

livestock country reviews

POULTRY SECTOR

Ghana



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FAO ANIMAL PRODUCTION AND HEALTH
livestock country reviews

POULTRY SECTOR

Ghana

Foreword

The poultry sector continues to grow and industrialize in many parts of the world. An increasing human population, greater purchasing power and urbanization have been strong drivers of growth.

Advances in breeding have given rise to birds that meet specialized purposes and are increasingly productive, but that need expert management. The development and transfer of feed, slaughter and processing technologies have increased safety and efficiency of poultry production, but favour large-scale units rather than small-scale producers. These developments have led the poultry industry and the associated feed industry to scale up rapidly, to concentrate themselves close to input sources or final markets, and to integrate vertically. One element of the structural change has been a move towards contract farming in the rearing phase of boiler production, allowing farmers with medium-sized flocks to gain access to advanced technology with a relatively low initial investment.

A clear division is developing between industrialized production systems of large and medium size, feeding into integrated value chains, and extensive production systems supporting livelihoods and supplying local or niche markets. The primary role of the former is to supply cheap and safe food to populations distant from the source of supply, while the latter acts as a livelihood safety net, often as part of a diverse portfolio of income sources. Extensive small-scale, rural, family-based poultry systems continue to play a crucial role in sustaining livelihoods in developing countries, supplying poultry products in rural but also periurban and urban areas, and providing important support to women farmers. Small-scale poultry production will continue to offer opportunities for income generation and quality human nutrition as long as there is rural poverty.

In order to develop appropriate strategies and options for poultry sector development, including disease prevention control measures, a better understanding is required of the different poultry production systems, their associated market chains, and the position of poultry within human societies.

This review for Ghana is part of a series of Country Reviews commissioned by the Animal Production and Health Division (AGA). It is intended as a resource document for those seeking information about the poultry sector at a national level, and is not exhaustive. The report is an updated version of the report "The Structure and Importance of Commercial and Village Based Poultry in Ghana" that was prepared by Dr K.G. Aning in 2006 (<ftp://ftp.fao.org/docrep/fao/011/ai354e/ai354e00.pdf>). The statistical data that are included from FAOSTAT are partly unofficial data or FAO estimated data. For details the reader is advised to consult the official FAOSTAT database at <http://faostat.fao.org/>. Some topics of the review are only partially covered or not covered at all and this document is subject to ongoing updating. The author and FAO/AGA¹ welcome your contributions and feedback.

¹For more information visit the FAO website at: <http://www.fao.org/ag/againfo/themes/en/poultry/home.html> or contact either Philippe Ankers or Olaf Thieme, Animal Production Officers. Email: Philippe.Ankers@fao.org and Olaf.Thieme@fao.org Food and Agriculture Organisation, Animal Production and Health Division, Viale delle Terme di Caracalla, 00153Rome, Italy

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Acronyms and abbreviations

ADB	Agricultural Development Bank
AfDB	African Development Bank
AgSSIP	Agricultural Services Sector Improvement Programme
AI	Avian Influenza
AIWG	Avian Influenza Working Group
AnGR	Animal Genetic Resources
APD	Animal Production Directorate
ARI	Animal Research Institute
ASF	African Swine Fever
ASR	Ashanti Region
AU-IBAR	African Union Interafrican Bureau for Animal Resources
BUSAC	Business Support Advocacy Challenge
BSE	Bovine Spongiform Encephalopathy
DFID	Department for International Development (UK)
DOC	day-old chicks
EPA	Economic Partnership Agreement
FASDEP	Food and Agriculture Sector Development Policy
GCNET	Ghana Community Network
GAR	Greater Accra Region
GDP	Gross Domestic Product
GHC	Ghana Cedis
GHS	Ghana Health Service
GIZ	German International Cooperation
GAFSP	Global Agriculture and Food Security Program http://www.gafspfund.org/content/about-gafsp
GNAPF	Ghana National Association of Poultry Farmers
GNP	Gross National Product
GOG	Government of Ghana
GVMA	Ghana Veterinary Medical Association
HPAI	Highly Pathogenic Avian Influenza
IFAD	International Fund for Agricultural Development
ISSER	Institute of Social, Statistics and Economic Research
LBM	Live Bird Market
LPIU	Livestock Planning and Information Unit
MLFM	Ministry of Lands, Forestry and Mines
MOAP	Market-Oriented Agriculture
MOFA	Ministry of Food and Agriculture
MOH	Ministry of Health

NADMO	National Disaster Management Organization
NARP	National Agricultural Research Project
NBSSI	National Board for Small Scale Industries
ND	Newcastle Disease
NGOs	Non-Governmental Organizations
NHIL	National Health Insurance
NRGP	Northern Rural Growth Programme
NMIR	Noguchi Memorial Institute for Medical Research
NTCC	National Technical Coordinating Committee
OIE	World Organization for Animal Health
PDB	Poultry Development Board
SADA	Savannah Accelerated Development Authority
SPINAP AHI	Support Programme to Integrated National Action Plans on Avian and Human Influenza
STOP AI	Stamping Out Pandemic and Avian Influenza
TAD	Transboundary Animal Disease
USAID	United States Agency for International Development
VACNADA	Vaccines Against Neglected Animal Diseases in Africa
VAT	Value Added Tax
VSD	Veterinary Services Directorate
WHO	World Health Organization
WPSAGB	World Poultry Science Association, Ghana Branch

Chapter 1

The country in brief

Country:	Ghana	
Location:	Western Africa, bordering the Gulf of Guinea, between Côte d'Ivoire to the East, Burkina Faso to the North and Togo to the West, Gulf of Guinea to the South, with a coastline of 550km.	
Population, total	24 965 816 (2011)	Source: World Bank 2013
Population density:	107.2/Km ²	Source: World Bank 2013
Population, growth rate:	2.25 (2012)	Source: World Bank 2013
Economy group:	Lower middle income	Source: World Bank 2013
GDP	USD 39199656051 (2011)	Source: World Bank 2013
Gini coefficient	0.4276 (2006)	Source: World Bank 2013
Administrative regions	Ten	Source: Ministry of Local Government and Rural Development, 2010
Decentralized districts	216	Source: Ministry of Local Government and Rural Development, 2012
Currency	1 Ghanaian New Cedi=0.46946 USD 1 USD=2.08302 Ghanaian New Cedi, (August 2013)	

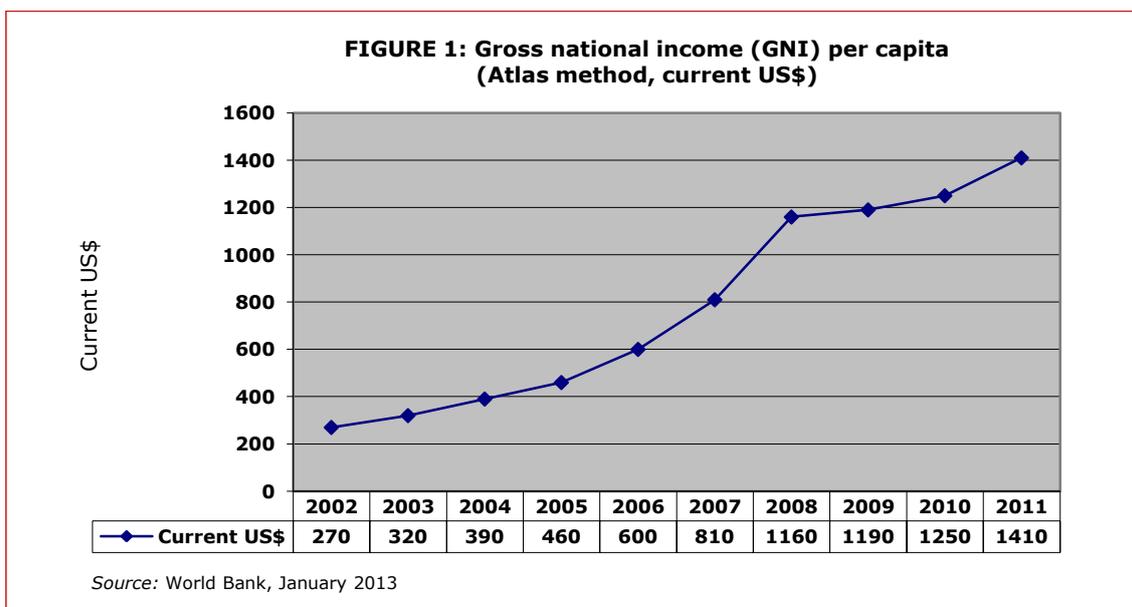
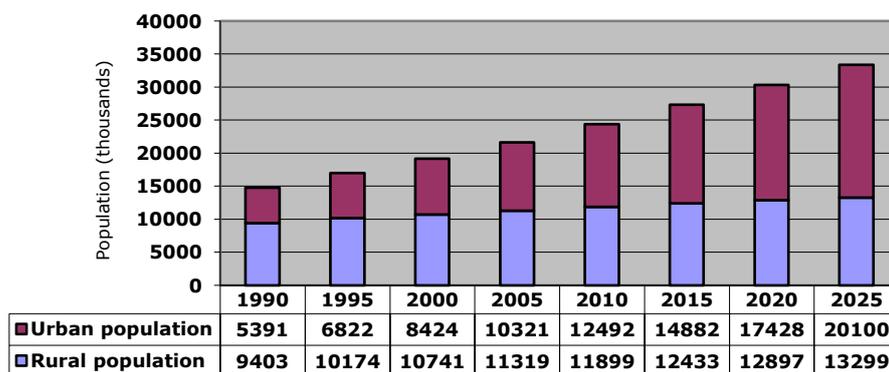
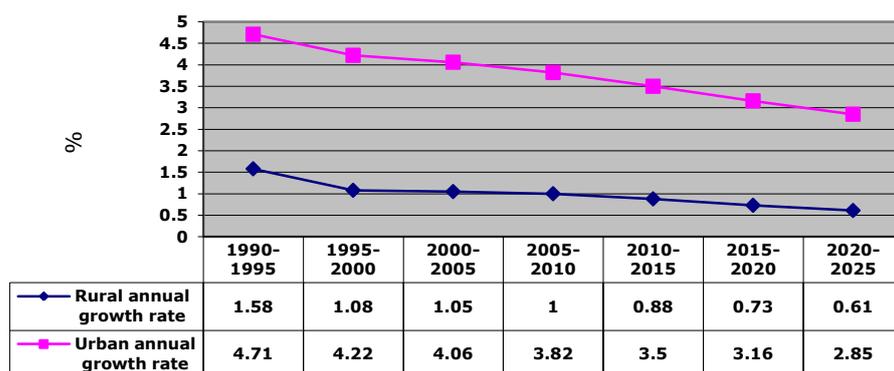


FIGURE 2: Demographic profile



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision and World Urbanization Prospects: The 2011 Revision, <http://esa.un.org/unup>, August 2013

FIGURE 3: Annual population growth rates

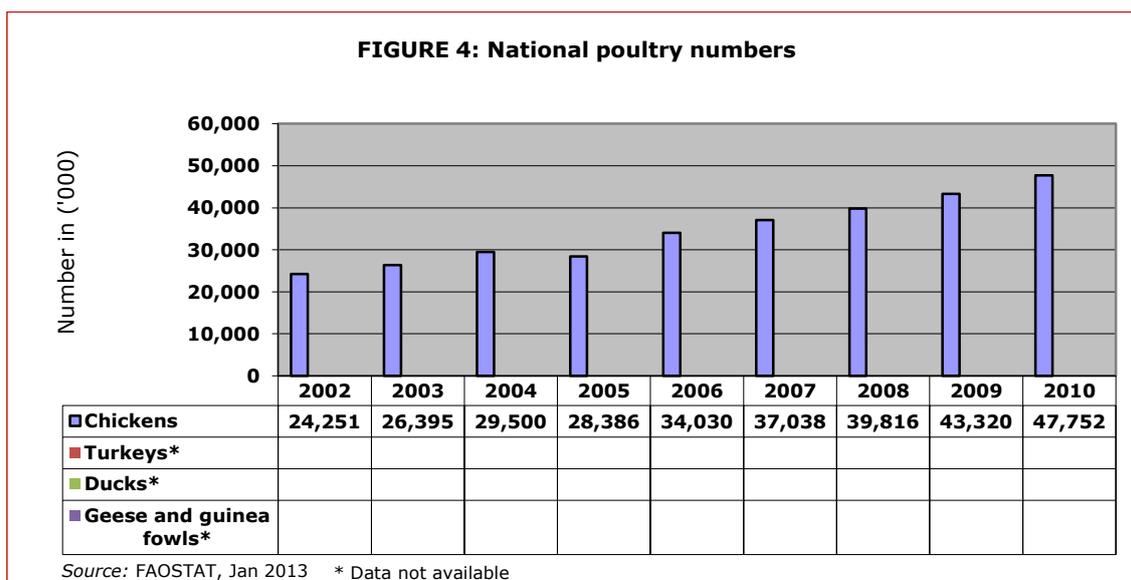


Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2010 Revision and World Urbanization Prospects: The 2011 Revision, <http://esa.un.org/unup>, August 2013

Chapter 2

Profile of the poultry sector

2.1 NATIONAL POULTRY FLOCK



2.2 GEOGRAPHICAL DISTRIBUTION OF POULTRY FLOCKS

Ghana's overall livestock production has been on the rise since 2000; however, this is largely the result of exponential growth of the poultry sector in the southern regions of the country. While the total cattle production increased by 8 percent between 2000 and 2007, poultry production increased by more than 80 percent for the same time period. Table 1 shows the poultry census data from 1995 and the projected growth of the poultry population for the following decade based on the pattern of growth in earlier periods. It was projected that the poultry population would reach over 33 million head by 2005 and over 38 million by 2010.

TABLE 1:
Projected regional poultry populations

Administrative Regions	Census		Projections	
	1995	2001	2003	2005
Greater Accra	4 179 458	10 160 174	13 540 230	18 044 753
Central	676 089	939 391	903 308	971 514
Western	247 377	380 039	423 971	472 982
Eastern	747 496	1 223 531	1 443 358	1 702 679
Volta	1 160 028	1 192 775	1 219 619	1 247 067
Ashanti	2 103 541	3 880 693	4 742 500	5 795 693
Brong Ahafo	863 630	1 571 243	1 983 356	2 503 559
Northern	1 468 320	1 749 368	1 836 921	1 928 856
Upper East	888 475	763 276	732 174	702 339
Upper West	912 898	968 151	998 949	1 030 727
Total	13 082 557	22 828 641	27 824 386	33 525 809

Source: Livestock Programme Information Data 2006

TABLE 2:
Numbers of the poultry species and their regional distribution (2009)

Category	Central	Western	Ashanti	Eastern	G/Accra	Volta	U/W	U/East	North	B/Ahafo	Total	%
Layers	623 499	599 911	7 885 958	2 227 817	2 345 349	465 119	162 162	0	233 866	6 855 037	21 398 718	59.00%
Broilers	161 063	122 203	1 054 066	719 489	137 046	12 801	43 610	0	106 429	2 874 971	5 231 678	14.42%
Cockerels	55 504	179 927	486 594	244 495	31 968	101 823	48 383	0	11 002	302 863	1 462 259	4.03%
Sub-Total	840 066	901 741	9 426 618	3 191 801	2 514 363	579 743	254 155	0	351 297	10 032 871	28 092 655	77.45%
Local chickens	55 731	462 965	647 834	650 740	20 786	363 648	243 735	578 647	1 744 799	279 280	5 048 165	13.92%
Guinea fowls	2 468	12 045	36 103	11 881	5 447	56 076	59 360	622 616	1 414 649	354 351	2 574 996	7.10%
Sub-total	58 199	475 010	683 937	662 621	26 233	419 724	303 095	1 201 263	3 159 448	633 631	7 623 161	21.02%
Ducks	4 361	21 258	45 542	23 170	2 410	47 410	11 879	93 324	56 046	24 645	330 045	0.91%
Turkeys	972	7 608	17 952	9 302	2 362	19 376	3 552	14 352	7 426	47 790	130 692	0.36%
Others	104	1 007	6 705	20	216	5 342	6 793	16 890	49 947	4 936	91 960	0.25%
Ostriches	0	0	6	0	1 635	27	0	6	985	24	2 683	0.01%
Sub-Total	5 437	29 873	70 205	32 492	6 623	72 155	22 224	124 572	114 404	77 395	555 380	1.53%
Grand Total	903 702	1 406 624	10 180 760	3 886 914	2 547 219	1 071 622	579 474	1 325 835	3 625 149	10 743 897	36 271 196	100.00
%	2.49%	3.88%	28.07%	10.72%	7.02%	2.95%	1.60%	3.66%	9.99%	29.62%	100.00%	

Source: Veterinary Services Directorate, 2010

Under the Support Programme to Integrated National Action Plans on Avian and Human Influenza (SPINAP-AHI), the Veterinary Services of Ghana conducted a poultry census through cooperation and input from regional officers. The data was disaggregated by type of poultry species.

Based on this census Table 2 summarizes the geographical distribution of poultry flocks throughout the country for the year 2009. The largest number of poultry flocks belong to the Brong-Ahafo Region which accounted for 29.6 percent of the total poultry population of Ghana, with the smallest number of poultry flocks belonging to the Upper West Region which comprise 1.6 percent. About 14.25 percent of all local chickens and guinea fowl in Ghana were found in the Upper East Region, Upper West Region and the Northern Region, which can possibly be attributed to the establishment and registration of a Guinea Fowl Farmers Association and the importance of the social-economic value of local chickens and guinea fowl in the three regions.

The projected population data and the estimated data from FAOSTAT differ from the VSD 2009 poultry census data. These projections are likely to be inaccurate as anecdotal evidence from poultry farmers indicates a decline in commercial production in most regions over the period from 2007 to 2010 as a result of frequent Gumboro disease outbreaks, competition from cheaper imported poultry meat and eggs and the increasingly high costs of feed ingredients such as maize. For example one large commercial poultry farm (Sydal Farms) in Greater Accra has discontinued its broiler hatchery and production operations. Nevertheless while broiler bird populations are likely to be in decline there is evidence that between 2001 and 2011 layer bird operations have increased judging from the increase in number of poultry operations in the Kumasi and Dormaa Ahenkro area. According to Gyening (2006), several layer farms have expanded their operations to stock 50 000 birds or more and currently the Dormaa-Ahenkro district in Brong-Ahafo which is sharing a border with Côte d'Ivoire is believed to be holding some 1.8 million layer birds (VSD Dormaa Ahenkro 2011).

Table 3 shows the relative importance in terms of numbers and distribution of the poultry species in Ghana today. Since very little statistical data has been collected over the years information in the table has been collected through various interviews with government officials and poultry farmers. As expected, village chickens are mostly concentrated in the more rural regions (Northern Upper East and Upper West) but are also present in large numbers in the other regions.

TABLE 3:
Relative importance of poultry species in Ghana

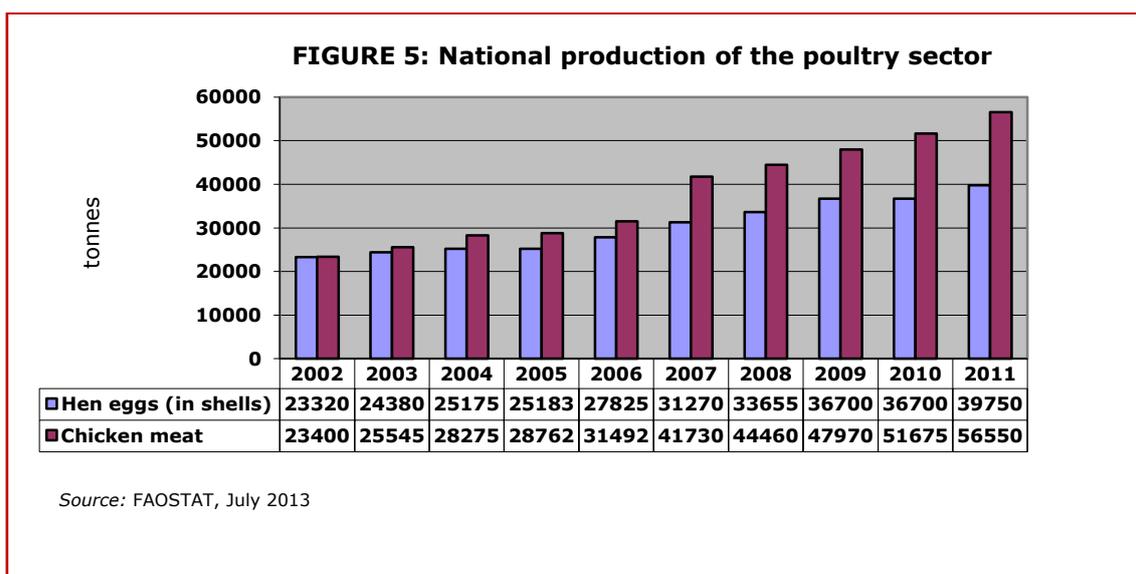
Adm. Regions	Commercial Exotic chicken		Village Chicken	Guinea fowl		Turkey		Duck		Quail	Pigeon
	Broiler	Layer		Exotic	Local	Exotic	Local	Exotic	Local		
G. Accra	+++	+++	++	++	+	+	+	+	++	+	+
Central	+	++	++				+		+		
Western	+	++	++				+		+		
Eastern	+	++	++				+		+		
Volta	+	++	++				+		++		
Ashanti	+++	++	++	++			+		+		
Brong Ahafo	++	++	++				+		+		
Northern	Negligible	+	+++	+	+++						+
Upper East	Negligible	+	+++		+++						+
Upper West	Negligible	+	+++		+++						+

Source: Stakeholder Interviews 2006

Exotic birds are kept for commercial purposes and they are more abundant in the urban areas of the Greater Accra, Brong-Ahafo and Ashanti regions where markets for their products exist and the climatic conditions are favourable. There are also substantial commercial bird populations in Western, Central and Eastern Regions.

