly income	14,456	7,812	9,910	11,172	13,227	24,659
Monthly Per Capita Consumption						
Mutton (Kg)	0.06	0.01	0.01	0.02	0.04	0.19
Beef (Kg)	0.20	0.09	0.16	0.20	0.24	0.31
Chicken (Kg)	0.25	0.09	0.14	0.20	0.28	0.51
Milk (Fresh and Boiled) Liter	6.83	3.73	5.07	6.31	7.88	11.12
Milk Packed (Kg)	0.01	0.00	0.01	0.01	0.01	0.04

Source: Household Integrated Economic Survey (2007)

(2) Supply of Beef

Figure 6-3-12 shows the trends of beef supply and the population in Pakistan. It is clear that the supply of beef has been increasing more than the rate of population growth. As depicted in Figure 6-3-13, the per capita meat supply increases at the similar rate of per capita income growth. It indicates that the quantity of beef supply has increased at the growth rates of population plus income per capita.

The growth rate of beef supply outpaces that of the number of cattle and buffalo which shows the similar trend to the population growth. It may suggest that the ratio of beef marketed to the total beef produced has been increased during this period.

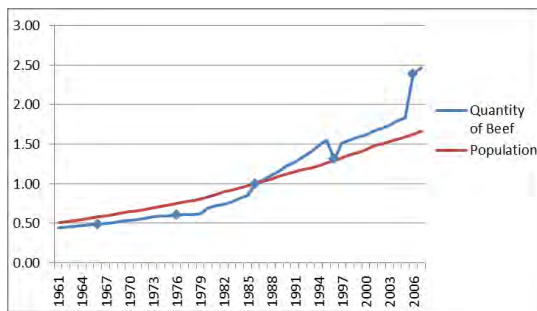


Figure 6-3-12 Supply of Beef and Population in Pakistan : Index (1986=1.00)

Source: FAOSTAT

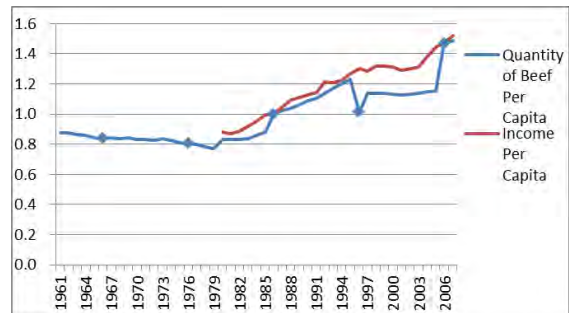


Figure 6-3-13 Supply of Beef and Income Per Capita in Pakistan : Index (1986=1.00)

Source: FAOSTAT, World Bank

Figure 6-3-14 depicts the trend of beef price, expressed as the relative price to Consumer Price Index (CPI), and the per capita monthly consumption of beef. The price of beef shows the cyclical trends for 7 to 8 years (so-called “Cattle Cycle”), but there is no clear long-run trend. The per capita consumption of beef decreased from 2004 to 2007; it may be the result of the increase in relative price of beef.

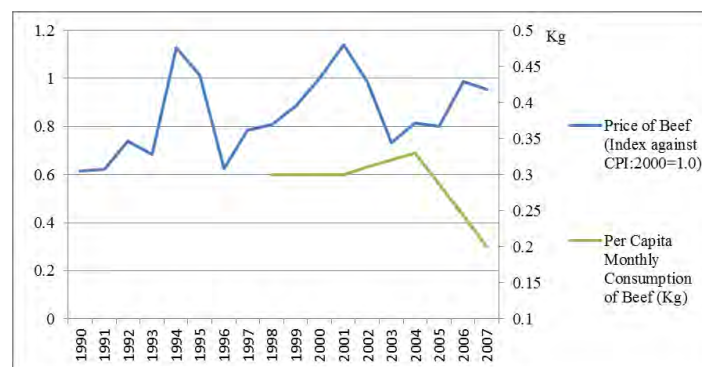


Figure 6-3-14 Price of Beef and Per Capita Consumption in Pakistan

Source: Household Integrated Economic Survey, Pakistan Economic Survey

(3) Supply of Mutton

Figure 6-3-15 shows the trend of mutton supply in comparison to the population of Pakistan. The quantity of supply shows the increasing trend by 1996, but has been decreasing sometime between 1996 and 2006. As shown in Figure 6-3-16, the per capita supply of mutton has also been decreasing sometime between 1986 and 1996.