Livestock and poultry populations in Ghana have remained low perhaps because of poor management systems and the social-cultural reasons for keeping livestock especially the large and small ruminants.

2.3 PRODUCTION



For the period 2000-2011 poultry production has been markedly on the rise. Figure 5 demonstrates the increase of national hen egg and chicken meat production with chicken meat showing a faster increase over the past decade. Table 4 below also includes the figures for import and export of poultry meat and eggs.

TABLE 4:
Poultry meat and egg production and supply in Ghana (tonnes)

Year	Meat (Chicken Turkey Guinea Fowl etc.)				Eggs			
	Production	Export	Import	Supply	Production	Export	Import	Supply
2001	20 963	0	12 262	33 225	22 260	0	96	22 356
2003	25 545	823	56 090	80 812	24 380	196	62	24 246
2005	28 763	64	52 570	81 269	25 183	0	107	25 290
2007	41 730	29	80 551	122 252	31 270	16	51	31 305
2008	44 460	0	76 957	121 417	33 655	26	45	33 674
2009	47 970	18	80 775	128 727	36 700	4	20	36 716
2010	51 675	0	112 145	163 820	36 700	3	36	36 733
2011	56 550				39 750			

Source: FAOSTAT, 2013

The poultry meat supply figures presented in Table 5 for the period 2001-2010 are based on production estimates with projected poultry populations, actual import figures presented by the VSD MOFA and the layer bird populations. According to LPIU and MOFA data these represent between 18 percent and 21 percent of the total meat consumption in Ghana.

TABLE 5:
Local poultry meat production and imports

Year	Potential Sources of Poultry Meat (tonnes)			% of total meat supply
	Domestic ¹	Imported ²	Total	
2001	26 554	30 261	56 815	17.9
2002	28 962	19 986	48 947	15.2
2003	31 369	27 798	59 166	18.1
2004	33 776	39 089	72 864	22.0
2005	22 709	42 288	64 997	11.3
2006	27 224	47 794	75 018	13.1
2007	29 630	67 473	97 103	16.9
2008	31 853	91 364	123 217	21.4
2009	34 656	70 085	104 741	18.2
2010	37 279	72 418	109 697	19.1

¹Estimated (2001-2004) ² Official (2001-2004)
Source 2005-2010: Veterinary Services Directorate, 2011

National egg production for 2011 was estimated conservatively to be 10 964 million (Table 6). Estimates of the number of eggs were based on stockholdings per farm and 66 percent egg production.

TABLE 6:
Egg production (2011)

Region	No. of Farms (Sectors 2 & 3)	Estimated no. of Eggs (millions)
Greater Accra	421	542
Ashanti	697	5 321
Brong Ahafo	510	3 989
Central	312	437
Western	159	247
Eastern	213	358
Volta	98	68
Total	2 410	10 964

Source: Field Data Akunzule 2011

2.4 CONSUMPTION

According to FAO (2009) the annual per capita consumption of meat for Ghana in 1995 was 9.5 kg which increased to 10.6 kg by 2005. This shows an annual growth of 1.1 percent from 1995 -2005. The per capita daily caloric intake from livestock products stood at 42.4 kcal in 1995 and increased to 50.2 kcal in 2005 as compared to the worldwide average caloric intake from livestock products of 339.3 kcal in 1995 and 388.2 kcal in 2005. In Ghana the percentage of daily energy supply provided by animal products of any type is low relative to other countries.

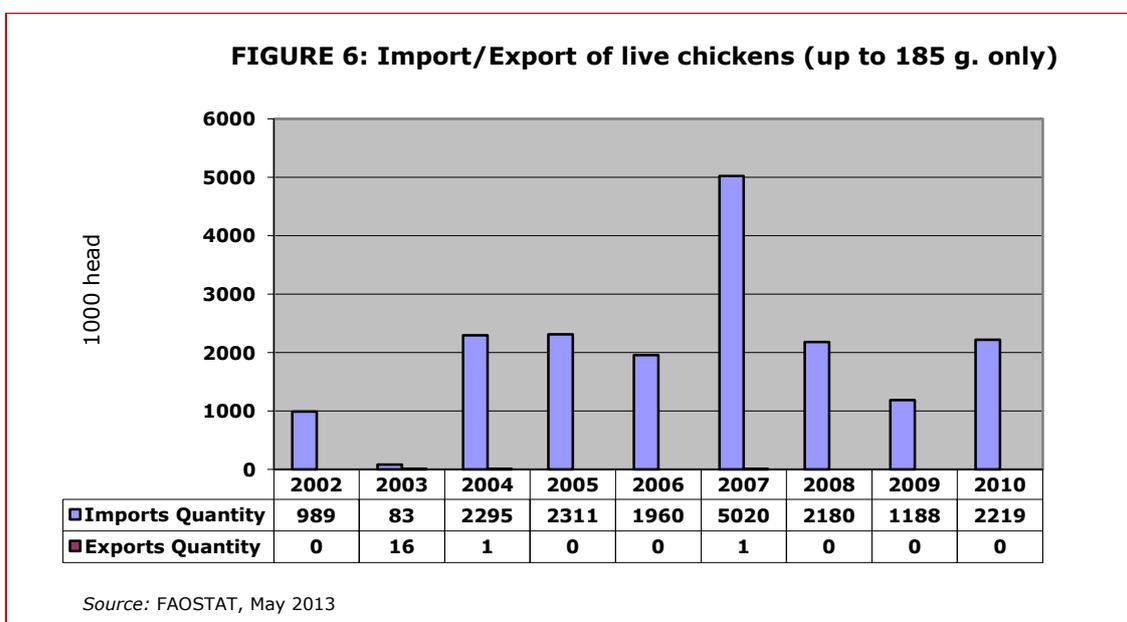
The share of total calories from livestock products remained constant at 1.8 percent from 1995 to 2005. The annual growth of total calories share from livestock products was 0.2 percent as compared to the world average of 11.8 in 1995 and 12.9 in 2005 (FAO 2009).

The annual per capita consumption for eggs in Ghana was 0.6 kg in 1995 and 0.8 kg in 2005 compared to the world average of 7.3 kg in 1995 and 9.0 kg in 2005. The annual growth for Ghana's egg consumption from 1995 to 2005 was 4.0 percent (FAO 2009).

In Ghana poultry meat and eggs together account on average for only 0.60 percent of the total daily calories consumed. Killebrew and Plotnick (2010) estimated that consumption of poultry products consisted of 1.2 kg of meat and 12 eggs per person per year as compared to the world average of 9.7 kg of meat and 154 eggs per person per year.

2.5 TRADE

Figure 6 shows both the import and export quantity of Ghana's live chicken industry. The exportation of live chickens from Ghana to other countries is virtually non-existent. For the period 2000-2010, the import quantity of live chickens was volatile ranging from a low of 83000 heads of chicken in 2003 to a high of 5 020 000 in 2007. Ghana exports few day-old chicks to some African countries, such as Liberia, Sierra Leone, Cameroon, Benin and Uganda.



Import of day-old chicks and hatching eggs

Ghana imports large quantities of day-old chicks and hatching eggs from the European Union, USA and Brazil. There was an occasional glut of hatching eggs possibly caused by high imports from Côte d'Ivoire prior to the occurrence of AI in that country. This caused hatcheries in Ghana to operate below their operating capacities or stop operations completely. The Table 7 shows the imports of day-old chicks, parent stocks and hatching eggs into the country for the period 2005-2012.

**TABLE 7:
Imports of DOC and hatching eggs**

Year	Broiler	Layer	Turkey	Parent stock	Broiler hatching eggs	Layer hatching eggs	Total
2005	247 116	2 467 283	33 080	5 960	110 136	21 600	2 885 175
2006	286 402	669 661	408	69 067	239 160	191 160	1 455 858
2007	490 405	2 469 537	2 500	27 696	574 080	210 540	3 774 758
2008	47 734	326 822	4 510	15 402	1 440	162 000	552 908
2009	454 640	1 036 872	6 972	58 822	115 380	121 015	1 793 701
2010	379 643	1 422 199	21 290	95 016	53 070	274 744	2 245 962
2011	547 205	2 461 140	9 180	9 180			
2012	651 112	3 227 844	16 966	114 344			

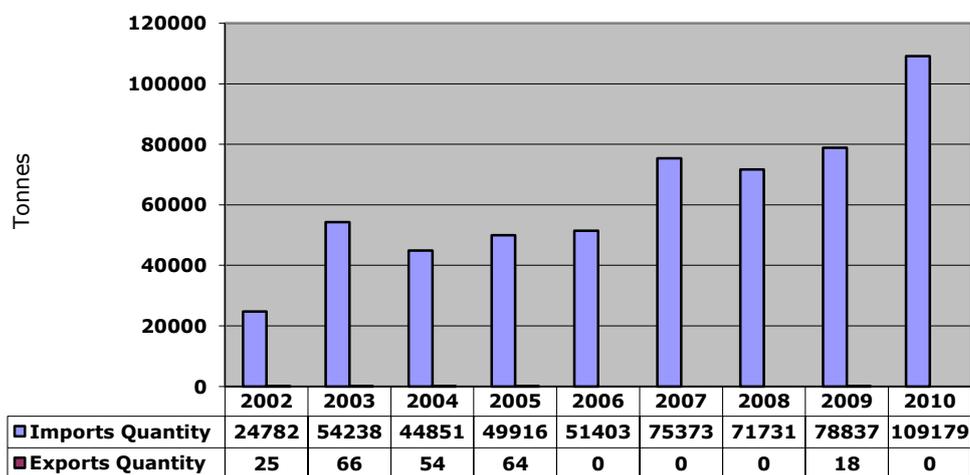
Source: Veterinary Services Directorate, 2012

Chicken meat

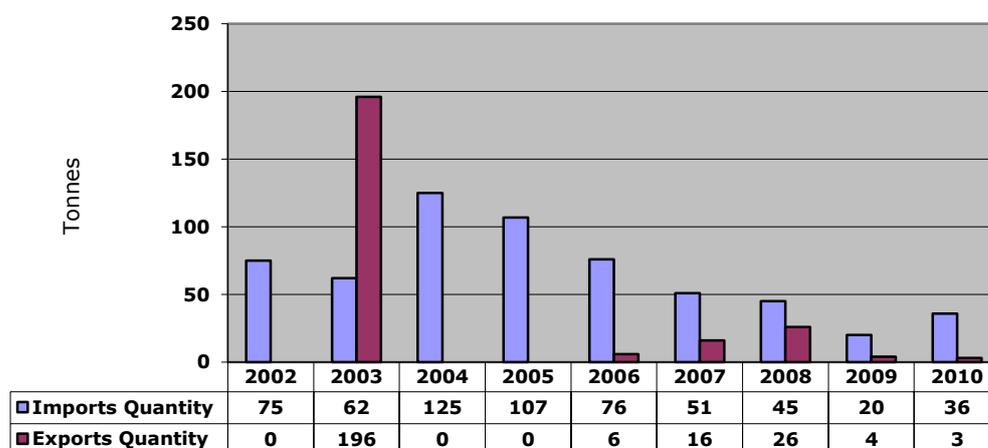
Apart from re-export of frozen chickens imported from the European Union, Ghana does not export locally produced chicken meat to any other African countries.

The Figures 7.a and 7.b show the trade of chicken meat and hen eggs between Ghana and other countries during the period 2002-2010.

FIGURE 7.a: Import/Export of chicken meat



Source: FAOSTAT, May 2013

FIGURE 7.b: Import/Export of hen eggs (with shells)

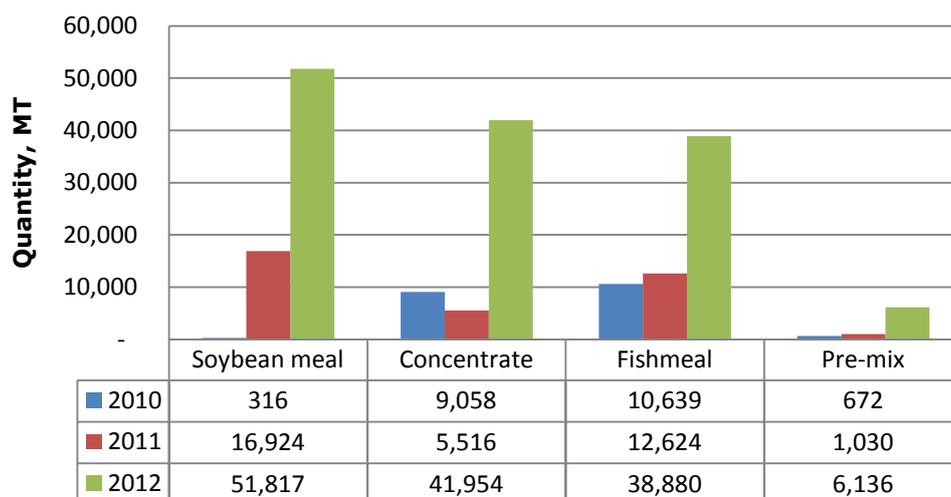
Source: FAOSTAT, May 2013

Poultry feeds and feed ingredients

Quantitative and qualitative insufficiency of feed especially during certain periods of the year is one of the main impediments in the way of improvement of poultry production in Ghana.

Availability of feed ingredients for compound feed manufacture has not been consistent. Some of the feed ingredients like fish meal are not produced locally while in the case of others the domestic production is not adequate to meet the requirements of the industry.

The main poultry feed inputs such as fishmeal, premix, concentrate and soybean, are imported. Figure 7.c. shows the quantity of feed ingredients which were imported in 2010, 2011 and 2012.

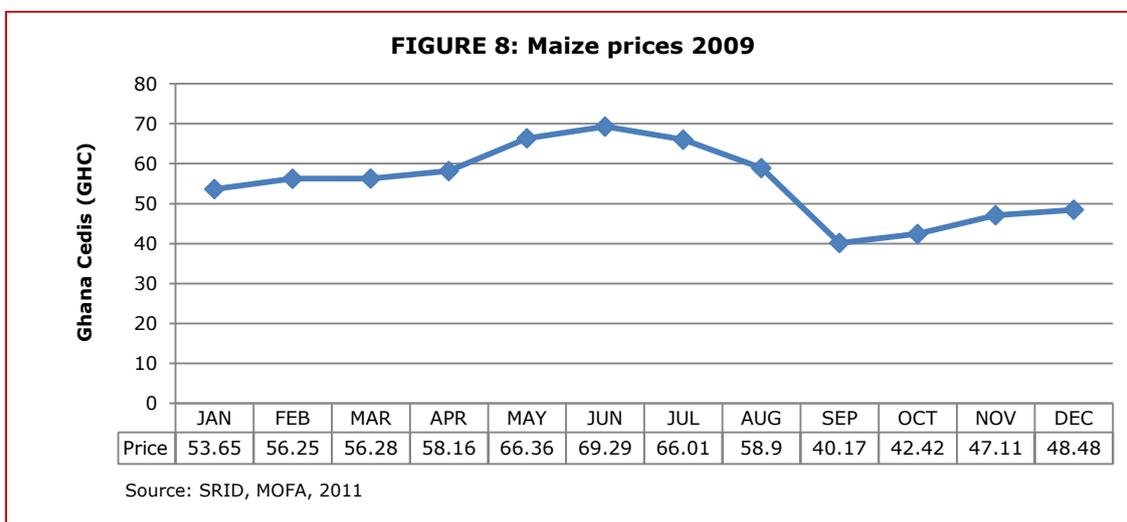
FIGURE 7.c: Import of feed ingredients

Source: Animal Production Directorate of MoFA, 2013

It has been reported that the feed mills operated 50 percent below their capacity since the 1980s when the downturn of the Ghanaian economy affected the availability of feed ingredients and other inputs and poultry production declined (Ibrahim Akalbila, 2008). The reasons for the continuing low output are an overall increase in the cost of feed ingredients and a credit squeeze which does not permit purchase of ingredients at appropriate time

when market prices are lower (see Figure 8) and this has forced poultry farmers to cut their flock size.

Unit costs of production for poultry meat and eggs have increased since at least 2001 without comparable increases in sale prices. Much of the increase has been due to rising costs of local maize which producers use for feed.



2.6 PRICES

Poultry products such as hen eggs and chicken meat have suffered from volatile producer price changes. From 2002 to 2008 the prices for hen eggs fluctuated between a low of 1603.95 USD/tonne to a high of 2509.18 USD/tonne; the prices for chicken meat varied from 1843.88 USD/tonne to 2973 USD/tonne for the same time period (Figure 9).

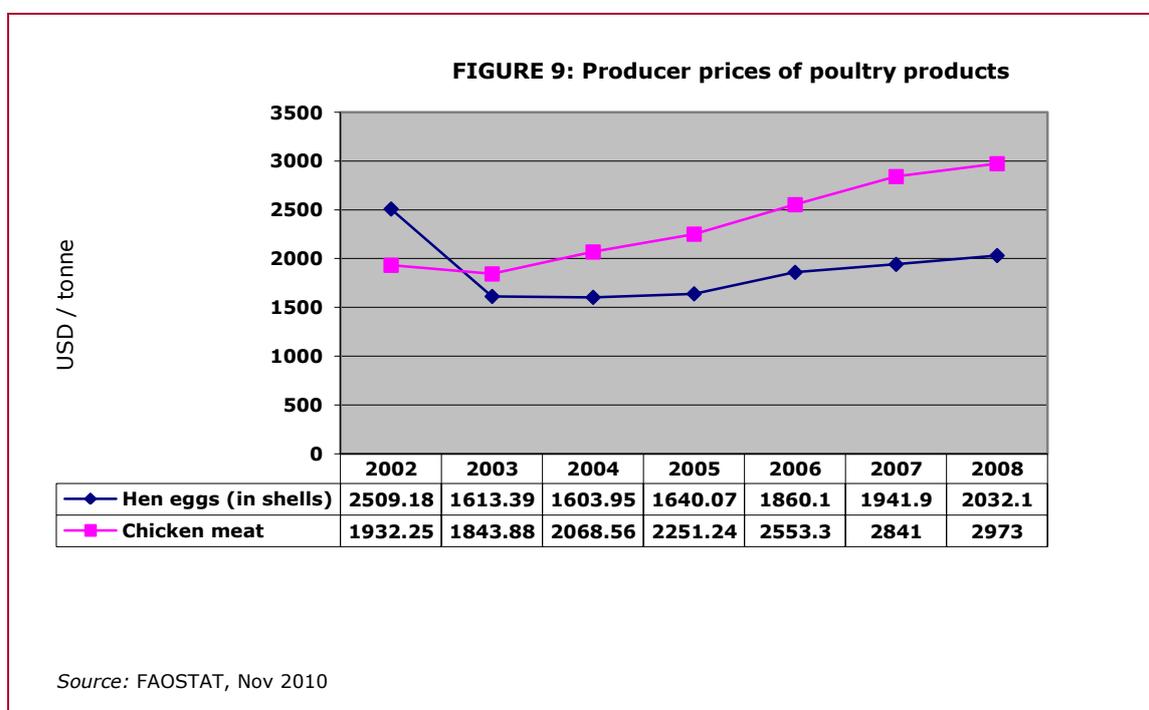


Table 8 shows changes in the cost of inputs for 2012 and July 2013. The inputs prices for vaccines remained constant which is to effectively control diseases in rural poultry and commercial poultry. Nearly all other inputs for poultry production have increased including

feed and day-old chicks. With between 25.0-33.3 percent the largest cost increase was for locally produced day-old chicks.