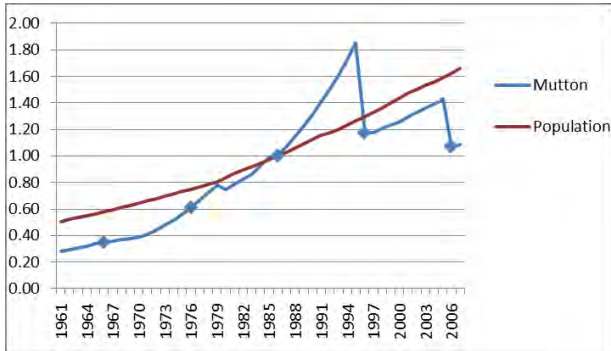


Figure 6-3-15 Supply of Mutton and Population in Pakistan : Index (1986=1.00)

Source: FAOSTAT

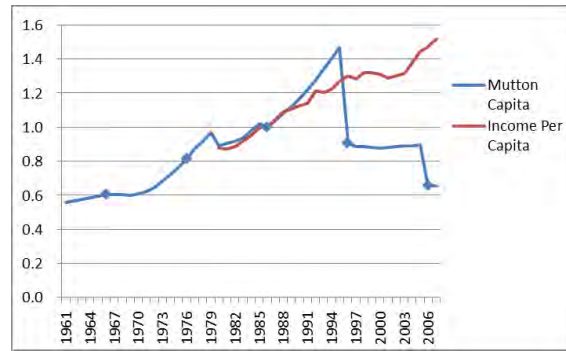


Figure 6-3-16 Supply of Mutton and Income Per Capita in Pakistan : Index (1986=1.00)

Source: FAOSTAT

Figure 6-3-17 depicts the trends of mutton price and per capita monthly consumption since 1998. One can see decreasing trends for both figures. This may indicate that the decreasing trends in supply and consumption are led by the decrease in the demand for mutton, while the recent decrease in consumption of beef is thought to be led by the price increase.

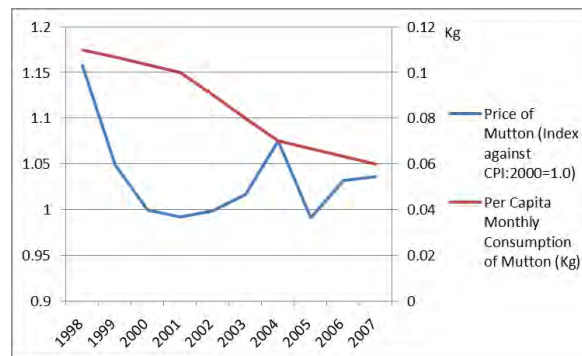


Figure 6-3-17 Price of Mutton and Per Capita Consumption in Pakistan

Source: Household Integrated Economic Survey, Pakistan Economic Survey

(4) Supply of Poultry Meat

As depicted in Figure 6-3-18, the quantity of poultry meat has been increasing at the rate that significantly outpaces the population growth. The growth rate of per capita supply of poultry meat is also higher than that of per capita income, as depicted in Figure 6-3-19.



Figure 6-3-18 Supply of Poultry and Population in Pakistan : Index (1986=1.00)

Source: FAOSTAT

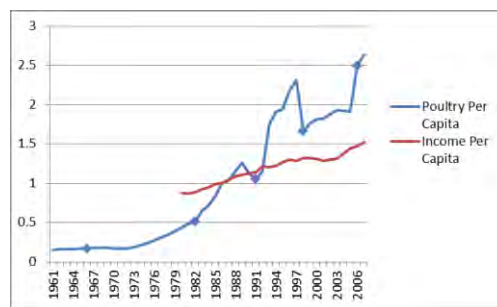


Figure 6-3-19 Supply of Poultry and Income Per Capita in Pakistan : Index (1986=1.00)

Source: FAOSTAT

Figure 6-3-20 shows the trend of price and the monthly per capita consumption for chicken⁸. One can see the recent increasing trend in price since 2002. As the average per capita consumption has been increasing during the same period, it is indicated that the price increase is led by the increase in demand for the chicken meat.

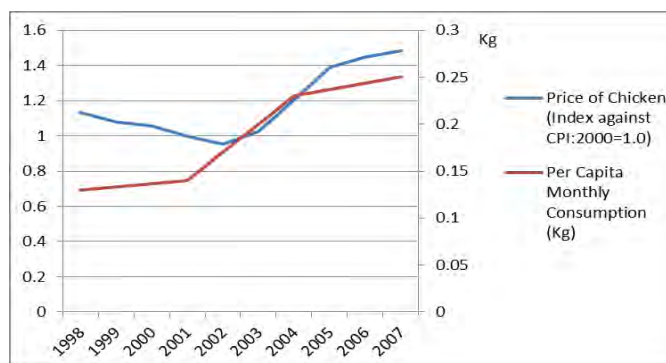


Figure 6-3-20 Price of Chicken and Per Capita Consumption in Pakistan

Source: Household Integrated Economic Survey, Pakistan Economic Survey

(5) Supply of Milk

Table 6-3-5 shows the quantity of production and supply of milk (fresh milk and milk products excluding butter) in Pakistan. The total supply quantity and consumption has increased by more than 4 times between 1966 and 2006. The net import constitute only a small part of total supply, thus, the supply of milk has been almost self-sufficient in Pakistan.

⁸ The price and consumption on other poultry meat such as duck and mule are not included here as the information for these figures is not available. However, as chicken meat is assumed to constitute a large part of the total poultry meat supplied, the figures for chicken can be used as the substitute for the poultry meat.

Table 6-3-5 Quantity of Production and Supply of Milk and Milk Products (excluding butter) in Pakistan

	Production	Stock Variation	Import Quantity	Export Quantity	Supply Quantity	Feed	Waste	Milk Consumption	Ratio of Net Import to Supply Quantity
1966	6,712,500	0	10,928	0	6,723,428	328,402	707,661	5,687,367	0.16%
1976	8,348,000	0	114,204	0	8,462,204	402,245	883,973	7,175,984	1.35%
1986	11,818,000	0	232,628	20	12,050,608	567,471	1,251,318	10,231,818	1.93%
1996	22,970,000	0	118,302	397	23,087,905	1,125,407	2,324,954	19,637,544	0.51%
2006	31,214,000	-5,556	144,925	52,050	31,301,320	1,532,139	3,115,534	26,653,650	0.30%

Source: FAOSTAT

Figure 6-3-21 shows the trend of milk consumption in comparison to the population growth⁹. Milk consumption had increased at the similar rate to the population growth until 1986, but it significantly outpaced the rate of population growth since then. As depicted in Figure 6-3-22, the growth rate of per capita supply of milk has even outpaced the growth rate of per capita income since 1986.