TABLE 8: Prices of inputs for poultry production (GHANA CEDIS)

Feed ingredient*	Quantity (kg)	2012	July 2013	Change
Wheat Bran	25	7	7.5	7.1%
Maize - White	50	28	30	7.1%
Maize - Yellow	50	37	40	8.1%
Soya Meal 49% - Local	50	70	70	0.0%
Oyster Shell	50	7	8	14.3%
Concentrate 30%	50	98	120	22.4%
Full Fat Soya	1	1.1	1.2	9.1%
Salt	1	0.4	0.5	25.0%
Layer Premix	1	2.9	2.96	2.1%
Broiler Premix	1	2.85	3.92	37.5%
Lysine	1	5.2	5.2	
Methionine	1	15	15	
Seapak 65%	1	2.08	2.08	
Poultry vaccines**				
HB1	1 dose	0.008	0.008	
Lasota	1 dose	0.008	0.008	
IBD	1 dose	0.01	0.01	
Newcavac	1 dose	0.085	0.085	
Fowl Pox	1 dose	0.015	0.015	
DOC***				
Imported brown layer	Single	2.8	2.90	3.6%
Imported white layer	Single	2.85	2.99	4.9%
Imported broiler	Single	2.2	2.30	4.5%
Local brown layer	Single	1.5	2.00	33.3%
Local broiler	Single	1.2	1.5	25.0%

Sources: * Asutsuare Poultry Farm Ltd ** VSD, 2013 ***Multivet, Gh.Ltd, 2013

The consumer price for table eggs in selected markets in the country are shown in Table 9, for different categories of meat in Table 25 and for live guinea fowl in Table 19. Table 29 shows comparative prices of maize and eggs. The Table 9 shows that the price increase for table eggs in Accra market was 86.6 percent from January 2008 to January 2011.

TABLE 9:
Monthly wholesale price (GHC) for eggs in selected markets in Ghana (2008-2011)

Market	January 2008	January 2009	January 2010	January 2011	August 2011
Accra	4.02	4.80	7.00	7.50	8.00
Tema	3.27	5.00	6.00		
Sekendi/Takoradi	3.62	5.40	6.00	6.78	6.94
Koforiadua	3.42	5.00	6.00	7.14	7.21
Cape Coast	3.62	5.40	6.00	6.17	6.82
Menkessim	3.47	5.00	6.00		
Ho	3.65	5.00	7.00	7.04	7.68
Kumasi	3.38	4.70	6.00	6.33	6.21
Obuasi	3.20	4.22	5.50		
Sunyani	3.20	4.30	6.00	5.73	5.90
Techman	3.72	5.68	6.00		
Tamale	3.50	4.90	6.00	7.58	8.28
Bolgatanga	3.90	5.20	7.00	7.75	NA
Wa	4.50	4.50	6.00		

Source: Marketing Services Unit SRID (MOFA), 2011

Chapter 3

Poultry production systems

TABLE 10:
FAO classification of poultry production systems

Sectors (FAO/definition)	Poultry production systems			
	Industrial and integrated	Commercial		Village or backyard
		Bio-security		
		High	Low	
	Sector 1	Sector 2	Sector 3	Sector 4
Biosecurity	High	Mod-High	Low	Low
Market outputs	Export and urban	Urban/rural	Live urban/rural	Rural/urban
Dependence on market for inputs	High	High	High	Low
Dependence on goods roads	High	High	High	Low
Location	Near capital and major cities	Near capital and major cities	Smaller towns and rural areas	Everywhere. Dominates in remote areas
Birds kept	Indoors	Indoors	Indoors/Part-time outdoors	Out most of the day
Shed	Closed	Closed	Closed/Open	Open
Contact with other chickens	None	None	Yes	Yes
Contact with ducks	None	None	Yes	Yes
Contact with other domestic birds	None	None	Yes	Yes
Contact with wildlife	None	None	Yes	Yes
Veterinary service	Own Veterinarian	Pays for veterinary service	Pays for veterinary service	Irregular depends on govt vet service
Source of medicine and vaccine	Market	Market	Market	Government and market
Source of technical information	Company and associates	Sellers of inputs	Sellers of inputs	Government extension service
Source of finance	Banks and own	Banks and own	Banks and private ²	Private and banks
Breed of poultry	Commercial	Commercial	Commercial	Native
Food security of owner	High	Ok	Ok	From ok to bad

Sector 1: Industrial integrated system with high level of biosecurity and birds/products marketed commercially (e.g. farms that are part of an integrated broiler production enterprise with clearly defined and implemented standard operating procedures for biosecurity).

Sector 2: Commercial poultry production system with moderate to high biosecurity and birds/products usually marketed commercially (e.g. farms with birds kept indoors continuously; strictly preventing contact with other poultry or wildlife).

Sector 3: Commercial poultry production system with low to minimal biosecurity and birds/products entering live bird markets (e.g. a caged layer farm with birds in open sheds; a farm with poultry spending time outside the shed; a farm producing chickens and waterfowl).

Sector 4: Village or backyard production with minimal biosecurity and birds/products consumed locally.

² Money lenders, relatives, friends, etc.

3.1 BACKGROUND INFORMATION

The Ghanaian economy is based largely on agriculture which accounts for 35 percent of the Gross Domestic Product (GDP) (ISSER 2010). Agriculture's contribution to the GDP increased from 33.9 percent in 2008 to 34.9 percent in 2009 (ISSER 2010). About 60 percent of the labour force is engaged in this sector mostly operating either a crop farm or a mixed crop and livestock/poultry farm. According to a survey by MOFA/DFID (2002) the livestock/poultry component serves as a 'safety net', providing an important source of ready cash for emergency needs. Thus even though livestock and poultry contribute only 7 percent to the agricultural GNP (FASDEP 2002) their role in rural livelihoods and food security is significant.

In the 1960s the Government of Ghana identified poultry production as having the greatest potential for addressing the acute shortfall in the supply of animal protein and job creation and established an integrated poultry project in Accra. The growth of the industry was initially slow as supplies of day-old chicks and other inputs were irregular. This was exacerbated by frequent outbreaks of Newcastle Disease (ND) which discouraged potential farmers. These constraints were overcome and by the 1970s poultry production was established supported by the removal of custom duties on poultry inputs (feed additives drugs and vaccines).

The development of the poultry industry in Ghana has passed through many challenges and it is characterized by the following achievements:

- Control of ND and fowl pox since the 1960
- Control of Gumboro (Infectious Bursal disease) in 1970
- Regular supply of poultry vaccines to control poultry diseases for commercial poultry production in the entire country
- Establishment of associations of stakeholders such as the Ghana National Association of Poultry Farmers in 1984 and the Ghana Feed Millers Association in 1985
- Establishment of hatcheries in 1990s
- Establishment of the Ghana Poultry Board established on 9th September 2005. There are plans to change the Ghana Poultry Board to the Ghana Poultry Development Council

In the early 1980s however the downturn in the Ghanaian economy severely affected the availability of feed ingredients and other inputs and poultry production declined. Although the situation improved towards the end of that decade a change in government policy resulting in trade liberalization caused the influx of cheaper poultry meat products. The renewed imposing of taxes and duties on imported inputs for the poultry industry has since then caused a severe decline of the poultry industry in Ghana. The outbreaks of Avian Influenza (AI) caused by the Highly Pathogenic Avian Influenza (HPAI) H5N1 strain in some parts of Asia Europe and Africa threaten to cause further devastation of the local poultry industry in Ghana. Its actual outbreaks in the country in 2007 caused economic losses to the actors in the poultry value chain. As of 2013, some poultry farms that were affected by the HPAI are still closed down completely or downsized, long after the disease was effectively controlled in 2007 in the country. The Coka Appiah, Mensah and Letap Farms that were affected are now no longer in operation.

The Table 11 is an attempt to give an overview about the poultry operations in Ghana according to the above FAO classification system. Only one unit in the Dormaa district of Brong-Ahafo and few farms in Tema and Kumasi can be classified as FAO Sector 1. However according to the President of the Ghana National Association of Poultry Farmers (GNAPF) none of the large-scale poultry farms has the full characteristics described for Sector 1. More detailed information about farm structures is available from the Dormaa Ahenkro district (Table 12). The most common farm size for layer farms in that location is 2000-4000 with a share of 34.1 percent among all farms (for details see Table 18). Many of the farms are clustered closely together representing a high risk of disease transmission in the event of an outbreak of infectious disease. Indeed many of the farms are located within less than 100m from each other.

It is important to note that two large farms stocking 150 000 and 83 000 layer birds in the Dormaa district are supplied with inputs from a parent company across the border in Côte d'Ivoire (Dr. Ayensu personal communication).

TABLE 11:
Poultry production systems and their distribution in Ghana (2010)

Administrative Regions	FAO sector				Total
	1	2	3	4 ^a	
Greater Accra	1	140	335	997	1 473
Central	-	65	247	1 053	1 365
Western	-	33	69	1 161	1 263
Eastern	-	43	170	64 900	65 113
Volta	-	23	75	52 496	52 594
Ashanti	5	190	507	4 725	5 427
Brong-Ahafo	1	177	332	76 070	76 580
Northern	-	-	30	77 142	77 172
Upper East	-	-	33	43 382	43 415
Upper West	-	-	34	22 592	22 626
Total	7*	671	1 832	344 518	347 028

a - Comprises local chickens kept by the majority of almost all rural and peri-urban households (5-25 birds/household) and in a small number of cases exotic birds (10-15/household) kept in backyards. Current distribution obtained, using Population and Housing Census of 2010, with assumption of 10-16 persons per household and assuming that half of each household keep village poultry for NR.UWER, BA, VR, ER and for GAR, Ash, about a 1/200-1/300, based on author's calculations.
* Based on interview only.

Source: Veterinary Services Directorate, 2011

TABLE 12:
District distribution of commercial poultry farms in Brong-Ahafo Region (2011)

District	FAO sector			Total
	1	2	3	
Dormaa	1	105	106	202
Jaman South		4	5	9
Berekum		9	25	34
Sunyani		22	43	65
Techiman		10	15	25
Tano South		4	12	16
Nkoranza		4	28	32
Kintampo South		0	1	1
Asufano North		2	15	17
Asufano South		0	0	0
Asutifi		0	10	10
Wenchi		2	7	9
Sunyani West		25	65	90
Total	1	187	332	510

Source: Gbeddy Kenneth, Veterinary Service, Sunyani, 2013

3.2 SECTOR 1: INDUSTRIAL AND INTEGRATED PRODUCTION

The large scale industrial and integrated poultry farms that correspond to the sector 1 of the FAO classification have breeding parent stock, hatcheries, feed mills and marketing channels with limited exports of DOC to West African countries (see Table 14 for the list of breeding farms). One example of such a farm is the Unity Farms Ltd which is a conglomerate of five brothers with poultry operations in both layer and broiler production. Two of the brothers won the Best National Poultry Farmer Award in 2006 and 2009. Akate Farms Ltd in Kumasi also won the National Best Poultry Farmer Award and the National Best Farmer Award in 2007 and 2008, respectively. Such farms keep good records of production with a high productivity and laying percentage between 76 and 82.8 percent.

3.3 SECTORS 2 AND 3: OTHER COMMERCIAL PRODUCTION SYSTEMS

Sector 2

Sector 2 operations are described locally as large-scale commercial poultry farms. They are mainly egg producers but some occasionally raise broiler birds, guinea fowl or turkeys for meat especially during festive seasons. Most of them operate their own feed mill and various privately-owned farms operate their own hatchery and maintain parent stock. These farms stock more than 10 000 birds and have high levels of feed and veterinary drug inputs.

The birds in this sector are kept completely indoors either on deep litter or in battery cages. Birds are well fed on formulated diets. The main feed ingredients are locally obtained maize or imported yellow maize, soybean meal, cotton-seed cake and fishmeal while vitamin-mineral premixes are imported. Pullets start laying at 16 weeks while broilers attain 2-2.5 kg live weight within 6 and 7 weeks.

Most of these farms follow the vaccination programme recommended by the Veterinary Services Directorate of the Ministry of Food and Agriculture (Table 13). Antibiotics, vitamins and anti-coccidial medications are given according to the farm's previous health records or profiles.

TABLE 13:
Recommended vaccination schedule for poultry production³

Age (Weeks)	Type of vaccination	Method
1	1 st Gumboro	Oral
2	1 st Newcastle Disease (HB1)	Oral
3	2 nd Gumboro	Oral
7	1 st Fowl Pox	Injection
10	2 nd Newcastle Disease (Lasota)	Oral
12	2 nd Fowl Pox	Injection
16	3 rd Newcastle Disease (Newcavac)	Injection

Source Veterinary Services Directorate, 2012

Sector 3

Sector 3 includes small-scale commercial farms keeping 50-5 000 birds or medium-scale commercial farms with 5000-10 000 birds. They rely on hatcheries for day-old chicks and feed mill operations for feed. However some of them buy concentrate and maize and prepare their own feed. Bio-security levels are low and wild birds sometimes have access to the poultry houses.

³ This vaccination schedule is applicable for layers, broilers and cockerels. However, broilers are kept for only 7-10 weeks and only 1st Gumboro, 2nd Gumboro and 1st Newcastle Disease (HB1) vaccination are recommended. The last vaccination for layers is at 16 weeks of age

The birds are kept wholly indoors on deep litter or in battery cages. These operators often complain about the quality of poultry feeds and the day-old chicks that they obtain from suppliers. Their operations are very susceptible to price-changes in feed ingredients as they are unable to stock large quantities of feed between the months of November and December when prices are very low.

The farms rely on private veterinarians and MOFA Veterinary and Extension Agents for animal health delivery services and apply the recommended poultry vaccination like in sector 2 farms.

3.3.1 Breeding stocks and hatching eggs

Over the last five years, day-old chicks and guinea keets for commercial production have been produced by six hatchery companies (Table 14). They maintain their own parent stock of layer or broiler chicken. According to a report by Aning *et al.* (2008) many of the poultry keepers expressed concern about the quality of day-old chicks available in Ghana. The report states that a simple voluntary programme for hatcheries could be piloted combined with laboratory support to improve the quality and animal health status of DOC for poultry farmers.

TABLE 14:
Breeding farms in Ghana

Name of farm	Location
Topman Farms	Kumasi
Mfum Farms	Kumasi
Besease Farms	Kumasi
Akate Farms	Kumasi
Dobbmags Farms	Mankraso
Jokas	Kumasi

Source: Field Data Akunzule, 2013

All the current hatcheries produce well below their installed capacities on account of low demand for locally produced DOC due to their low quality. There is however, high demand for imported DOCs which have a better quality. Other hatcheries depend on imported fertile eggs for their operation. The local hatcheries that produced these DOC included Darko Farms, Akate Farms, Mfum farms, Jerusalem Farms, Asayam Farms, Besease farms, Akropong Farms (all in Ashanti Region) Africo and Afariwa (all in Greater Accra Region). The Table 15 shows the local production of DOC during the years 2010-2012/3 by the Akate Farms and Trading Co. Ltd.

The advantages of the local hatcheries are their direct access to the producing farms in the country and an easy way to immediately replace DOC in case of mortalities. Their main weaknesses are the poor quality of the produced DOC which either have high mortalities from week 1-10 of age or low laying performance of the mature birds from the age of 19 weeks and above.

The imported DOC have lower mortality rates throughout the life of the bird and quality assurance for good laying performance of the adult birds.

TABLE 15 :
Production of Day-old Chicks at Akate Farms and Trading Co. Ltd⁴

Year	Layers	Broilers	Cockerels
2010	2 025 837	233 123	1 957 500
2011	2 575 850	333 402	2 248 800
2012	3 079 935	329 400	3 081 140
2013(Jan-June)	1 234 000	139 200	1 232 900

Source: Akate Farms and Trading Co. Ltd, 2013

3.3.2 Broiler production

Local broiler meat production is in direct competition with imports of chicken, turkey and duck meat. Local broiler meat cannot compete with imports of frozen chicken meat due to the fact that the frozen meat is often sold cut and butchered which is more affordable and convenient to the final consumer. A poultry census survey conducted in 2009 by VSD showed that the broiler production in Ghana is reducing because of the rising cost of production and marketing problems.

Between October and December 2012 Liberty Commodities Limited and the Ghana National Association of Poultry Farmers (GNAPF) implemented a Pilot Broiler Project. A total of 28 000 broiler DOC was distributed to 35 farmers, with a regional distribution as follows: Brong Ahafo (9); Ashanti (9); Western; (6) and Greater Accra (11). The DOC were raised to 8 weeks with an average live weight of 2.5 kg and slaughtered. The purpose was to identify potential challenges and risks likely to be faced in a commercial broiler production project. The project exposed the challenges of broiler production, particularly in relation to processing and marketing of broiler meat in the country (Quame Kokroh, Personal Communication, 18 July 2013) In the Dormaa Ahenkro district within the Brong Ahafo Region broiler production is of importance with high numbers because of easy access to markets in Côte d'Ivoire (Table 16).

TABLE 16:
Numbers of broilers produced in the East District of the Greater Accra Region

Name of Farmer	2011	2012
Gad K Hansen	500	1000
James Amisaah	600	1000
Richard Kisseidu Awuku	500	500
Cecilia Boachie Sackey	500	500
Josiah Kingful	500	500
J.S.Torto	6000	3000
Augustine Amankwah	18000	25000
Agyepong Sefa	1500	2000
Abraham K. Oppong	400	400
Fredrick Lutterodt	500	500
Albert Aidoo	500	1000
Mrs Boateng	1000	1000
E. Mark-Hansen	500	500

Source: Veterinary Services Directorate, 2013

⁴ The production of DOC was obtained from only one of six breeding farms listed in Table 15

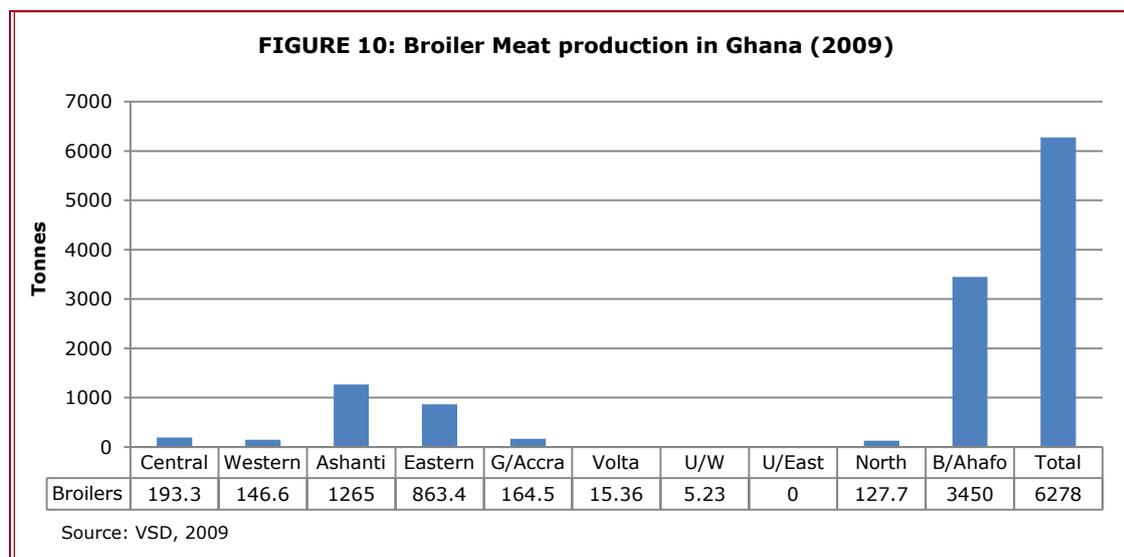


Figure 10 show that the Brong-Ahafo Region recorded for the year 2009 the highest broiler meat production of all regions. The Upper East Region recorded no broiler production and this situation remains in 2013.

3.3.3 Hen eggs

Much of the poultry sector operations are based on hen table egg production. The National Poultry Census of 2009 indicated that layers constituted 59 percent of the total poultry population. As there is no importation of table eggs into the country the consumers depend only on locally produced table eggs.

TABLE 17:
Estimated numbers of layers and egg production on selected farms (2013)

Name of farm	Layer stock	Estimated egg production*
Homes farms	13 700	2 959 200
Sabina Farms	10 000	2 160 000
Dr Mensah's Farm	4 000	864 000
Attipoult Farms	6 000	1 296 000
Trot Memo Farms	4 000	864 000
Senyo Farms	1 500	324 000
Vakpo Farms	4 000	864 000
Faith Farms	1 400	302 400
Beruta Farms	2 000	432 000
Charles Agbeve	1 000	216 000

* Based on a laying performance of 75% and 288 days in lay
Source: Regional Veterinary Office, Volta Region, 2013

Typical farms with both large and small stock numbers of layer birds are shown in Table 17. Average laying percentage per hen housed at the peak of lay ranges on many farms from 60-85 percent. However, some poorly managed farms can have a performance as low as 20-

50 percent. The main factors affecting low production are low quality DOC, and low quality feed. Some farmers do not consider the quality of feed in the calculation of the quantity of feed needed to fully meet the feed requirements of the laying bird.

The size structure of layer farms in the Dormaa Ahenkro District of the Brong-Ahafo Region is shown by Table 18

TABLE 18:
Structure and number of layer farms in Dormaa Ahenkro District 2011

Size of operation	No. of farms	% of farms
100-599	13	7.26
600-1 999	20	11.17
2 000-3 999	61	34.08
4 000-5 999	34	18.99
6 000-8 999	19	10.61
9 000-10 999	8	4.47
11 000-12 999	5	2.79
13 000-15 999	5	2.79
16 000-18 999	0	0.00
19 000-20 999	1	0.56
21 000-30 999	4	2.23
40 000-80 999	6	3.35
90 000-120 999	3	1.68
Total	179	

Source: Veterinary Services Directorate Dormaa Ahenkro, 2011

3.3.4 Other species

Guinea fowls

Commercial production of exotic guinea fowl started in Greater Accra and Ashanti before 2001. Currently the demand is low and guinea keets are only hatched on demand in two hatcheries in Greater Accra and Kumasi. Fertile eggs are imported from Belgium. Overall the number of exotic guinea fowl produced is small.

TABLE 19:
Prices of live Guinea fowls in the Upper East Region(in GHC)

	Adult 5-6 months	Young 1.5-2 months	Keets DOC -1 month
2009	5.00	1.00	0.30
2010	8.00	2.00	0.50
2011	10.00	2.50	1.00
2012	14.00	7.00	3.00

Source: Guinea Fowl Farmers Association Upper East Region, 2012

According to the VSD Poultry Census from 2009 the guinea fowl population represents 7.1 percent of the national poultry population. There have been government and donor programmes to stimulate the growth of guinea fowl production.

In the three regions of the north of the country guinea fowl farming is currently practised both with males and females by almost every rural household for purposes including: income generation, customary rites, festive occasions as well as cash buffer against food insecurity (Savana Farmer 2007). GIZ has promoted the guinea fowl value chain and produced a manual on guinea fowl rearing. Table 19 indicates the change in prices of live guinea fowl from 2009 to 2012 in the Upper East Region.

The Akate Farms & Trading Company Ltd has a system of large intensive production of guinea fowls. The population of the farm in 2013 is 25 100 guinea fowls including layers, growers, pullets and young stock of brooding stage from one to four weeks.

Ostriches

All ostrich farms are located in the Greater Accra and Volta Regions and the number of birds produced per farm ranges from 3 to 30. It was estimated that there were 4000 ostriches in the country in 2005. The main ostrich farms are Prof. Frimpong Farms and Kalpdzi Vincent farms with an estimated flock of 40 ostriches. There was a reduction of ostrich farms from 20 in 2006 to only 6 in 2011. The causes were not reported.

Ducks

Exotic ducks were produced for local restaurants between 2001 and 2005 on two farms in the Tema Metropolitan Area (Greater Accra). It is estimated that during this period 36000 ducks were produced annually. Duck production has not received any promotion unlike other poultry species such as guinea fowl and local chicken (Akunzule, 2011).

3.4 VILLAGE OR BACKYARD PRODUCTION

3.4.1 Chickens

The village or backyard production system (the low input low output system) is the most prevalent in Ghana with poultry playing a very important role in the livelihoods of farmers. Village chickens are kept all over the country in the rural and peri-urban areas. According to various estimates they account for 60-80 percent of the national poultry population (FASDEP 2002; Gyening 2006). Various estimates report the village poultry population in Ghana at 12 million in 2000 (Amakye-Anim, 2000) and at over 7 million in 2005 (VSD 2009. See Table 2). The Ghana National Census (2000) shows a total of 3 701 241 households of which 65.9 percent resided in the rural areas. Almost all households in rural areas keep some chickens and in some areas of the country also guinea fowl turkeys and ducks. If each rural household keeps an average of 10 village chickens the total rural poultry population would exceed 25 million.

The 2009 National Poultry census figures (Table 1) show that the proportion of village chickens, local guinea fowl, ducks, turkeys and pigeons excluding layers, broilers and cocks was highest in the Upper East (16.21 %) Upper West (3.97 %) and Northern (40.02 %) regions. These are the three poorest regions in the country.

Supplementary feeding in the form of maize or other grains, kitchen waste, pito mash (a by-product of the local brewery) and termites harvested from the field are usually provided. In operations in peri-urban areas wheat bran may also be given. However, these birds generally scavenge to find their feeds themselves.

In recent years (since 1998) the Veterinary Services Department has committed itself to the vaccination of local chickens against Newcastle Disease (ND). The locally-produced I2 vaccine is applied by veterinary staff, community livestock health workers or the stock owners themselves via the conjunctiva.

The use of I2 vaccine for mass vaccination against Newcastle Disease in rural poultry was reactivated and re-initiated under the project "Vaccines for the Control of Neglected Animal Diseases in Africa (VACNADA)" in the three regions of the north (Upper West Upper East and Northern).

Rural commercial poultry keeping

Some limited commercial poultry rearing takes place in the rural areas mainly in the southern parts of the country. Commonly exotic cockerels are raised for meat especially for festive occasions for which people buy cockerels from LBM and feed them until they are mature at between 8-12 months of age (Author's observation 2011). In the 2009 National census figures however, this operation accounted for only 4.03 percent of the national poultry population. This activity also takes place in peri-urban areas of the other regions but no figures are available for comparison. In recent years there has been an expansion of small-scale layer production units into rural areas. This has been aided by NGOs working to reduce rural poverty. It is estimated that some 40 000 layer birds are kept for this purpose in the rural parts of Ghana.

The role of village poultry keeping

Village chickens and other local poultry species (particularly guinea fowls) are kept as a source of protein and as a means of sustaining or improving livelihoods in rural areas. Together with livestock they make vital contributions to the household and farm enterprises in northern Ghana (Karbo *et al.* 2003). In a study carried out in the Coastal Savannah (Aboe *et al.* 2003) village chickens were found also to play a very important role in the economy of rural parts of Southern Ghana. They are generally kept for the production of meat and eggs and to generate income for family needs (Table 20). Their contribution to household food security and income is shown in Table 21. Often they are also kept for cultural purposes to be given as gifts, as payment of bride price and for religious rituals. Thus, rural poultry plays very important nutritional and socio-economic roles in the rural life in Ghana.

TABLE 20:
Role of village chickens in rural livelihoods (% poultry keepers reporting)

Uses of village chickens	
Income supplementation	85
Domestic meat supply	100
Domestic egg supply	40
Uses of income from village chickens	
Personal needs	68
Hospital bills	23
Supporting crop farming	15
School fees	35
Paying debts	10
Points of sales	
Farmgate	85
Market	40
Food vendors	10
Constraints to increased production	
Diseases	90
Feed availability	58
Housing	36
Finance	20

Source: Aboe *et al.*, 2003

TABLE 21:
Income generated from local poultry in two districts of the Northern Region

Year	Species of birds	No. of birds	Av. No. Household	Birds sold	Gross Income ('000 ₵)	Average Price/Bird (₵)	Net income household (₵)
1997	Guinea fowl	799	20	388	2319	6546	63 494
	Chickens	499	12	226	1159	5128	28 875
	Turkeys	2	2	-	-	-	-
1998	Guinea fowl	799	20	586	3 536	6 034	88 400
	Chickens	499	13	217	1 237	5 701	30 930
	Turkeys	2	4	2	100	-	88 400
1999	Guinea fowl	1933	48	476	4 408	9 261	110 200
	Chickens	19 587	15	195	1 020	5 231	25 500
	Turkeys	19	19	-	-	-	-

No. of households surveyed = 100 (1997-1999) Aboe *et al.*, 2003

3.4.2 Ducks

This information has not yet been sourced.

3.4.3 First case study: Small scale commercial layer production



Mme Rejoice Dorkpor is receiving the best poultry award



Standing in her chicken coop

Madam Rejoice Dorkpor is a 55 -years old small scale commercial poultry farmer. She is a widow with three children living in Asutsuare community in the Dangme West District of the Greater Accra Region.

She was introduced to small scale commercial poultry production by the Sankofa Foundation (SF) and the Ghana Poultry Network (GAPNET) in 2005. Since then she has developed a keen interest in commercial poultry production after her first experience with 100 layer birds that the project donated to her.

Sankofa Family Poultry (SFP) is sponsored by Oxfam Novib a Netherlands based organization, and implemented by the Sankofa Foundation in partnership with the Ghana Poultry Network a local Non-Governmental organization.

Madam Rejoice was among the first 10 beneficiaries of the SFP which piloted small scale commercial poultry production in 2005. Madam Rejoice received 100 layer birds that were 20-weeks old and received also poultry health services and production training, poultry feed, veterinary drugs and a constructed hen coop with a holding capacity for 100 layers. The hen coop was constructed with local materials of thatch for roofing bamboo sticks and ropes.

In 2006 the project supported Madam Rejoice in raising 50 layers. After gaining experience from keeping layers from the Sankofa Family Poultry and from the profit she made through the layer production she took 400 day-old layer chicks and brooded them herself in 2009. She also constructed two poultry houses using roofing sheets instead of thatch without financial assistance from the Sankofa Family Project. As of 2010 she was in the process of building a third poultry house for expansion to increase her production capacity to 1000-1500 layers per production cycle.

She collects an average of 300 eggs per day from her 395 layers and loses approximately 1.25% of the birds from brooding to the point of lay. In addition to keeping layers Mme Rejoice took 150 day-old broiler chicks and raised them and sold them at the Easter festival in April 2010. In July 2010 Madam Rejoice sold an average of six crates of eggs per day for GH5.00 per crate. She often sells her eggs to individuals and businesses such as restaurants and hotels. She uses the broken eggs for family meals and gives some to friends and other family members as gifts. She keeps records of all egg collection, feed purchases, transportation costs, drugs purchase and administration and mortalities.

Madam Rejoice bought her day-old chicks and poultry feed from a private companies in Accra which is located about 1.5 hours drive from Asutsuare. She uses local green leaves such as *Monrigo* and "bokoboko" planted in her poultry houses as supplementary feed to reduce feeding costs.

Madam Rejoice was awarded a price for being the most outstanding poultry producer beneficiary of the Sankofa Family Poultry in September 2010. She shared some of her motivational story with the media during the presentation ceremony and reported that her success was due to hard work, determination and the financial and technical support from the Sankofa Foundation and the Ghana Poultry Network. Additionally she said that the income she earns from the sale of eggs has helped her afford the education of her children. She is able to pay for her expenses, buy her own veterinary drugs and vaccines for her birds, purchase poultry feed and birds and pay for transportation costs as well as for the maintenance of her poultry houses. Madam Rejoice is also using the profits from the sale of eggs and live birds to invest in seasonal farm enterprises such as rice and vegetable farming (pepper, tomatoes

and egg plants).

Her farm is now used as a model for new beneficiaries of the Sankofa Family Poultry.

Rejoice is a member of the Asutsuare Women Development Society and the STAR Group Leader a sub-unit of the society. She is the owner and manager of her farm, the Rhema Farms Ltd.

Source: Interview by Akunzule and Nyameke (2011)

3.4.4 Second case study: Women in local village turkey production



Incubating Turkey in the kitchen



Mrs. Tetteh is feeding the pullets with ants

Mrs. Mariatu Tetteh is a 45-year old village turkey producer. Married and with nine children her family lives in the small community of Someh in the Dangme West District of Ghana. Someh has an approximate total population of 700 to 1000 people and is a predominantly Muslim community. In households in Someh exclusively the women are in charge of keeping turkeys though occasionally the men support their wives in feeding and collecting the eggs. Each woman keeps two or three turkeys which are kept outside the house and unconfined at night.

Mrs. Tetteh has been active in village turkey production for over 25 years. With no formal education or poultry training she has a natural interest and enthusiasm in turkey rearing. Originally she started with only three poults that she bought from a friend but now she and her family are actively involved in rearing poults and adult turkeys for livelihood and income generation purposes. She also keeps various other types of livestock including guinea fowls, ducks, goats sheep and local chickens but her main interest and focus are in turkey rearing as a business rather than for cultural purposes.

In addition to rearing the progeny from her own turkeys, she goes to surrounding villages to buy poults from other farmers and keeps them until they are mature and sells them to consumers in Accra Dodowa and Ashaiman which are about 60-70km from Someh.

Early January 2011 her stock was 62 turkeys (calculated after the sales at Christmas and New Year in 2011). She annually sells between 80-100 poults and live adult turkeys at GHC 70.00 to GH 80.00 per turkey.

She uses the female progeny for breeding and sells mostly the gobblers to individual hotels and restaurants. Occasionally people, call her who want to buy her turkeys, call her. The hens lay on average 12 -15 eggs. She does not sell or eat the eggs but instead keeps them for incubation. Mrs. Tetteh reported that the hens sometimes lay eggs in her kitchen or in the bush nearby her house and she therefore inspects the eggs daily until they are ready for incubation.

The eggs are incubated in an open metal bowl placed in her kitchen with a hatching rate of 65-70 percent during the hot season and 75-95 percent during the cold season. After hatching Mrs. Tetteh hand feeds the poults until they are two weeks of age with live termites collected from the forest and with local leaves called "Dokibiba". The mature turkeys are fed with household leftovers, maize cassava, a kenkey and supplemented with grower mash bought from feed mills. She also feeds the poults

Mrs. Tetteh main constraints are turkey diseases such as fowl pox during the hot season. Housing and feeding have been a major financial obstacle to the expansion of her turkey production enterprise.

Source: Interview by Akunzule and Nyameke (2011)

3.4.5 Third case study: Guinea Fowl production in Pungu



Mr. Atudichonga Kuti tending his poultry

Mr. Atudichonga Kuti is a thirty-seven year old guinea fowl farmer from Pungu in the Kassena Nankana East District of the Upper East Region of Ghana. He has been in guinea fowl production for over ten years and started it after his senior high school education.

Atudichonga has trained his guinea fowl to lay their eggs in a coop which is different from the common practice of communal nesting sites shared by two or more farmers. The nest is lined with fresh leaves of a tree called *Anogiensus leocarpus* (Lua in the kassem language). According to him the leaves prevent unwanted moisture migration from the ground to the eggs which would render them bad. He collects the eggs daily leaving between leaves at least two in the nest in order to encourage the guinea fowl to continue laying.

To improve the hatchability of the eggs he mixes them with *Hibiscus* seed in a calabash before he places them in the nest for the broody hen to sit on. In addition Atudichonga lines the nests with teak leaves. He candles the eggs fifteen days after setting by holding the eggs against the sun. Just before the guinea chicks hatch Atudichonga searches for termites as protein source for feeding. Grains such as millet sorghum and maize are also fed as supplementary feed. After hatching, he gathers the shells and pours them on a cross path for people to trample on. It is believed that by many people walking over the shells an evil wish of a person towards the hatched keets will not cause any mortality to the keets.

New chicks are kept in a coop with the hen for brooding. They are not provided with water but are fed on malt flour for three days to allow the yolk to get absorbed. The hen is allowed to go out with the chicks during the brooding period. He trains his guinea fowls to roost on top of his roof rather than on trees where they are likely to mix with other guinea fowls and wild birds. Atudichonga trains his guinea fowls such that they are very docile and allow themselves to be caught by hand which is different from most other guinea fowls.

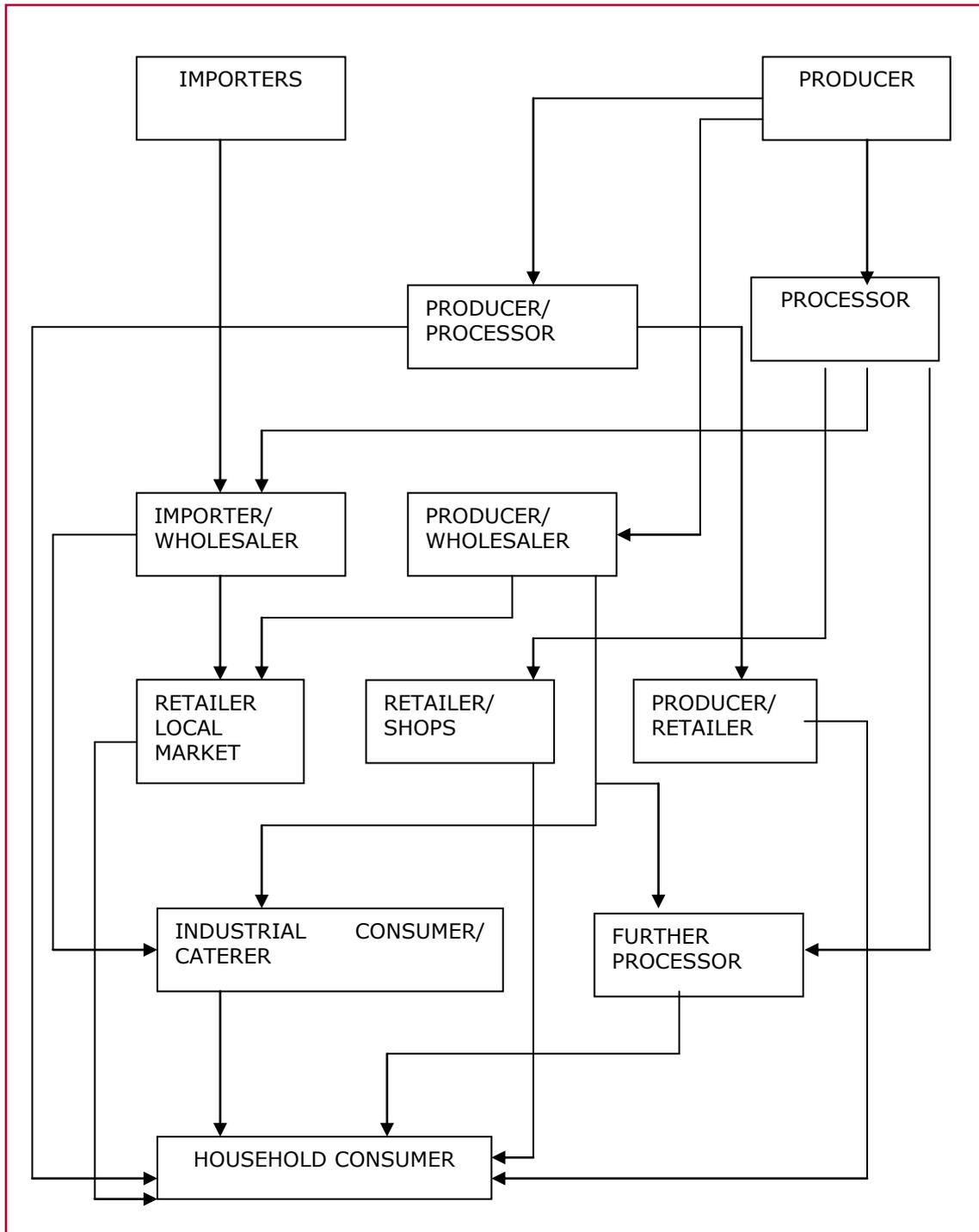
Fowls with naked necks are preferred. Local wisdom says that such fowls fear rain and will make sure they get all the chicks to shelter unlike fully feathered fowls that try to provide shelter for the chicks in the open resulting in casualties.

Both eggs and guinea fowls are sold in nearby markets to meet emergency cash needs. They are eaten and used for traditional purposes.

Source: Interview by Akunzule and Kambonga, February 2011

3.5 POULTRY VALUE CHAIN ANALYSIS

FIGURE 11: Flow Diagramme for poultry production



3.5.1 Day-old chicks

The Veterinary Public Health and Food Safety Unit of VSD monitors and enforces regulations on the importation of day-old chicks (DOC) hatching eggs and turkey poults. DOC and hatching eggs must be accompanied by a health certificate from the country of origin (Certificate for Poultry and Hatching Eggs for Export) issued by a veterinarian authorized by the Government Veterinary Services. These products are imported through the Kotoka International Airport (KIA), Accra.

Day-old chicks are also produced locally from hatcheries with parent stocks (see Table 15) or from imported hatching eggs

3.5.2 Chicken meat

Producers (Farmer-Traders)

The majority of small-scale backyard farmers (50-5 000 birds) sell their produce at the farm-gate. They also sell whole dressed broilers to families and caterers. The latter tend to dictate the price as they have alternative sources such as foreign imports. Village chickens are sold live either at the farm-gate or in live bird markets.