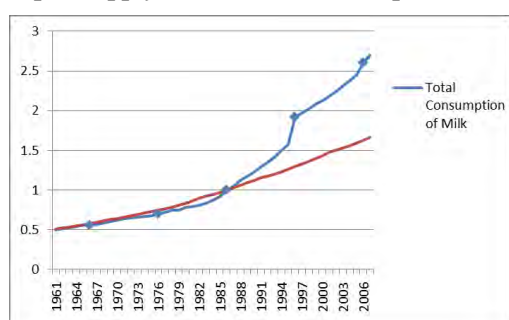


Figure 6-3-21 Consumption of Milk and Population in Pakistan : Index (1986=1.00)

Source: FAOSTAT

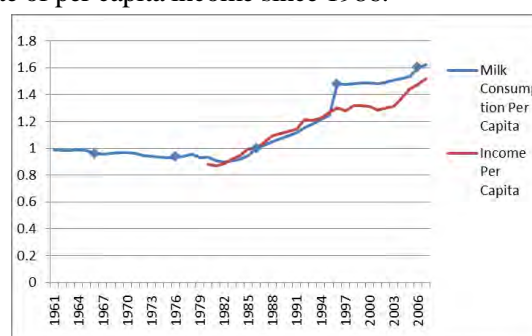


Figure 6-3-22 Per Capita Consumption and Income in Pakistan : Index (1986=1.00)

Source: FAOSTAT

Figure 6-3-23 shows the trends of milk price and per capita monthly consumption. Per capita consumption level has been increasing since 2001, but the price remains almost constant during this period. This may indicate that the supply of milk has met the increase in demand for milk during this period.

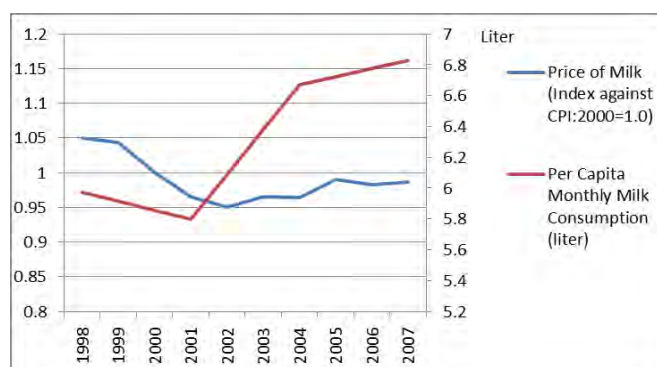


Figure 6-3-23 Price of Milk and Per Capita Consumption in Pakistan

Source: Household Integrated Economic Survey, Pakistan Economic Survey

⁹ Figure 6-3-21 shows the total amount of milk consumption which is total quantity supplied minus feed and waste. On the other hand, the data for the total meat consumption of meats are not available, and thus the total quantities of supply are shown in the earlier discussion of meat consumptions in Pakistan. Quantities of meat supply appear to be good indicators for meat consumptions as wastes of meats in the supply are very small.

6.3.3 Summary of Historical Trends in Livestock Holding and Supply, and Examination on Future Trend

(1) Demand and Supply of the Livestock Products

As discussed above, the numbers of many livestock animals have been increasing significantly in the last 50 years, yet the rates of growth differ from animal to animal. The types of animals that show the significant increases throughout the period include poultry, goat, donkey, and buffalo. The total consumption (approximated by the quantity of supply) of meat and milk have also dramatically grown, along with the growth of population and per capita income. However, there has not been any increase of imports and significant price increase for meat and milk. This suggests that the livestock sector in Pakistan has been providing sufficient supply to the increasing demands for meat and milk.

A major characteristic of the livestock sector in Pakistan is that the most of these dairy and meat products are supplied by a large number of small scale farmers. For example, as shown in Table 6-3-6, 20% of total households own cattle and 25% of them own buffalo in Sindh. However, the average number of cattle or buffalo holding is less than 5. Most of these small farmers reside in the rural areas where 67% of population lives (Population Census 1998).

Table 6-3-6 Percentage of Households Who Own Cattle and Buffalo and Average Number of Holding

	Number of HH	% HH who own cattle	Average # of cattle holding	% HH who own buffalo	Average # of buffalo holding
All Households	4,294,535	20%	4.5	25%	4.0
Farm Households	1,072,469	39%	4.7	47%	3.9
Non-farm Households	3,222,066	14%	4.5	17%	4.1

Source: Agricultural Census 2000 Sindh Province

Table 6-3-6 also shows that quite a large percentage of farm households own cattle and buffalo. This is thought to be explained by the common practice of mixed farming in Pakistan. Mixed farming is the farming system where crop sub-sector and livestock sub-sector is integrated in an economic entity (Hirashima: 195). Mixed farming provides the farmers a variety of benefit such as the diversification of production risks in agriculture, utilization of complementary by-products (livestock dung as manure and rice-straw and wheat-straw as fodder), and stable employment for family members throughout the year (Kurosaki: 469). Livestock are also a liquid form of assets that can play a role of insurance in a bad year, and this role of livestock generates benefits to both farmers and non-farmers.¹⁰

(2) Examination on Future Trend of Supply and Demand

The analysis in the last sections, however, suggests that demand for meat and milk is likely to continuously increase in the future as both the population and per capita income are expected to increase. As shown in Table 6-3-7, the population of Pakistan is expected to rise by around 40% between 2010 and 2030, and per capita is projected to double during these periods.

¹⁰ The characteristics and roles of mixed farming are discussed more in detail in Chapter 7 (Fodder and Feed Management) and Chapter 9 (Rural Society and Farm Households).

Another key aspect for the future demand for milk and meat is the movement in the number of urban dwellers. As shown in Table 6-3-8, the population in major cities has been increasing at higher rates than overall growth rate of population. Also, the rate of urbanization is expected to rise continuously in the future (Pakistan Economic Survey 2009). As the rate of urbanization keeps rising, there will be increasing need of enhancing the supply capacity in the rural areas where most of the milk and meats are produced.

Table 6-3-7 Projected Population and GDP per capita in Pakistan

	2010	2015	2020	2025	2030
Population ('000)	173,383	192,262	211,397	229,377	246,272
Nominal GDP per capita (US\$)	929	1,071	1,268	1,565	2,018

Source: Pakistan Economic Survey 2009, IMF

Table 6-3-8 Population in Cities in Pakistan

City	1998 census	1981 census	Annual Average growth rate (%)	Projection in 2010
Karachi	9,339,023	5,208,132	3.49	13,386,730
Lahore	5,143,495	2,952,689	3.32	7,214,954
Faisalabad	2,008,861	1,104,209	3.58	2,912,269
Rawalpindi	1,409,768	794,834	3.43	2,013,876
Multan	1,197,384	732,070	2.93	1,610,180
Hyderabad	1,166,894	751,529	2.62	1,521,231
Gujranwala	1,132,509	600,993	3.79	1,676,357
Peshawar	982,816	566,248	3.29	1,386,529
Quetta	565,137	285,719	4.09	871,643
Islamabad	529,180	204,364	5.70	972,669

Source: Pakistan Economic Survey 2009

The relevant question that should be raised next is whether the supply of meat and milk can meet the demand in the future. One of the key factors for this problem is the issue of availability of nutrients resources. Indeed, many have pointed out that poor availability of nutrients is the major constraint in the development of the livestock sector in Pakistan¹¹. Hanjra et al (1995) noted that the total annual livestock nutritional requirement for Pakistan is estimated to be 63.2 million tons of total digestible nutrients (TDN), and 5.53 million tons of digestible crude protein (DCP). Whereas, current available feed contains only 37.55 million tons of TDN (a shortfall of 40.6% of the requirement) and 3.95 million tons of DCP (a shortfall of 28.6% of the requirement). In addition, Sarwar et al (2002) estimated that the total energy requirement to maintain the Pakistan herd, including that for lactation and draft/plough work, is 90.36 million tons TDN, and 10.92 million tons of DCP. They estimated that current available amounts are 69.00 million tons of TDN (a shortfall of 24.02% of the requirement) and 6.76 million tons of DCP (a shortfall of 38.1% of the requirement).