Processors

Some small-scale medium-scale and large-scale broiler producers process live birds for sale as whole-dressed broiler meat. As of 2005 the two largest producers (Darko and Asaomaoh and Yamoah) that processed chicken parts had a combined capacity to process 20 000 birds per day (ADB 2003). Another emerging category of processors convert chicken meat into nuggets sausages frankfurters and marinated chicken. The costs of processing and storage have increased dramatically on account of high electricity tariffs affecting local operators.

Wholesalers

Meat importers play a major role in the wholesale of poultry meat products. They usually operate cold storage capacities of 1 000-2 000 tonnes and sell products to retailers in cartons and in bulk. Wholesalers are considered a key player in the success of the chicken out-grower scheme initiated in 2003 when they were encouraged to stock and distribute local chicken. Producers also act as wholesalers when they sell culled layer birds to retailers or broiler birds in bulk to caterers and other traders.

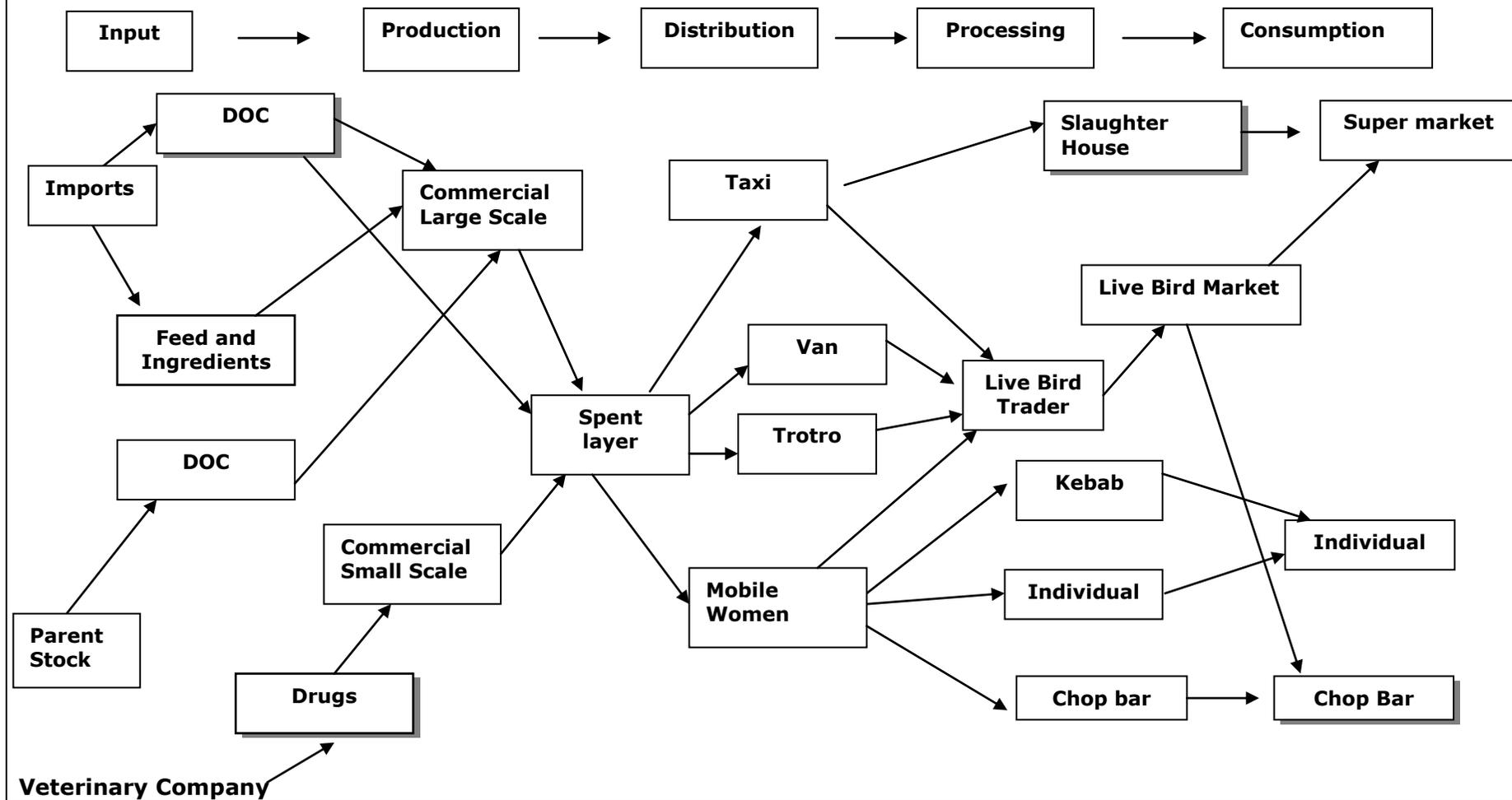
Retailers

Live bird dealers go to poultry farms to purchase birds in bulk for further resale in live bird markets. There is often some vertical integration with producers selling live birds at the farm-gate and processing for retail. Some retailers especially women who buy frozen poultry from wholesalers retail them at cold stores or on tables in markets for consumers. Others retail in the local markets where they may have smaller refrigeration units such as deep freezers.

Consumers

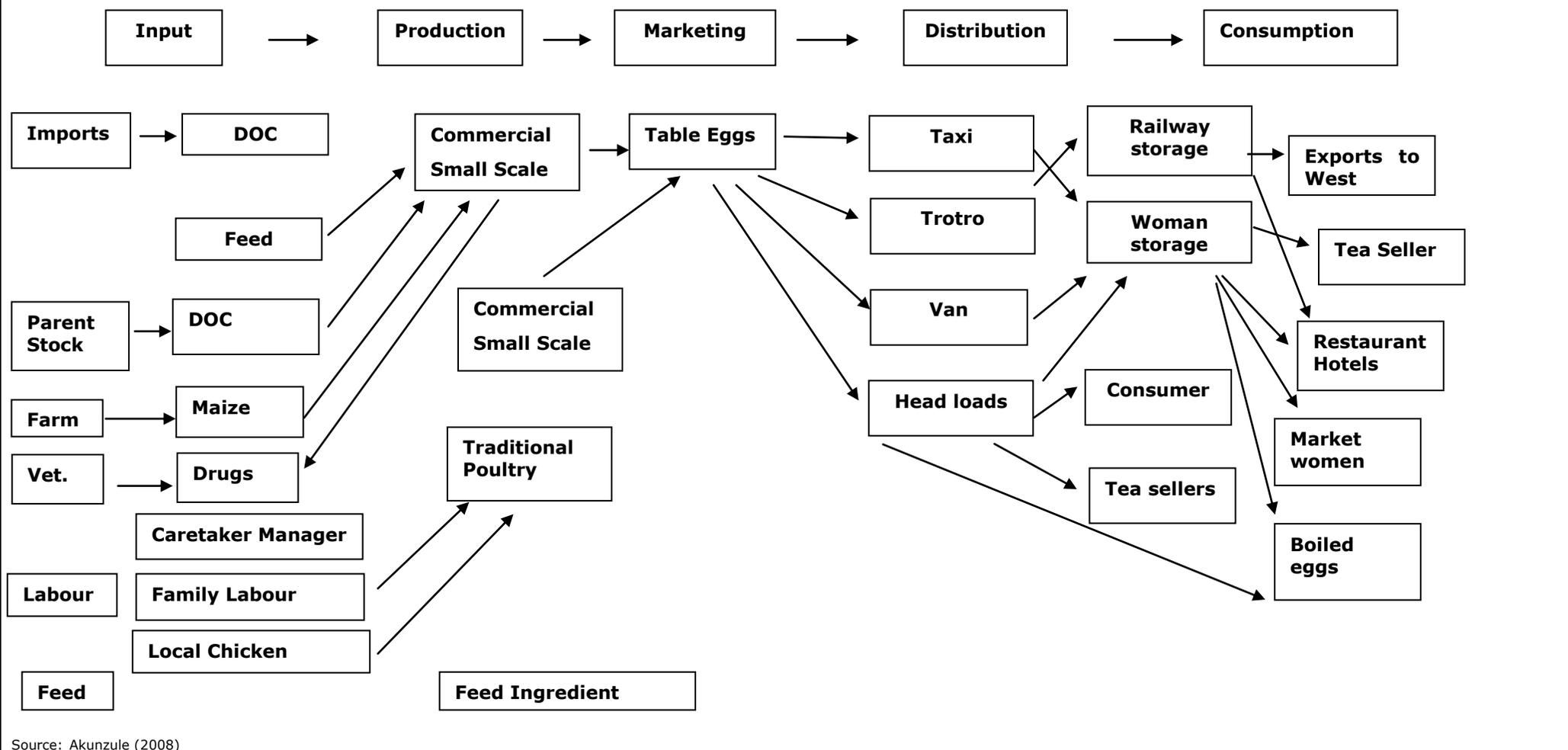
There are consumers in industrial (catering) organisations and households. Household consumers purchase chickens in all forms but mainly as live birds and pre-cut portions. Spent layer meat is an important source for households (Figure 12), who use it for preparing chicken soup and stew, because the hard and tough meat is preferred for that.

FIGURE 12: Value chain for spent layer (meat)



3.5.3 Table eggs

FIGURE 13: Value chain for table eggs



The Figure 13 shows the results from a value chain study for table eggs that was conducted by Agronomes et Vétérinaires Sans Frontières (in Akunzule, 2008).

TABLE 22:
Movement of table eggs from Dormaa Ahenkro region to Accra (2007-2012)

Year	Number of Eggs
2007	2 721 000
2008	39 480
2009	47 283 810
2010	141 949 380
2011	32 241 100
2012	31 437 000

Source: Veterinary Service Dormaa Ahenkro, 2013

Table eggs are moved in vehicles from Dormaa Ahenkro to markets in Accra, Takoradi, Cape Coast, Kumasi, WA Sewfi-Wiaso and Tamale. The Veterinary Services at Dormaa Ahenkro issue movement permits to traders in order to allow the movement of table eggs from Dormaa Ahenkro to other places. The quantity of these movements is shown by Table 22. There was a reduction of the quantities of eggs moved from Dormaa Ahenkro to Accra after 2010 caused by active surveillance for HPAI H5N1 by the veterinary staffs and stricter movement control.

3.5.4 Other species

In addition to chicken the most economic species is guinea fowl. Therefore, GIZ, in partnership with MOFA, has promoted the guinea fowl value chain for farmers in the three regions of the North (Upper East Upper West and Northern). The Figures 14a and 14b show the guinea fowl value chain and its development from 2005 to 2009.

FIGURE 14 a: Guinea fowl value chain map – Dec 2005

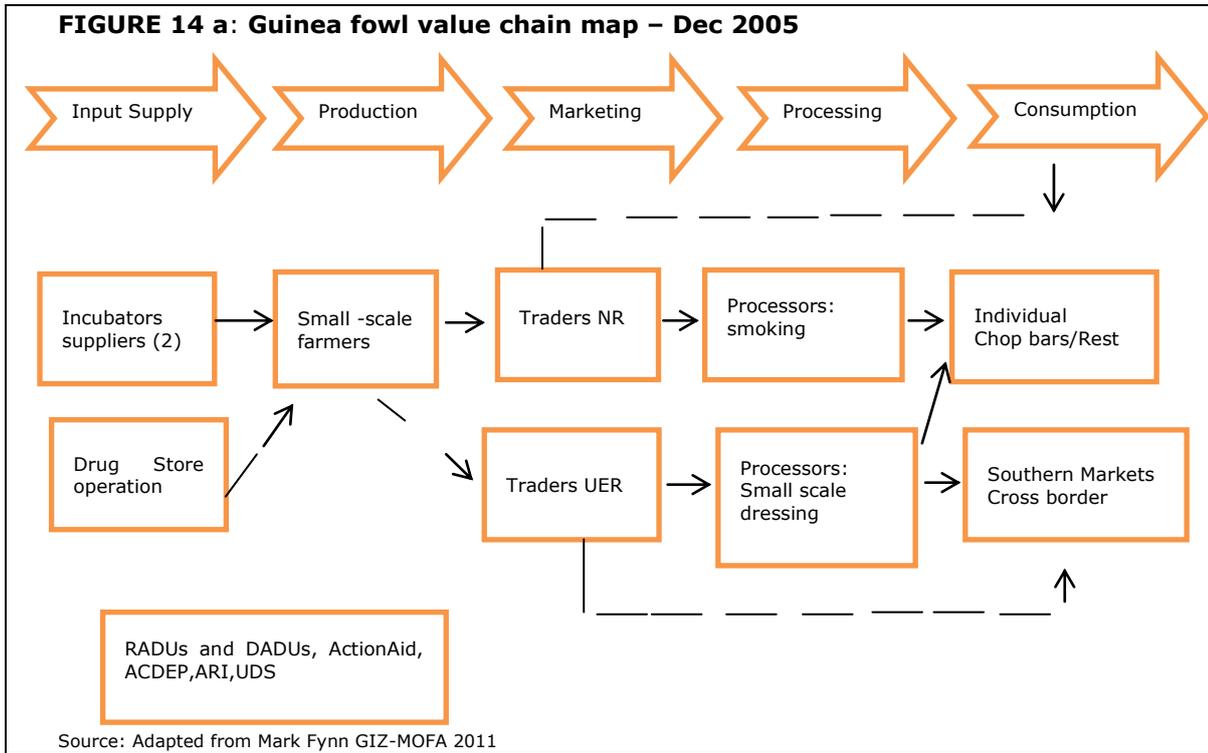
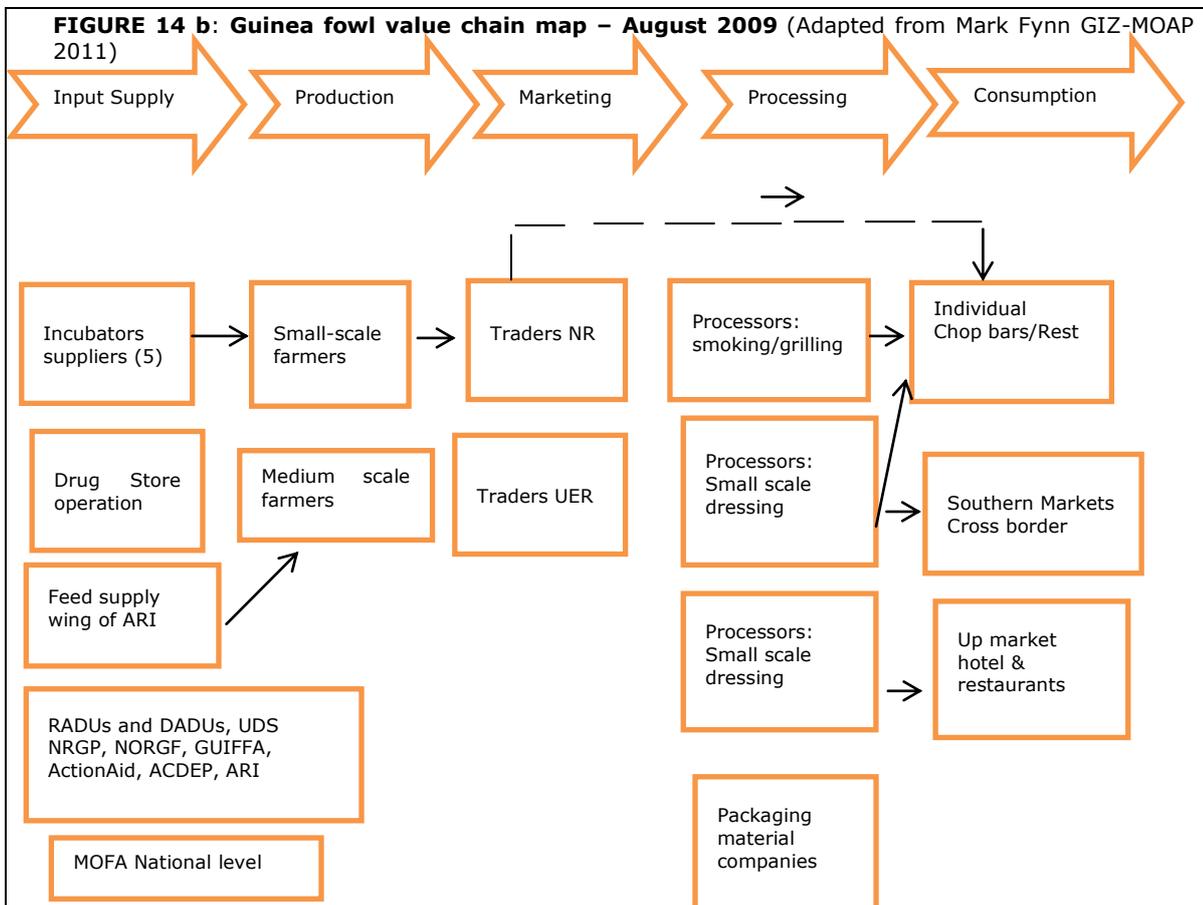


FIGURE 14 b: Guinea fowl value chain map – August 2009 (Adapted from Mark Fynn GIZ-MOAP 2011)



Chapter 4

Trade, marketing and markets

4.1 DOMESTIC MARKET

Trade in live poultry and poultry products takes place in markets, at the farm gate, in households and at roadside markets directly or indirectly to consumers.

The domestic market for live poultry and poultry products exist countrywide. To encourage domestic markets for live birds the Ministry of Food and Agriculture established in 2002 the Christmas Bazaar in the premises of the Great Accra Regional Office where poultry farmers sell their live birds and eggs during the Christmas season each year. Though it is known as Christmas Bazaar it also operates during the Easter season when there is a high demand for live fowls.

In 2010 twenty-two farmers participated in the Christmas bazaar consisting of five female and seventeen male farmers. The poultry species traded at the bazaar included 12 000 spent layers, 9 000 broilers, 4 000 cocks, 300 guinea fowl and 1 400 turkeys. In 2012, the quantities of fowls sold at the Christmas Bazaar were 14 000 broilers, 9 000 spent layers, 300 turkeys and 2 500 cockerels (cocks). The Table 23 shows the respective prices for the years 2010-2012 which increased. Live birds sold at the market are not priced by direct weighing but by the physical assessment of the weight of live birds by the buyers (Akunzule 2011).

TABLE 23:
Market prices for poultry at Christmas Bazaar Accra Ghana (Average Price in Ghana cedis)

Product	2010 (Dec)	2011 (Dec)	2012 (Dec)
Broiler per bird (2.2 kg live weight)	15-20	18-25	20-30
Spent layer per bird (1.5 kg live weight)	8	10	12
Egg per crate of 30 pieces	6	7	8.5
Cockerel per bird (2.0 kg live weight)	12	25	30
Turkey per bird (4.5 kg live weight)	120-200	200-250	250-300

Source: Ministry of Food and Agriculture, 2012.

Distribution of Live Bird Markets

Markets for live poultry and poultry products are spread throughout the country.

In Ghana live bird markets are major points for government avian influenza surveillance. The Veterinary Service Directorate conducts active surveillance for AI in live bird markets by conducting purposeful sampling. In some live bird markets traders form formal and/or informal associations. VSD selected leaders of these associations to participate in workshops on HPAI in Bamako (Mali) in 2007 and in Banjul (the Gambia) in October 2009. Local leaders of live bird markets took part in training workshops on HPAI. These workshops included the USAID STOP AI training workshop between May and August 2008 and the pro-poor HPAI

Reduction Strategies jointly organized in June 2008 by the International Livestock Research Institute and the International Food Policy Research Institute.

Ghana was part of an FAO supported poultry value chain study which was conducted in 2008 together with three other countries: Togo, Burkina Faso, and Côte d'Ivoire. Twelve live bird markets in the country were selected for the poultry value chain study by using the following criteria:

- Quantities of live birds traded
- Location with respect to border with neighbouring countries

A survey conducted in 2009 by field veterinary officers indicated the existence of 323 live bird markets in the country spread over all ten administrative regions and 170 districts. This survey was part of the Support Programme to Integrated National Action Plans on Avian and Human Influenza (SPINAP-AHI) which was an AU-IBAR funded project (Table 24).

TABLE 24:
Distribution of Live Bird Markets by administrative regions, Ghana

Regions	No. of live bird markets
Upper East	57
Upper West	16
Northern	113
Brong-Ahafo	37
Ashanti	14
Eastern	13
Greater Accra	17
Central	6
Volta	34
Western	16
Total	323

Source: Veterinary Services Directorate, 2009

Markets for poultry products (meat and eggs) exist in urban and peri-urban areas of the country

4.2 IMPORT

The local production and import figures for poultry meat are shown in Table 5. The bulk of imported poultry birds come in the form of pre-cut portions while locally produced birds are sold as live or processed whole birds. A couple of large-scale producers have attempted to sell birds in pre-cut parts for example Darko Farms Ltd, but this has not been sustained to date.

Imported poultry tend to be cheaper by 50-60 percent (ADB 2003; see also Table 25). Previously the imposition of tariffs on poultry imports has tended to give a slight competitive advantage to local broiler producers but since its withdrawal in 2003 this has not been sustained. Competition from imported poultry meat has depressed broiler bird production in Ghana. Most poultry operations are therefore focused on table eggs and some large-scale farms have been forced to shut down their broiler operations.

TABLE 25:
Average market retail prices of locally-produced and imported poultry meat (¢ X 100/KG)

Year	Locally produced	Imported	Imported in % of locally produced
2008	6.43	2.64	58.9
2009	7.50	3.07	59.1
2010	8.21	3.50	57.4
2011	9.29	4.21	54.6

Source: Amas Farm Ltd, 2011

The Figure 7a also shows increasing annual levels of chicken meat imports. The Government contends that it is necessary to maintain them not only to conform to international trade regulations but also to give Ghanaians access to affordable sources of animal protein.

4.3 EXPORT

Exports concern mainly day-old chicks. There are limited exports to some African countries such as Liberia, Sierra Leone, Cameroon, Benin and Uganda.

4.4 SLAUGHTERING FACILITIES

There are few formal abattoirs in the country and these are listed in Table 26.

TABLE 26
Formal abattoirs in Ghana

Abattoir	Location	Scale	Status
Farmer George	Greater Accra	Large	Established 2004 , not operational
Afariwaa Farms	Greater Accra	Large	Not operational
Asamoah-Yamoah	Ashanti Region	Large	Not operating at full capacity
Gees Fresh Point	Northern Region	Large	Not operating at full capacity, only for Guinea fowl
Akate Farms	Ashanti Region	Large	Operational
Asutsuare Poultry	Greater Accra	Large	Not operating at full capacity
Darko Farms Ltd	Ashanti region	Large	Operating with reduced capacity with 4 800 birds per 8-hr shift and two shifts(9,000 birds /day)
Amas farm	Greater Accra	Cottage	Cottage processing plant
Daniel Kabason	Greater Accra	Cottage	Cottage processing
Aboabo Fowl market	Northern Region	LBM	Whole birds dressed at LBM
Kumasi Fowl market	Ashanti Region	LBM	Whole birds dressed at LBM
Domeh Fowl Market	Greater Accra	LBM	Whole birds dressed at LBM

Source: Field Data-Akunuzule, 2013

Much of the slaughtering of live birds takes place at the household level. There are dedicated abattoirs for the slaughtering of cattle, sheep, goats and pigs in which the meat of the

slaughtered animals is inspected by the Veterinary Services and the Environmental Health Unit of the Ministry of Local Government and Rural Development. Poultry however, are not slaughtered nor inspected in these abattoirs.

In some live bird markets individual consumers or “chop bar operators” buy live birds and these are slaughtered and cut into parts for them on the spot. USAID STOP AI implemented a pilot improved biosecurity project in two live bird markets (Domeh and Kumasi Central) in the country from February to September 2010. This project provided killing cones in the Domeh and Kumasi Fowl markets in order to improve the conditions of the slaughtering facilities in such markets (USAID STOP AI, 2010). The value chain study by Agronomes et Vétérinaires Sans Frontières revealed that only 17% of the live bird markets studied had a place to slaughter live birds (Akunzule, 2008).

Gees Fresh Meat Products is a slaughter facility that is dedicated solely to guinea fowl processing. It was established in 2008 and is located in Tamale in the Northern Region.

4.5 POULTRY FEEDS

The Ghana Standards Authority (GSA) is the regulatory body for poultry feed standards. The body periodically updates its “Animal Feeding Stuff- Specification for Poultry Feed” with regards to the requirements for poultry feed in respect for layer starter, layer grower, layer, broiler starter and broiler finisher. The feedmills formulate poultry feed according to these specification. The main component of poultry feed in Ghana is white maize which constitutes 50-60 percent of the formulated feed. In fact the poultry industry consumes nearly 30 percent of all white maize produced in the country (Oppong Anane, 2010). Inflation adjusted retail prices of maize had increased by 88 percent in July 2008 compared to the same month of the previous year. With maize being the main source of food for 80 percent of households the majority of the population is highly vulnerable to such market fluctuations (Biederlack and Rivers, 2009).

A typical poultry feed formulation calculated on the basis of information provided to the author is presented in Table 27 for Delawin Farms Ltd Tema from 2011 and from 2013 in Table 28 for TIG Farms Ltd in the Kwabre District of the Ashanti Region. TIG Farms Ltd had over the last ten years a bird population of 40 000. However, the bird population on the farm was reduced to 4 000 in 2013 due to high cost of feed ingredients, poor quality of DOC and low market prices for eggs. A complete feed formulation for birds of different ages used by the Koforidua feed mill is given in Annex X.

TABLE 27:
Feed ingredients cost and formulation by Delawin Farms Ltd Tema (January 2011)

Feed ingredient	Unit	Quantity	Cost/Quantity GHC	Composition (Percentages)
Agricare concentrate	kg	50	80.00	20
Maize	kg	50	22.00	55
Wheat bran	kg	25	4.50	20
Oyster shells	kg	50	3.50	5
Antimold	kg	20	50.00	0
Total		195	160.00	100

Source: Delawin Farms Ltd Tema, 2011

Since maize is a main constituent of poultry feed its price is a key determinant of the price of poultry products. This is reflected in Table 29 where the changes of prices for maize and eggs are compared for the years 2006-2012. The maize price is constantly increasing and went up by 75 percent in 2008 leading to an increase of the egg price of 20 percent. Between December and January the availability of maize is abundant every year. Farmers

with sufficient money buy maize at this time and store it for feed formulation throughout the year. Those without surplus money have to buy maize monthly (at higher prices) which is reducing their profits.

TABLE 28:
Feed ration used by TIG Farms Ltd and cost (July 2013)

Feed Ingredient	Quantity (Kg)	Price (GHC)	Price/kg	% weight	% cost
Maize	500	350	0.7	50	36.88
Soya	170	350	2.06	17	36.88
Layer concentrate	50	120	2.4	5	12.64
Oyster Shells	90	24	0.27	9	2.53
Wheat bran	188	85	0.45	18.8	8.96
Toxin binder	2	20	10	0.2	2.11
Subtotal ingredients	1000	949		100	100
Milling and mixing	Lumpsum	26			
Handling charges	Lumpsum	25			
Subtotal handling and milling		51			
Grand total		1000			

Source: TIG Farms, Ashnati Region, 2013

TABLE 29:
Comparison of Maize and Egg Prices

Year	Maize GHC/100 kg	% change	Eggs GHC/single	% change
2006	23.57		2.83	
2007	27.52	17	3.25	15
2008	48.21	75	4.05	20
2009	55.26	15	5.60	38
2010	49.15	-11	6.53	17
2011	64.90	32	7.03	7.7
2012	89.65	38	8.18	16

Source: Statistics, Research and Information Directorate, 2012

About one -third of poultry farmers produce their own feed and two-thirds buy their feed from many feed millers located in the major three regions where the poultry industry is concentrated: Brong-Ahafo, Ashanti and Greater Accra (FAO/WHO/OIE/AU-IBAR, 2008). When feed ingredients are scarce in the market, poultry farmers tend to buy feed directly from feed mills while when feed inputs are readily available poultry farmers often buy the feed ingredients themselves (Ben Oquaye: Personal Communication 2011). It was due to the large demand for poultry feeds that facilitated the establishment of many feed mills in the 1980s. A study by the World Bank recorded thirty feed mills in 1988 while during the Agriculture Exhibition in October 2010 in Accra the Feed Millers Association indicated a total of fourteen feed mills.

An emerging feed industry in the country

A major feed processing plant in the poultry is Ghana Nuts Limited which was incorporated in 2001 as a private limited liability company. Its objective is to become the Agro-Processing centre of excellence within the sub-region for poultry feed production.

Ghana Nuts has an annual capacity of 75 000 tonnes. The equally modern cotton processing unit has an annual capacity of 8 500 tonnes. Its Poultry Master brand which comprises solvent-extracted soya bean and cotton meal is of excellent quality nutritionally with a consistently higher level of available protein than other expeller type soya bean meal. The Company also has a shea butter extraction unit that processes 36 000 tonnes per annum. Soya bean production during 2008-2010 is shown by Table 30.

TABLE 30:
Feed Production at Ghana Nuts Ltd.

Year	Production (Tonnes)
2008	13 478
2009	15 821
2010	18 613

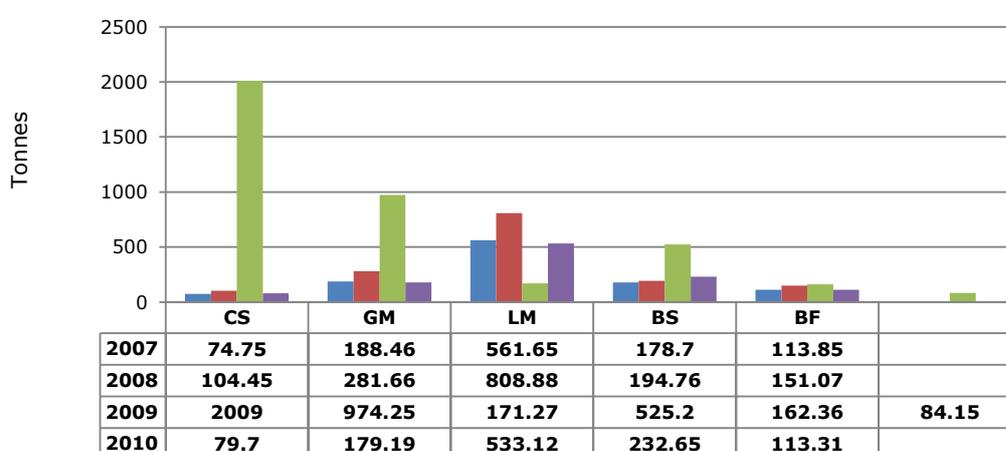
Source: Ghana Nuts, 2010

The company's direct labour force during the peak season is 769, including 336 permanent workers and 433 casual workers. Indirect employees comprise 7 603 out-growers in Soya bean production in Northern Ghana & Brong Ahafo as well as over 5 000 families engaged through procurement of Shea Nuts.

Ghana Nuts is currently the biggest supplier of soybean meal in the West African Sub-region. The declared quality parameters for Poultry Master Soybean Meal are: Protein 48%, Moisture 8% and Fat 2%.

Another important feed mill is Kosher which is located in Accra and accessible to many poultry farmers. Production of poultry feed at Kosher feed mill in Accra from 2007 to 2010 is shown by the Figure 15. Table 31 shows the feed production of other selected feed mills in the country.

FIGURE 15: Production of poultry feed, Kosher, Accra



For abbreviations see Table 31; Source: Kosher Feed Mill Accra, 2010

TABLE 31:
Local poultry feed production in selected feed mills in Ghana

Feed mill	Location	Operating capacity tonnes/day	Type of feed	January-October 2012	
				Quantity produced (tonnes)	Value (GH¢)
Agricare Ltd	Kumasi		40% concentrate, 60% finished feed	3 500	3 150 000 000
GAPFA	Accra	80	CS,GM,LM,BS,BF	15 649.92	14 084 928 000
Central Feed mill Ltd	Adenta				
Kosher Feed mill	La	24	TS,GM,LM,BS,BF	1 137.96	1 058 166.000
Tantra Co. Ltd	Takoradi/Ho	8	CS,GW,LM	0.230	207 000
Divine Feed mill	Accra				
Amas				825.50	742 950
Delawin Farm Ltd	Tema	10	CS,GW,LM	0.915	814 350
Asutsuare Poultry Farm Ltd	Kumasi	40	CS,GW,LM	4 960	4 464 000
K.Asante Farm Ltd		10		0.558	502 200

CS: chicken starter, GM: grower mash, LM: layer mash, BS: broiler starter, BF: broiler
Source: Field Data, Akunzule, 2012

Table 32 shows the price difference for poultry feed between members and non-members of the Greater Accra Regional Poultry Farmers Association.

TABLE 32:
Price of feed at Greater Accra Regional Poultry Farmers Association feed mill (GHC per 45kg)

Type of Feed	Members			Non-Members		
	Feb. 2011	Oct. 2012	Difference GHC	Feb. 2011	Oct. 2012	Difference GHC
Chick Starter	29.6	41.0	11.4	31.1	44.0	12.9
Grower Mash	26.0	37.0	11.0	27.3	40.0	12.7
Layer Mash	31.0	42.0	11.0	32.6	45.0	12.4
Broiler Starter	36.0	49.0	13.0	37.8	52.0	14.2
Broiler Finisher	33.4	46.0	12.6	35.1	49.0	13.9

Source: GAPFA, 2011 and 2012

Chapter 5

Breeds

FAO funded in 2003 through the country's Ministry of Food and Agriculture a comprehensive study of the State of Ghana's Animal Genetic Resources (AnGR). The study report confirmed the presence of the following species and breeds in the poultry production sector:

Chickens (*Gallus domesticus*)

Local Ghanaian Fowl (Village chicken)

Varieties: Frizzle, Barred, Naked neck

Distribution: Throughout the country

Exotic Breeds: used for commercial production and usually imported as DOC or hatching eggs and hatched locally from established parent stocks or imported hatching eggs.

For egg production: Shaver Brown; Hisex Brown; ISA Brown; Lohmann Brown; Lohmann White; Hyline Silver, Starcross 288; Bovans Brown; Afabird (was developed locally).

For broiler production: Arbor Acres; Cobb500; Ross 308; are imported. .

For breeding/parent stock: Bovans Brown; ISA Brown; Cobb Avian 48.

Distribution: Commercial production farms

Turkey (*Meleagris gallopavo*)

Local Ghanaian Turkey

Varieties: White Bronze Buff

Distribution: Nationwide

Exotic Breeds: California White imported during festive seasons

Guinea Fowl (*Numida meleagris*)

Local Ghanaian Guinea fowl

Variety: Pearl helmeted

Distribution: Throughout the country but concentrated in the Northern Upper West and Upper East Regions.

Exotic breeds: Galore (imported from France and Belgium)

Distribution: Greater Accra, Ashanti and Northern Regions

Duck (*Anas platyrhynchos*)

Local Ghanaian Duck

Variety: Muscovy duck

Distribution: Throughout the country

Exotic breeds: Pekin; Greenhead

Distribution: Greater Accra Region

Ostrich (*Struthio camelus*)

Local ostriches (very few)

Exotic: Imported from South Africa

Distribution: Greater Accra Volta Ashanti and Northern Regions.

Pigeon (*Columba livea*)**Local Ghanaian Pigeon**

Distribution: Throughout the country.

The Ministry of Food and Agriculture (MOFA) is planning to upgrade the size and productivity of the local Ghanaian fowl through a cross-breeding programme with cockerels of an exotic breed. In many parts of Southern Ghana cross-bred fowl can be seen.

It is feared however that susceptibility of crossbreds to infectious diseases, such as Gumboro, is higher than that of the 'pure' local bird and that broodiness in crossbred hens is compromised. These may affect village chicken populations in the future.

5.1 EXOTIC BREEDS

See above

5.2 LOCAL BREEDS

See above

Chapter 6

Veterinary health public health biosecurity measures

Veterinary Public Health and Food Safety

The Veterinary Service of Ghana is responsible for the prevention and control of poultry diseases in the country. VSD has a Public Health and Food Safety Unit which is responsible for meat safety and zoonotic diseases. Presently the Ministry of Health has the primary authority for food safety and public health. Many veterinary public health functions of preventing specific food-borne zoonoses and general food safety functions are the responsibilities of the Food and Drugs Board and the Ghana Standards Board. Currently the primary authority for meat hygiene is the Environmental Health Division of the Ministry of Local Government and Rural Development. However, a Public Health Act, 2012, Act 851 has been passed by the Parliament of Ghana, which states in Part Seven, section 108(4), that the Veterinary Services Department shall in collaboration with the Authority carry out meat inspection in the slaughter houses.

The management, implementation and coordination are generally not undertaken in conformity with international standards and rated as "1" by the OIE-PVS-Ghana 2009. Although the above mentioned Health Act was passed, VSD is still not fully carrying out meat inspection as required by OIE.

Since the outbreak of the HPAI H5N1 in 2007 there have been heightened biosecurity measures in poultry farms, live birds markets and hatcheries.

6.1 HIGHLY PATHOGENIC AVIAN INFLUENZA (HPAI) H5N1

In the more recent past (1990s) Infectious Bursal Disease (Gumboro disease) caused great losses through mortality and the poor performance of poultry surviving the outbreaks (Aning 1995). The threat posed by this disease is giving way to that of AI with its outbreaks recorded in the country in 2007. HPAI H5N1 has zoonotic importance potentially leading to a human pandemic. HPAI H5N1 is characterized by high mortality rates within flocks and its rapid spread.

After February 2006, when HPAI was first reported in Nigeria the fear of the disease spreading to poultry and humans in Ghana was heightened. This fear was fanned by the media and consumer demand for poultry meat and eggs subsequently fell.

Table 33 shows producer and consumer responses to the threat of the entry of AI into Ghana. The demand for poultry meat - both imported and locally produced - fell by up to 80 percent between January and May 2006, although prices had gone down. The price of eggs on the market also fell during this period. Farmers responded by selling off their stock at low prices to cut their losses. During the period there was a huge accumulation of unsold eggs at the egg production centres. One hatchery operator (Afariwaa Farms) had to destroy about 60000 day-old chicks as poultry farmers stopped taking them due to fears of an AI outbreak in the country and a general drop in purchase of eggs and poultry. Some parent stocks were sold off, creating very heavy financial losses. Feed-millers as well as veterinary drug distributors also incurred low sales. It was only after sustained awareness-raising programmes on radio and television by MOFA, MOH and GVMA and a well-attended symposium organized by the World's Poultry Science Associations, Ghana Branch (WPSAGB) in April 2006 that consumer interest in poultry products began to improve.

TABLE 33:
Poultry products price changes and other impacts of the global Avian Influenza outbreak (Greater Accra Region), 2006

Item	30 January	28 th March	20 May	30 June
Average cost of egg (¢)	766.7	600	466.7	733.3
Cost of poultry meat (¢/kg)	32 500	25 000	20 000	25 000
Meat consumption (%)	100	NA	20-80	NA
Sale of day-old chicks	+++	-	-	-
NA	Not available; +++ Normal sale pattern; -		No sales	

Source: Ghana National Poultry Farmers Association, 2006

These impacts were largely the result of the fear of AI being introduced into Ghana. If large numbers of village poultry would have been destroyed in the event of an AI outbreak the livelihoods of rural dwellers - especially in the three northern regions - would have been severely affected. This would have led to a situation where both the food and nutritional security of most Ghanaians would have been significantly compromised. However, though HPAI H5N1 occurred in the country in 2007, the three regions of Northern, Upper East and Upper West were not affected by the disease.

Table 16 and Table 18 show the large concentration of commercial poultry activity in the Dormaa district of Brong-Ahafo which shares a boundary with Côte d'Ivoire. The possibility of spread of AI into this district was real and would have possibly affected the 179 poultry farms in that district and another 9 in Jaman South district which also shares a boundary with Côte d'Ivoire.

On 24th April 2007 Ghana became the eighth African country to record HPAI H5N1. It occurred on a small-scale farm in Kakasunanka within the Tema Metropolitan area of the Greater-Accra Region (see Table 34).

The scare of HPAI H5N1 from 2005 to 2006 and its actual outbreak in 2007 in Ghana caused huge economic losses to actors in the poultry value chain. An amount of GH¢ 160 000 (153 440 USD) was paid to poultry producers for culled birds as compensation. The cost of containment of the disease at the source, case management and control measures against the risks of the introduction of HPAI into the country since 2006 was valued at GH¢41 237 000 (4.3 million USD). Those expenses prevented further loss of poultry in the country which was valued at GH¢ 398.944 000 (416 million USD) and the risk of human exposure to the disease (Akunzule *et al.*, 2009).

Before the outbreaks the Ghanaian government had formed the National Avian Influenza Working Group (AIWG) in October 2005 to co-ordinate Ghana's plan and actions to address the threat of the AI. The AIWG prepared with development partners the "Preparedness and Response Plan for Avian and Human Pandemic Influenza 2005-2006" in December 2005 which was revised in February 2006.