To see the status on the nutrients availability in the future, the estimation was made for required nutrients applying the same method of Sarwar et al. To do this, firstly the required TDN and DCP are

¹¹ See Sarwar, M., M. A. Khan, and Z. Iqbal (2001), "Feed Resources for Livestock in Pakistan", Status Paper, International Journal of Agriculture and Biology for the overview of this topic. The details are described in Chapter 7 (Fodder and Feed Management).

estimated using the data of livestock numbers in Pakistan Livestock Census in 2006¹². Then, the numbers of animals are projected up to 2025. Case 1 of the projection assumes that the number of livestock holding will increase at the same rate as the estimated population growth rate projected by FAO. Case 2 of the projection assumes that each type of animals will grow at the same rate as the growth rate between 1996 and 2006. For both cases, the proportions of young and adult animals, female and male, and milk and dry animals are assumed to be constant as they were in 2006. Also, the number of horses and camels are assumed to be constant as they were in 2006 because the numbers of these animals have not increased in the last 40 years. Based on these projected numbers of animals, the required TDN and DCP are estimated.

Figures 6-3-24 and 6-3-25 show the projected amounts of TDN and DCP for the period of 2006 and 2025. It is indicated that the required TDN and DCP are projected to increase by 44% for Case 1 and 80% for Case 2 between 2006 and 2025.

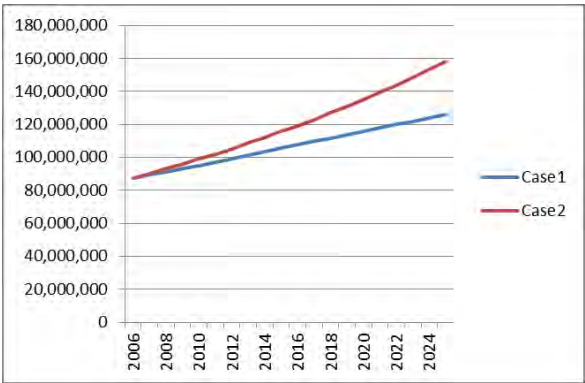


Figure 6-3-24 Projected Amount of Total TDN Required

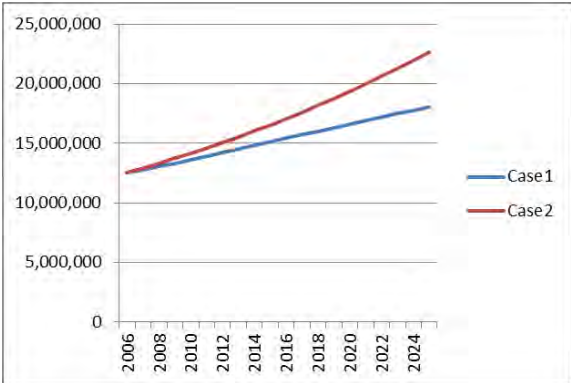


Figure 6-3-25 Projected Amount of Total DCP Required

The amount of required nutrients projected above was then compared with the projected amount of available nutrients. The amount of available nutrients was estimated by Sarwar et al. (2001), and it was assumed that it would remain constant over the period of projection. This assumption is seemingly reasonable as the production of feed stuff have not shown any trend of increase or decrease, but there is only a short time change due to the fluctuation of rainfall.

Based on these assumptions, it was estimated that 79% of required TDN and only 54% of required DCP are available in 2006. Figure 6-3-26 shows that the projected ratios of available nutrients to the required levels for both Case 1 and Case 2. For Case 1, the available supply of TDN and DCP will decline to 66% and 45% of the required levels. For Case2, the supply of TDN and DCP will become only 53% and 45 % of required levels respectively. These projected figures imply the severe shortage of nutrients in the future and the difficulty of sustainable increase of livestock animals if the amount of available nutrients will not be changed.