When in March 2009 the Pandemic Flu H1N1 occurred the AIWG continued to work but revised and changed in September 2009 Ghana's Preparedness and Response Plan to a 'National Integrated Strategic Plan for Pandemic Influenza' (2009-2013). The revised plan has six components instead of five.

On the basis of the AIWG the National Technical Committee (NTCC) was constituted on 28 April 2009 (Annex 1). NTCC is under the chairmanship of the Minister of Health and is to operate under a National Coordination Committee.

During the HPAI scare of 2006, the Government of Ghana and development partners spent at least 2 million USD in cash and in-kind contributions to prevent a nationwide outbreak of the disease (Ministry of Food and Agriculture) and the HPAI was successfully contained.

TABLE 34:
HPAI outbreaks in Ghana 2007

No.	Date	Location	Dead birds	Culled birds
1	14 April	Kakasunanka and Tema	12 811	23 327
2	11 May	New Dorma and Sunyani	210	2 672
3	13 June	Aflao	350	1 357
Total			13 371	27 356

Source: Veterinary Services Directorate, 2007

Disease control measures implemented during the outbreaks of HPAI H5N1 in Ghana included:

- Samples were sent to the International Reference Laboratory for the Newcastle Disease and Avian Influenza at Instituto Zooprofilattico Sperimentale delle Venezie Padova Italy and the United States Naval Medical Research Unit-3 in Cairo, Egypt which were confirmed positive.
- The Minister of Food and Agriculture, in accordance with the Diseases of Animal Act 1961 Act 83 of the Republic of Ghana, declared the foci of outbreaks as infected zones.
- Depopulation of affected and in-contact birds on poultry farms in which 27 356 birds were culled and their owners' compensated. The amount of compensation ranged from 70 to 90 percent of the market prices for day-old chicks broilers and layers while table and fertile eggs were paid compensation at the rate of 50 percent and 60 percent of market prices respectively. A total of 13 371 birds died naturally from the disease during the period of HPAI outbreaks in the country.
- Live bird markets in the affected areas were closed.
- Infected farms were quarantined.
- Active surveillance for the disease in the affected areas and beyond was conducted.
- Disinfection of infected premises and farm machinery and equipment.
- Use of veterinary movement permits for poultry and poultry products in country
- Ban of movement of live poultry and their products and a ban on the importation of live poultry and their products from affected countries.
- Establishment of an AI diagnostic laboratory at the Accra Veterinary Laboratory, which can perform rapid testing for AI serological AI tests (such as HI) as well as RT-PCR. The Noguchi Memorial Institute for Medical Research of the University of Ghana is used as the national reference laboratory while samples are sent to the FAO/OIE reference laboratory IZS Padova, Italy for confirmation.

Impact of HPAI on poultry populations

HPAI initially had a very negative impact on the growth of the poultry industry in the country in addition to causing economic losses. Table 35 shows the change in the layer populations of selected farms before and after the outbreak of HPAI as assessed during a review in the Sunyani Municipality of the Brong-Ahafo Region and in 2013. Four of the 16 farms in the Sunyani area where HPAI occurred remain closed even in 2013. Others had reduced operation by 2010 but most have recovered either to previous strength or even increased their layer population by 2013. Over the longer period the HPAI event thus did not reduce the layer population in the surveyed locations but lead to structural changes with some farms going out of the business and others increasing their size of operation.

A similar downsizing of the stock after the HPAI events also happened in the Tema area which recorded HPAI outbreaks in April 2007 (see Annex IX). Although the poultry populations increased due to opening of small scale poultry farms in the Dormaa Ahenkro area this could not compensate for the closure of farms in the Tema and Sunyani areas where closed poultry farms had 60 000 to 120 000 layer birds. This situation is similar in the Tema area until now, with many AI affected farms being closed down and non-affected farms as well (see Annex IX).

TABLE 35
Layer Populations before and after outbreak of Avian Influenza in Sunyani

Name/Owner/Farm	2006	2010	2013	Change 2006-2013
Asamoa Antwi	7 000	5 000	10 000	3 000
Paul Oduro	6 000	2 000	6 000	0
Seth Oduro	10 000	5 400	22 000	12 000
Bawuah	21 000	16 000	30 000	9 000
Paulina Gyau	1 500	0	0	-1 500
Captain Duah	2 000	1 000	3 000	1 000
Amponsah Boateng	2 000	2 000	2 000	0
Cubbage	5 000	0	0	-5 000
Alhaji Bahiru	3 500	2 000	5 000	1 500
Byron Botwe	1 500	800	0	-1 500
Mrs Mujeba Kassim	7 000	2 000	3 000	-4 000
Owusu (Aseda Farms)	25 000	15 000	21 000	-4 000
Martin Kusi	1 500	0	0	-1 500
Lawyer Otoo Essel	2 500	1 500	3 000	500
Emmanuel Opata	2 000	800	2 000	0
Agyei Mensah	3 300	2 000	5 000	1 700
All	100 800	55 500	112 000	11 200

Source: Abdulai Issa, Veterinary Services Directorate, Sunyani, 2013

The poultry industry is unstable because farms in the Accra and Kumasi areas are collapsing faster than new farms are being established or old farms are being expanded. This is largely due to poor quality of DOC, high poultry feed prices, expensive veterinary drugs and the difficulty in the marketing of eggs (Adama Musah Personal communication 17 February 2011).

The main source of income for the poultry farms comes from the selling of eggs in the communities affected by the outbreaks of HPAI in 2007. Other people in the affected communities working as traders benefit from the poultry industry. About 94.3 percent of traders interviewed ranked trading in poultry products as their main source of income while the remaining 5.7 percent ranked trading in clothes and sewing accessories as their main source of income (Mensah- Bonsu Akwasi 2008).

6.2 OTHER MAJOR POULTRY DISEASES

In the 1960s the major commercial poultry disease of the poultry industry was Newcastle Disease. From the 1970s to the present, Infectious Bursal disease (Gumboro Disease) has

become an additional threat to the poultry industry alongside Newcastle Disease. In rural poultry Newcastle disease has been and still remains the major disease of economic importance. To protect village poultry against ND VSD introduced the thermostable Newcastle Disease I-2 vaccine. The Accra Veterinary Laboratory started mass production of the vaccine in 2002 after successful field trials in 2000 and 2001. The laboratory produced two million one hundred and thirty five thousand (2 135 000) doses of the vaccine in 2006 (VSD 2009).

For regularly updated information on the status of notifiable and other transboundary poultry diseases please refer to:

The FAO Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases available at www.fao.org/ag/aqainfo/programmes/en/empres/home.asp

The OIE World Animal Health Information Database (WAHID) available at www.oie.int

A mandatory vaccination regime was established by VSD (Table 36) for all poultry farmers to be used in order to vaccinate commercial poultry against the major poultry diseases. The numbers of vaccinations for the years 2007-2012 are shown in Table 36.

TABLE 36:
Poultry Vaccination

Type of Disease	2007	2008	2009	2010	2011	2012
Newcastle disease (Commercial Poultry)	5 259 852	10 169 204	6 052 159	9 846 711	7 596 383	9 413 048
Newcastle disease (Rural Poultry)	703 500	512 938	508 698	231 656	3 147 829	184 051
Infectious Bursal Disease	2 482 543	4 500 620	3 589 858	5 140 334	3 453 771	5 527 274
Fowl Pox	1 227 566	2 301 005	2 175 525	2 340 492	1 800 503	2 580 244
Marek's disease	263 300	4 000	35 500	11 000	-	169 117

Source: Veterinary Services Directorate, 2012

The number of outbreaks on poultry farms for some of the poultry diseases and affected birds are shown in Table 37.

TABLE 37:
Poultry disease outbreaks on farms 2007-2012

Year	No of Outbreaks				No of Birds Affected				Total loss (Birds)			
	AI	IBD	ND	FP	AI	IBD	ND	FP	AI	IBD	ND	FP
2007	3	22	56	0	13 391	8261	13734	0	36 376	1973	4567	0
2008	0	122	141	0	0	22879	39343	0	0	9586	3461	0
2009	0	85	154	8	0	25376	14817	198	0	11670	8908	10
2010	0	86	196	10	0	25381	45339	4917	0	11674	9168	16
2011	0	58	202	14	0	15868	56993	375	0	5951	18963	11
2012	0	63	243	5	0	22998	17753	324	0	7103	3504	106

Source: Veterinary Services Directorate, 2013

Poultry Vaccines

For the control of poultry diseases the Director of Veterinary Services of Ghana has the mandate to procure vaccines for use within the country. These biological products must meet the standards recommended by the World Organization of Animal health (OIE) and must come from reputable manufacturers.

The vaccines are sold to poultry farmers and the revenue paid into the Directorate's Non-Tax Revenue Account at the Bank of Ghana High Street Accra. However, critically needed poultry vaccines are not being imported in time by the VSD because of the unwieldy nature of the MoFA revolving fund (OIE-PVS-Ghana 2009). The total number of vaccines imported for the control of poultry diseases during 2006-2012 is indicated in Table 38.

TABLE 38:
Procurement of essential vaccines for poultry (in millions)

Vaccine Type	2006	2007	2008	2009	2010	2012
Hitchner B1	5.00	5.00	6.00	4.30	6.00	7.29
Lasota	5.00	6.00	7.00	4.80	5.10	6.29
Gumboro	4.00	6.00	8.00	7.00	5.10	9.3
Fowl pox	2.00	5.00	8.00	-	2.00	5
Mareks	3.00	-	2.00	2.00	2.00	
New cavac	4.00	2.00	3.00	1.00	2.00	3.5

Source: Veterinary Services Directorate, 2013

Private veterinary drug companies procure vaccines for VSD which then supplies vaccines to poultry farmers. The private drug companies also supply veterinary drugs directly to poultry farmers. Major veterinary companies importing drugs for the poultry industry are Frankatson Ltd, Multivets Ltd, Reisis Co. Ltd, Maridav Ltd, Huger Ltd, Gokals Ltd, Danex Ltd and Agrivets Ltd.

Laboratory capacity for poultry diseases

VSD has ten regional laboratories with the capacity to diagnose poultry diseases. Additionally the Accra Veterinary Laboratory, the Kumasi Veterinary Laboratory, the Central Veterinary Laboratory and Pong-Tamale are well equipped to diagnose ND.

6.3 BIOSECURITY MEASURES

There are a few farms that comply with strict bio-security procedures in Ghana. These are farms located in the Kumasi Tema and Dormaa Ahenkro Regions that comprise of more than 90 000 layers. The large population of free-roaming village poultry, the ease of movement of birds from farm to market, the re-use of paper egg crates and the clustered location of farms (especially in the Dormaa Ahenkro area) pose great challenges to the containment and control of AI should it enter the country.

Biosecurity measures on poultry farms, live bird markets, feed mills, hatcheries and border entry points have been a major focus of VSD and the general public before, during and after the outbreaks of HPAI in April 2007. With the support of FAO, 921 poultry farmers were trained by VSD in biosecurity between August and December 2007 (VSD, 2007). In addition the following documents about biosecurity were prepared:

- a) Biosecurity Manual, prepared by Veterinary Service Directorate of MOFA: For Training of Field Staff Poultry Farmers and Other Stakeholders –March 2008
- b) Biosecurity for Stakeholders in the Poultry Industry in Ghana-March 2008

The USAID “Stamping out Pandemic and Avian Influenza (STOP AI)” project also had an extensive training programme on biosecurity with practical field visits to poultry farms, live bird markets and hatcheries. The project “Biosecurity Surveillance and Outbreak Response Management” trained a total of 85 stakeholders between May and August 2008 with a range of trainer courses in the three ecological zones of the country (Accra June 2008, Tamale July 2008 and Kumasi August 2008).

Other projects such as the European Union Avian Influenza Project and Support Programme to National Action Plans on Avian and Human Influenza (SPINAP-AHI) strengthened the national capacity to prevent and control AHI while providing training in biosecurity for stakeholders in the poultry value chain.

The reasons for a biosecurity classification of poultry farms in Ghana

After all the investments put into biosecurity activities the Veterinary Services Directorate (VSD) and the Ghana National Poultry Farmer’s Association (GNPFA) were still concerned about the low level of adoption of biosecurity principles and practices by poultry farmers. They both decided that biosecurity certification for poultry farms in the country would be an incentive for poultry farmers to implement biosecurity practices as their products could be identified as coming from biosecure facilities. In this regard the Veterinary Service decided to organize biosecurity certification (classification) workshops for poultry farmers and veterinarians to gather the necessary information for creating a biosecurity certification for poultry farms in the country. The first workshop was held from 22-23 April 2009 for a total of 35 participants which consisted of 12 veterinarians and 23 poultry farmers in Kumasi.

Apart from the need to ensure the absence of outbreaks of diseases on poultry farms high biosecurity levels on poultry farms can be used for the following purposes:

- a. Access to finance
- b. Compensation in case of any disease outbreak
- c. Insurance cover for poultry production
- d. Health status attestation of stocks and products for export and sales
- e. Criteria for the competitive National Farmers Award
- f. Risk management for higher productivity and investment prospects

Classification of Poultry Farms in Ghana based on Biosecurity

For ease of notification poultry farms are classified into groups A B C D and E. These grades are awarded according to grading points from 1 to 10 based on total penalty points scored for each biosecurity measure (where a score of 1 indicated strict adherence to biosecurity measures and minimal risk for disease occurrence. A score of 10 for a biosecurity measure

means that the risk for the disease occurrence is high). Due to financial constraints, the Veterinary Service Directorate has not implemented this classification system.

Chapter 7

Current policies legal framework

The Government of Ghana (GoG) has over the years implemented a number of agricultural policies which have affected the poultry sub-sector.

In 1970s, the poultry sector was supported by removal of custom duties on poultry inputs (feed additives, drugs and vaccines). In the early 1980s, the downturn in the Ghanaian economy severely affected the availability of feed ingredients and other poultry inputs and poultry production started to decline.

Agriculture was the main target under the Economic Recovery Programme/Structural Adjustment Programme in 1983, since it was the largest sector of the Ghana's economy. The major policy focus for the agricultural sector, including the poultry subsector was the deregulation of both the input and output markets. The measures instituted were:

- In April 1986, VSD started a programme of cost recovery by eliminating subsidy on most drugs and charging for several veterinary services.
- In May 1987, a revolving fund was created for drugs and vaccines, but since then the revolving fund has been stopped.
- The mechanism for imports was liberalised. A custom duty of 20 percent on chicken meat was imposed in 1999, dropped to 10 percent soon after and removed completely in 2002 prior to adoption of the 20 percent Common External Tariff in 2005.
- The removal of preferential lending rates for poultry farmers was instituted.
- In 2000, privatization of selected animal health services (sale of poultry vaccines) were instituted in the urban areas of the country

The Medium Term Agricultural Development Programme (1991-2000) proposed an increase in private participation in agricultural marketing, a more free market pricing

The most relevant policies and exemplary programmes in relation to food security include the following:

Food and Agriculture Sector Development Policy (FASDEPII)

The second national Food and Agriculture Sector Development Policy (FASDEPII) was finalized in 2007. For the first time the policy officially recognized the centrality of agriculture in the national economy and the crucial role it plays in reducing food insecurity and poverty. The FASDEPII is to be implemented through the Medium Term Agriculture Sector Investment Plan (METASIP) 2011-2015 and Savana Accelerated Development Authority (SADA).

Medium Term Agriculture Sector Investment Plan (METASIP) 2011-2015

MESTASIP is a medium term (2011-2015) investment programme related to policies of the agriculture sector for both crops and livestock. The plan is comprised of six programmes which correspond with the Food and Agriculture Sector Development Policy (FASDEP II). Some of the main strategies of the policy for the poultry sector are:

- Develop commercial poultry as a priority for improving meat supply in the short-term while measures are implemented to transform smallholder production into profitable enterprises.
- Interventions designed to address processing and marketing of livestock and to increase the awareness of food safety and public health.

- Increase poultry production (including guinea fowl) by 20 percent and small ruminants and pigs by 25 percent by 2015 through the adoption of improved technologies.

The Diseases of Animals Act 83 1961

This is a law that covers all types of animals including poultry (VSD 2011).

Legislation requires the notification of the veterinary authority by all livestock holders of all cases of suspected animal disease.

Fees and Charges (Miscellaneous Provisions) Act 795 2009

This Act seeks to empower Ministries Departments and Agencies (MDAs) to charge new fees and charges as approved by parliament.

The Hatchery Bill

The growth of the poultry industry depends on hatcheries producing quality day-old chicks. A Hatchery Bill is being processed and to be passed into law to ensure that biosecurity and hygiene standards exist in the hatcheries and that the Veterinary Service has the mandate to regularly inspect these hatcheries. VSD is still pursuing the enactment of the hatchery bill. VSD in implementing the Reinforcing Veterinary Governance in African Programme (VET-GOV) of the African Union of the Inter African Bureau for Animal Resources has prioritized passing of the hatchery bill as a major project activity.

Budget Statement of 2012 and Budget Statement of 2013

The Livestock Development Programme is part of Government's effort to boost local production of poultry and 1 500 farmers in 10 regions would be supported with 30 000 brooded cockerels to enhance their capacity to produce more meat in order to reduce the nation's meat deficit and also to increase income of farmers. To enhance and increase guinea fowl production, 40 enterprises of guinea fowl farmers in 40 districts across the three northern regions will be supported with 40 incubators (Budget Statement and Economic Policy of the Republic of Ghana for the 2013 Fiscal Year, presented to Parliament on Tuesday, March 5, 2013.)

Procurement of poultry and poultry related products

The Food and Drugs Authority and the Ghana Standards Authority have regulations and laws for food safety production and standardization that includes live poultry and poultry products. The obligation of Veterinary Movement Permits in the movement of poultry and poultry products within the country after the outbreak of HPAI H5N1 in 2007 is still in force. It has now become a regular routine for the movement of live birds within the country, though this is not as strictly implemented as during AI outbreaks. Movement permits apply to all types of animals that are moved from one place of the country to another. The purpose of this policy is to control the spread of animal diseases. The ban on the importation of poultry and poultry products from Asia and Southern Asia is still in force (Personal communication, Dr. Francis Ampratwum, June, 2013).

National Farmers Day Awards Celebrations

Since 1984 the Government of Ghana has instituted National Farmers Day Awards which take place on the first Friday of December each year. This day is a statutory national holiday in the country in honour of farmers. Farmers who have contributed immensely to food security are given prizes. Each year poultry farmers at the district regional and national levels are awarded poultry prizes.

Ministries Departments and Agencies Act 735 (Retention of Funds) Act 2007 and Act 793 of 2009, Fees and Charges Miscellaneous provision, Retention of Internally Generated Funds

The VSD has been in 2009 granted the right to claim 25 percent of the revenue it earns to use for the maintenance of infrastructure and the purchase of equipment. However, these funds are often insufficient for any large scale investment in new developments and technologies.

Reporting to International Bodies

For effective control of transboundary animal diseases (TAD) Ghana reports regularly on its animal health status to OIE and AU-IBAR. Despite this many diseases remain endemic and many surveillance programs have been discontinued due to resource constraints. In the case of the 2007 HPAI outbreak reporting was done promptly to OIE and follow-up surveillance efforts have continued and currently include wildlife. AI is a notifiable disease in the country. Passive surveillance is conducted for AI both in domestic and wildlife birds

Tariffs: Regulation on the imports of live poultry and poultry products

In 2003, the Government of Ghana tried to save the poultry industry by raising the tariff on imported poultry to 40 percent from its previous level of 20 percent. After only two months however the interventions of the IMF and the World Bank reversed the decision of the Ministry of Finance of Ghana. This led to the suspension of Act 641 passed by the Parliament in April 2003 (to impose a 40% tariff on poultry imports). In addition to the import duty of 20 percent, poultry imports also attract VAT of 12.5 percent, ECOWAS levy of 0.5 percent, EDIF levy of 0.5 percent, inspection fee of 1.0 percent and GCNET of 0.4 percent of CIF value. As from 1st August 2004, GoG has included National Health Insurance Levy (NHIL) of 2.5 percent to be collected by the VAT Secretariat (GRAIN Report, 2008).