Figure 6-3-27 shows an alternative scenario on the availability of nutrients. For this scenario, the

¹² As the figures of animal units used in Sarwar et al. (2001) are outdated, the units used by the Department of Livestock in Sindh are applied, and as a result, the estimated nutrients required become lower than that of Sarwar et al.

available nutrients are assumed to be increased by 1% annually¹³. The rates of decrease in the ratios are more modest than the former scenario, but it still shows the eventual severe shortage of nutrients.

The examination of this section shows the uncertainty about the development of the livestock sector in Pakistan from the viewpoint of the availability of nutrient resources. This suggests that the increase in the number of livestock without the attention to feed resources will not be sustainable.

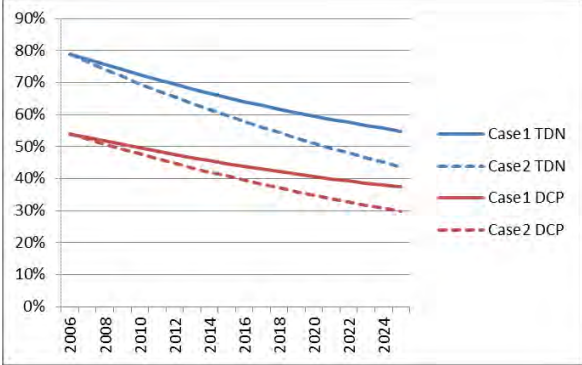


Figure 6-3-26 Projected Ratios of Available Nutrients

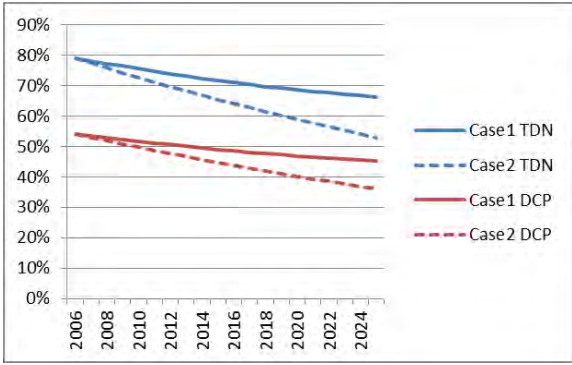


Figure 6-3-27 Projected Ratios of Available Nutrients with the 1 % Annual Increase of Resource

6.4 Food Security¹⁴

According to Food Insecurity in Pakistan 2009, food security in the country has deteriorated from 2003 to 2009. The status of food security is classified into 4 categories; food secure, borderline, food insecure, and extremely food insecure. In Pakistan, the number of districts classified as “extremely food insecure” has increased from 38 to 45, and the “food insecure” districts have doubled (from 16 to 35) between 2003 and 2009. In Sindh, the districts of “extremely food insecure” increased from 1 to 4 and the ones of “food insecure” also increased from 3 to 5 during the same period. On the other hand, the number of “food secure” districts also increased from 6 to 8. As a result, 44.3% of the population is considered as food insecure in Sindh.

Food security has been assessed from the following three aspects:

- (a) Physical availability of food: determined based on consumption versus total of production and external food supply such as aid and import. The districts with food availability equivalent to more than 2,350 kcal are classified as “sufficient”. There are two major sources of food, crop-based and animal-based. Animal-based food comprises milk, dairy products, meat, eggs and fish, which are important as protein and fats sources for human beings. In Pakistan, on average 18 grams of protein are consumed per day per capita while recommended figure is 36 grams.

¹³ This may be possible by the increase of productivity in crop production or the increase in the cultivated area of fodder. However, the cropping area of fodder has been actually decreasing, and this is highly unlikely.

¹⁴ The information in this section was obtained from Food Insecurity in Pakistan 2009.

(b) Socio-economic and cultural access to food: determined based on Food Consumption Scores¹⁵ (FCS), household income, child dependency ratio, living conditions, food expenditures, market prices of food commodities, and coping strategies. With the increase in poverty, people tend to spend more money on food than non-food items.

(c) Food absorption (food utilization and assimilation): measured by the state of sanitation such as environmental hygiene, health infrastructure, and individual health status, access to clean drinking water, and female literacy rate, etc.

In Sindh, most of the districts except for the large cities, Karachi and Hyderabad, are producing surplus or at least sufficient animal-based food (Table 6-4-1). This indicates there are much more than enough quantities of animals necessary for maintaining nutritious requirements of human beings. Food availability is therefore closely related to the availability of crop-based food. Nine out of 23 districts, particularly large cities and those in the desert area, are food deficit or extremely deficit.

As shown in Table 6-4-2, food security status of the districts is shown as “food security index”, which is largely correlated to both access to food and food absorption. The districts in the desert area are particularly food insecure, and on the other hand, the districts, where large cities and towns are located, tend to be food secure.

Thus, for the improvement of food security condition in Sindh through livestock development, the following strategies need to be considered:

- (a) Access to food should be improved by income generation and market improvement.
- (b) Food absorption should be enhanced by awareness building on nutrition and sanitation, and education on women.

Table 6-4-1 Food Availability

District	Food availability (surplus/deficit)		
	total (%)	Crop-based (%)	Animal-based (%)
Karachi	6	-99.9	-21.4
Tharparkar	17	-96.3	74.0
Hyderabad	22	-82.5	-29.1
Jamshoro	48	-59.7	51.3
Sukkur	64	-41.3	59.5
Umerkot	68	-34.7	4.4
Dadu	77	-29.6	155.4
Mirpurkhas	84	-17.7	16.9
Ghotki	98	-2.4	57.5
Sanghar	104	3.9	28.9
Khairpur	105	6.3	122.8
Kamber Shadadkot	112	12.3	-93.9
Thatta	115	18.9	170.3
Shaheed Benazirabad (Nawabshah)	117	20.3	126.2
Kashmore	119	21.8	72.6
Jacobabad	119	25.0	209.4
Matiari	119	24.4	169.3
Larkana	125	31.0	134.9
Tando Muhammad Khan	127	29.5	21.9
Badin	127	30.8	74.5
Tando Allahyar	131	36.1	70.3
Naushero Feroze	135	43.7	146.0
Shikarpur	165	104.8	373.2
		Extremely deficit	
		Deficit	
		Sufficient	
		Surplus	

¹⁵ FSC is calculated based on the household food diversity and frequency of food consumption over a week.

Table 6-4-2 Food Security Status

District	Access to food Index	Food absorption Index	Food security Index	Food insecure population (%)
Tharparkar	0.34	0.53	0.43	53.4
Dadu	0.49	0.44	0.53	49.2
Mirpurkhas	0.53	0.50	0.53	38.6
Umerkot	0.59	0.47	0.53	59.4
Kashmore	0.53	0.43	0.56	40.8
Badin	0.50	0.61	0.61	40.0
Jacobabad	0.52	0.54	0.65	38.7
Thatta	0.57	0.60	0.66	39.1
Sanghar	0.75	0.74	0.70	25.0
Khairpur	0.69	0.70	0.73	50.4
Jamshoro	1.02	0.85	0.77	36.0
Matari	1.07	0.75	0.78	33.5
Shaheed Benazirabad (Nawabshah)	0.75	0.76	0.79	57.5
Tando Allahyar	1.02	0.78	0.80	59.5
Tando Muhammad Khan	1.02	0.85	0.80	34.3
Sukkur	0.91	0.84	0.81	66.9
Hyderabad	1.07	0.85	0.81	46.6
Ghotki	1.06	0.63	0.82	59.8
Larkana	0.83	0.77	0.84	37.3
Kamber Shadadkot	1.05	0.85	0.86	44.1
Shikarpur	0.58	0.77	0.87	32.4
Naushero Feroze	0.85	0.83	0.88	39.3
Karachi	1.47	0.96	0.97	38.0
Average				44.3
	Extremely low		Extremely food insecure	
	Very low		Food insecure	
	Low		Borderline	
	Reasonable		Secure	