Implementation of Government policies

The implementation of GoG policies in favour of the local poultry industry has always been difficult and weak. Apparently, advocacy initiatives by the Ghana National Association of Poultry Farmers (GNAPF) to influence GoG to implement its own decisions have often not been effective either. Since 2007, with the launch of the Food and Agriculture Sector Development Policy, 2007, (II), new initiatives got a push with the advent of the BUSAC Fund. They include:

- Advocacy for common tariff for poultry products for West Africa: GNAPF has received support from the Business Support Advocacy Challenge (BUSAC) to press for the implementation of the ECOWAS Common External Tariff. GNAPF organized a sensitization workshop for its members on this common tariff on 3rd September, 2011 in Kumasi.
- Ghana and other West African countries have since 2006 been working towards the adoption of ECOWAS Common External Tariff (CET). The CET has 5-band tariff structure divided into five categories with tariff rates of 0 percent, 5 percent, 10 percent, 20 percent and 35 percent, referring, respectively, to essential social goods; primary raw materials; intermediate goods; finished goods; and special goods for economic development (2013 Budget Statement and Economic Policy of the Government of Ghana, March 2013).
- Advocacy for favourable Economic Partnership Agreement (EPA) in support of the local poultry industry. The unfair trade competition that will arise when the EPA in its current form was signed in 2008 and the need for government to study carefully or otherwise opt out from the agreement. This was carried out by the Western Regional Poultry Farmers Association.
- Advocacy towards incorporation of a Hatchery Laws into Veterinary Ordinance by the Brong Ahafo Regional Poultry Farmers Association: The lack of sanitary conditions within the poultry industry primarily due to the absence of a Hatchery Policy/Law in the Veterinary Ordinance to regulate the breeding of day-old chicks for poultry production results in the rampant production of weak and diseased day-old chicks. This is causing very high mortality rates and a lot of financial loss to the poultry farmers and traders in the poultry business.
- Advocacy for the construction of Veterinary Clinic in Hohoe by the Bird and Animal Farmers Association. There is no veterinary clinic to render animal health services to poultry farmers, hence the need to construct one.
- Advocacy since 2011 by the Central and Western Regional Poultry farmers to deal with issues of poor storage, adulteration and contamination contributing to low

quality fish meal on the market is to contribute to the ongoing advocacy action by providing the compelling evidence in facts and figures for public officials to act.

7.1 ANIMAL WELFARE

VSD is responsible for animal welfare and the protection of the health of pets and other recreational animals. Animal welfare legislation in line with recent international standards needs to be drafted and the mechanism identified by which such regulations can be administered as part of the Technical Authority and Capacity of VSD (OIE PVS-Ghana, 2009).

The Diseases of Animals Act 1961 Act covers various aspects of animal welfare. These are contained in sections of the law, such as the following:

- Power of veterinary authority to inspect animals.
- Power of veterinary authority to perform autopsies.
- Power of veterinary authority to require disinfection or quarantine.
- Power of veterinary authority with respect to disinfection and destruction.

The Veterinary Service of Ghana participated in the OIE conference on Animal Welfare on the theme "Putting the OIE Standards to Work" from the 20-22nd October 2008 in Cairo Egypt. VSD completed the OIE questionnaire on the implementation of animal welfare standards. VSD has an OIE Focal Person on animal welfare.

Ghana currently has no legislation on the following:

- a) Transport of live poultry. Live birds are transported from farms to the LBM but many of the personnel handling these birds are not aware of the OIE standards on animal welfare or comparable standards.
- b) Slaughter for human consumption of live poultry. The most commonly used killing method for live poultry is mechanical stunning.

Nevertheless the country has legislation for culling for the purpose of disease control. This law, the Diseases of Animals Act 83 was enforced using the stamping out policy during the outbreaks of HPAI and H5N1 in 2007 in the country. Even though there are industry codes of practices or voluntary animal welfare schemes they do not reflect OIE standards.

Some non-governmental organizations have been involved in communication on animal welfare issues and standards including: Heifer Project International, Kindness International USA and the Ghana Poultry Network.

Some veterinary staff, farmers and other practitioners were trained in the practice of humane slaughtering of chicken and handling during the training organized by USAID STOP AI in 2008.

The major animal welfare problems likely to occur in the country are the transport of live poultry. In Ghana, often live poultry are often transported in the same vehicle as humans.

The tools that would help to resolve these animal welfare problems include appropriate legislation, voluntary schemes/code of practices, education and training, communication strategies and the overall strengthening of the veterinary services in the country.

Chapter 8

Analysis

8.1 CURRENT STRENGTHS AND WEAKNESSES OF THE POULTRY SECTOR

The poultry industry grew significantly between the 1960s and 1980s. A sharp decline was recorded at the beginning of the 1990s in response to the Structural Adjustment Programme (SAP) in the 1980s. The SAP led to the slashing of preferential lending rates and subsidies making the cost of poultry production increasingly expensive. In addition to the removal of subsidies cheap frozen chicken meat from Europe arrived at the market. These two phenomena negatively affected the growth of the local poultry industry.

The number of feed mills in the country was reduced from 30 in 1988 to only 14 by 2010 indicating that the industry was collapsing. Another important indicator of the poor performance of the poultry sector is the reduction of hatcheries operating in the country. There are now only 10 hatcheries operating compared to 22 hatcheries in the early 1990s. The Pomadze Poultry Enterprise which was set up in the 1960s as a government owned company with an installed capacity to produce 12.5 million day-old chicks per annum (World Bank Report, 1988) is closed down since the 1990s

The poultry population and the number of poultry farms in the country are very dynamic and change rapidly. In the southern part of the country especially in the outbreak areas of HPAI in the Tema Metro area farms had closed rapidly. Evidence indicates that big poultry farms such as Korankye Farms with a stock of 130 000 layers in 2007 have closed down completely. Letap Farms with a stock of 30 000 layers in 2007 was affected by HPAI and subsequently closed down. Additionally Duffie with 3 000 layers in 2007 has closed down as well (William Awku Ahiadormey personal communication February 2011), see Annex IX.

The current poultry situation depends on four main factors: feed, DOC, financial resources and technical management on farms. The dynamics of these four factors determine the situation of the poultry sector.

A new feed company, ESSAAR Agro Products from India has entered the Ghana poultry market, with products, such products such as soya meal concentrate, 46 percent and soybean meal hypro, 51 percent. Under the METASIP Programme area 1, there are several ongoing and proposed projects focusing on improving productivity of smallholder production of staples including maize and soy beans. The projects include; ADVANCE, Feed the Future Partnership Initiative (FtF), Northern Rural Growth Programme (NRGP), Rural Agricultural Finance Programme (RAFIP), and the Ghana Commercial Agriculture Program. Using a value chain approach has improved smallholders' access to inputs, credits, and mechanized services for land preparation and post-harvest handling. With the use of improved seeds, fertilizer, mechanization and appropriate soil and water management practices, maize yields as high as 4.0 to 4.5 tonnes per hectare are being achieved in the project area.

The Ashanti and Brong Ahafo Regions are presently still the hub of the poultry industry in the country. Akate Farms with 400 000 layers and Topman farms with 150 000 layers, all are located in Kumasi, while Sydals farms with 120 000 and Aglow Farms with 110 000 layers are located in Accra (World Poultry, 2012).

In the Brong Ahafo Region, the poultry population in 16 selected poultry farms recorded an increase of 10 percent from 100 800 in 2006 to 112 000 in 2013 (Abdulai Issa, 2013)

TABLE 39:
SWOT Analysis of the poultry industry

Strengths	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> • Farmers in the industry have basic inputs for production • Farmers are knowledgeable in management practices to increase production • VSD/APD to support farmers in production • Available unutilized poultry infrastructure • Large demand for poultry products • Quick Turn-over for investments in poultry enterprises • Ensure excess maize to be mopped up during glut and later sold to farmers under soft terms • Facilitate poultry farmers' access to credit 	<ul style="list-style-type: none"> • No hatchery policy/law to regulate their operations • Poor monitoring of breeder flocks • Poor monitoring of hatchery hygiene practices/poor quality DOC • No certification for farmers on biosecurity • No legal mandate for hatchery inspectors to enforce hatchery practices • Inadequate financial (credit) facilities to support farmers • High Interest rates from the bank for production • No poultry database of farmers/farms • Poor feed quality control for feed mills (Monitoring of Feed mills) • Inadequate processing facilities storage facilities and transport(cold vans) • Inadequate supply of feed ingredients (wheat bran maize fishmeal soya etc.) • No processing for poultry products • High cost of feed and other inputs (eg. veterinary drugs) • Poor biosecurity on farms resulting in high incidence of diseases 	<ul style="list-style-type: none"> • Available agricultural land for growing maize soybean and major ingredients of poultry feed • Available market for poultry products (internally and externally) • Idle Feed Mills and Hatcheries • Faculties of Veterinary Medicine in two major Universities(University of Ghana and Kwame Nkrumah University of Science and Technology) to train veterinary surgeons • Facility exist for training of veterinary technicians in tertiary institutions • Financial institutions ready to provide credit • Availability of local feed ingredients (maize, millet and sorghum) • Available local facility for vaccine production at the Accra Veterinary Laboratory 	<ul style="list-style-type: none"> • Emerging poultry diseases(HPAI H5N1) • Importation of DOC and hatching eggs and frozen poultry products into Ghana • Urbanisation that drives poultry farmers out • Infiltration of unapproved (substandard) vaccines drugs and biological products • Unfavourable government policies • Tendering policy for vaccine importation leading to delays in vaccine imports and not meeting vaccination schedules for poultry farmers • Lack of revolving fund to procure vaccines at appropriate times

Source: Veterinary Services Directorate, December 2010

In 2008, GIZ and MOFA conducted the commercial and rural poultry value chain analysis at the regional levels in Kumasi, Sunyani, Accra, Bolgatanga, Tamale Ho, and Cape Coast. Farmers, staff of MOFA, financial institutions and non-governmental organizations participated in this value chain analysis.

Additionally in 2008 the "Agronomes and Vétérinaires Sans Frontières" conducted for FAO a "Study of the Poultry Value Chain".

In December 2010, the Veterinary Services Directorate of the Ministry of Food and Agriculture organized a workshop about the poultry sector and carried out a SWOT analysis. The results of this analysis are shown in Table 39.

Recommendations for improvements in the poultry sector following the SWOT analysis that was formulated in the areas of institutional strengthening, macro-economic framework and appropriate veterinary legislation and government policies include:

1. Regulation of hatchery practices /poultry policies to be promulgated.
2. Make available credit to farmers at low interest rate (up to 10%).
3. The livestock component of the Block Farming Programme should be implemented and expanded with a strong veterinary engagement
4. Encourage the use of agro by-products to replace imported ingredients for poultry feed formulation.
5. Encourage local production of veterinary drugs and biological products.
6. Implementation of bio-security certification for poultry farms.
7. Strengthen diagnostic capability (laboratories) at regional levels.

8. Hold regular border harmonisation meetings with neighboring countries.
9. All value chain actors in the poultry industry should be involved in the creation of programmes through consultations (stakeholders engagements).
10. Initiate insurance policies for commercial poultry farms.
11. Organize trainings and strengthen the adoption of biosecurity measures.
12. Classifications of farms on biosecurity levels.
13. Building a comprehensive database on poultry farms in Ghana.
14. Encourage by-laws on zoning for poultry farms during outbreaks of diseases.
15. Strengthen fowl dealers associations and improve biosecurity in live bird markets.
16. Strengthen egg sellers associations and their egg storage facilities

The current strengths of the poultry sector in Ghana is determined by the following

Consumer demand and taste

There is a huge growing and expanding market for poultry products with the increase of Ghana's population by 28.1 percent from 18 912 079 in 2000 to 24 223 431 in 2010 (GSS, 2010). Ghana has become a middle income country, and the demand for poultry products is growing with rising incomes of the individuals. Additionally, there is the ECOWAS market with countries such as Mali, Burkina Faso and Niger that are importers of poultry products from Ghana.

The easy of using of chicken parts has also increased consumer demand. This has led to emerging of fast food joints in many parts of urban cities such as Accra, Cape Coast, Takoradi, Tamale, Kumasia and Sunyani.

Poultry feed ingredients

Ghana produces local feed ingredients (maize, soybean, rice bran and palm kernel cake) that are used in poultry feeds

The current weaknesses of the poultry industry in Ghana include:

High cost of feed ingredients

The number of feedmills in the country decreased from 33 in 1980s to 10 in the 2000s (VSD, 2013). Apart from this reduction, most feed millers are only producing at about 40-50 percent of their capacity (GRAIN Report, 2013). This means small scale poultry farmers who mainly depend on feedmillers cannot have easy access to poultry feeds. Additionally, poor-quality feeds are produced, because there are no certified control systems of quality standards and regulations for sample testing of feeds.

Poor quality day-old chicks

The local production of day-old chicks is one of the weaknesses in the poultry value chain. One of the reasons for low production of local DOC is the absence of any legislative framework or policy to regulate the operations of local hatcheries. As a result poor day-old chicks are produced. The number of hatcheries decreased from 28 in the 1980s to 10 in the 2000s (VSD, 2013). Additionally, most of the poultry hatcheries are only producing at about 60 percent of capacity due to low demand (GRAIN Report, 2013). Low demand for locally produced DOC is due to high mortalities recorded during brooding and poor laying capacity of pullets.

Collapse of processing plants

Big poultry processing plants that were operated by Afariwa and Darko Farms in the 1990s are no longer operating today. The number of processing plants decreased from 12 in the 1990s to 3 in 2013. One key aspect of the local broiler industry is the absence of cut-parts

for easy to use by consumers. Almost all broilers produced are sold live or dressed whole to consumers (FAO study, 2011).

Non-governmental organizations in support of poultry

The number of non-governmental organization providing technical and financial support to smallholder poultry production has decreased from 12 in the 1990s to 3 in 2013.

Imports of frozen poultry meat

At present the country is not producing broiler meat at competitive costs compared to imports and the price of domestic broiler meat on the domestic market is thus also not competitive. Imported poultry products tend to be 30-40 percent cheaper than locally produced chicken (GRAIN Report, 2013). This influences that farm gate prices received by producer are usually low.

Institutional coordination of regulatory bodies

The roles and responsibilities of services providers and regulatory institutions are sometimes not well defined, leading to duplication of duties and neglect of others. For instance, while poultry feed ingredients importation is being done by the Animal Production Directorate, the Veterinary Services Directorate carries out testing of feed for microbial contamination. The Food and Drugs Authority has the responsibility of ensuring farm inspections and certifying cold storage facilities for poultry meat whilst the Ghana Standards Authority certify feed formulation.

Care-taker poultry farm managers

A number of poultry farms are managed by care-taker managers who are not the farm owners. The industry is made up of a lot of care-taker managers, and being care-takers, some of them have no direct interest in taking care of the business, because, they are poorly motivated and are not given all the necessary poultry inputs to run the farm. Even if it is a family-owned farm, family members working there often have apathy and no motivation for efficient management of the farm, leading to workers stealing eggs and live birds (Anthony Nsoh Akunzule, August 2013). "With my sister-in-law being the farm manager, the farm collapsed with a total of 2 000 layers in 2007" (Alexander Nyarko Dei, Personal Communication, September 2013⁵).

Competition between human and poultry for grains

The grains (maize, millet, sorghum and soybeans⁶) that are used in poultry feed are also used for human consumption. It is estimated that approximately 70 percent of maize produced domestically is available for human consumption with the remaining 30 percent is used for feeding livestock, mainly poultry feed (MoFA, 2011).

8.2 PROSPECTS OF THE POULTRY SECTOR OVER THE NEXT FIVE YEARS

The prospects of the poultry sector over the next five years will depend on the strengths of the sector and investment opportunities. The opportunities exist in the processing of agricultural products, such as livestock (cattle, pigs, poultry, sheep) and the supply of machinery to establish hatcheries for day-old chicks (KPMG, 2012). Some of the future prospects are outlined as below.

Consumer demand

Consumer demand is expected to increase over the next five years, which is a good indicator of the prospects in the poultry sector. Another development in recent times has been the evolution of preferences by Ghanaian poultry consumers from live birds to dressed and cut poultry pieces. Generally, the frequency of chicken consumption is low among consumers although more people are eating frozen chicken, the most frequently consumed chicken

⁵ Alexander Nyarko Dei is resident in the United Kingdom, but started a poultry farm in Ghana, but the farm collapsed because, he was not on the farm to supervise its operations

⁶ Maize, cassava, yam, cowpea and sorghum are identified as the food security

meat, is consumed on average 0.59 times a week (FAO, Ghana Consumer Survey, 2011).

Legislations, policies and regulations in the Poultry Sector

The Government is in the process of reviewing the Diseases of Animals Act, 83, 1961 to include poultry hygiene legislation in order to ensure that quality DOC are produced according to international standards. This would require regular monitoring of the operations of hatcheries in the country. The review is being done with assistance from FAO and a meeting was held in August 2013 between the Veterinary Services, Animal Production Directorates and the FAO Ghana office to initiate the process of reviewing the Act 83. The "Reinforcing Veterinary Governance (VET-GOV) in Africa" Programme, implemented by the African Union Interafrican Bureau for Animal Resources, held its national consultative multi-stakeholders' Workshop in Accra from 26-28 June 2013. The workshop identified livestock policies, legislation and regulation as a gap in the development of the livestock sector. Accordingly, a national livestock policy hub is being established to work towards an improved livestock policy environment in the country.

In 2003, the GoG set up the Ghana Poultry Board. Presently, the GoG is working to change it from the Ghana Poultry Development Board to the Ghana Poultry Development Council. The Council would advise GoG on policies to improve the poultry sector. In August 2013, the Hon. Deputy Minister held a meeting with stakeholders on issues of the council. The draft of the council is in place but needs the legal backing to start.

Access and availability of poultry inputs (feeds, DOC)

The two main factors for the improvement of the poultry sector are feeds and DOC. The prospects of feeds and DOC accessibility and availability are good. This is based on the fact that since 2011, the quantities of imported feed ingredients have increased tremendously. Imported pre-mix has increased by 496 percent from 1 030.35MT in 2011 to 6 136.28 Mt in 2012, soybean by 206 percent from 16 923.50 MT in 2011 to 51 816.56 MT in 2012 (APD, 2012). Numbers of imported parent stock for breeding and consequently to produce DOC locally, increased by 1 146 percent from 9 180 in 2011 to 114 344 in 2012

Advocacy for improved policy environment in poultry sector

Another sign of good prospects in the poultry sector is the advocacy by poultry associations for improved policy environments. Since 2010 the "Business Advocacy Challenge Fund" (BUSAC) supported the Central and Western Regional Poultry Farmers Association to advocate for a national standard for fish meal used for poultry feed preparation. Following this advocacy action a national fishmeal standard has been drafted by Ghana Standards Authority, and stakeholder consultation on-going. BUSAC also supported the Ghana National Association of Poultry Farmers on advocacy action on Common External Tariffs in the ECOWAS Region. Additionally, the Asutsuare Women Development Society received support from BUSAC for its advocacy on improved veterinary infrastructure /livestock and services in the community. These advocacy actions by farmers associations are civil societies calling on GoG to improve the environment for productivity in the poultry sector.

New entrants to the poultry sector

New entrants engaging as commercial poultry farmers are indicators of prospects of the poultry sector in the next five years. A group discussion was held with 13 members of the Kwabre East Poultry Farmers Association on 22 August 2013. The farmers stated their years in commercial poultry production which was two with 0-8 months, six with 1 -5 years and five with more than 6-years, thus two new entrants have started commercial poultry production, while others have been in the business for the last 30 years. Of the 29 poultry farmers who received poultry inputs as micro-finance through Phase II of the Micro Finance and Small Loans Centre, 31 percent were new entrants to the poultry sector.

Maize and soybeans

The consistent supply of maize and soybean as feed inputs is significant factor for the prospects for the next five years. To this end, the National Food Buffer Stock Company (NAFCO) was initiated in 2009. It is aimed at managing the government's emergency food security as well as stabilizing prices for maize, soybean, and rice. NAFCO since, its inception

has supplied poultry farmers with maize, with stable prices throughout the year to ensure smooth operations of poultry farms.

In 2005, the GoG through MOFA imported 20 000 MT of yellow maize and sold it to poultry farmers. In 2012, the GoG through the National Service Secretariat provided Ghana Nuts with yellow maize to process poultry feeds for farmers (Daily Graphic, February 24, 2012). The National Service Secretariat initiative in yellow maize product ensures a good prospect for the poultry sector.

The volume of high-quality yellow maize going into commercial poultry feeds is about 200,000 MT. Roughly 150 000 MT of this is produced in Ghana, primarily in the Northern Region. Imports represent the balance of about 50 000 MT. The remaining 175 000 to 200 000 MT of maize required for feed is locally produced white maize. White maize remains more widely produced and thus more available in the market, but the poultry industry prefers yellow maize. A total of 1.79 million MT of maize is produced in the SADA zone and 90 000MT of soybeans in the country (USAID/EAT, January 2012). The promotion of maize and soybeans is being implemented by the Agricultural Development and Value Chain Enhancement (ADVANCE/USAID). Other organizations promoting the production of maize and soybean on large scale are WEINCO, and YARA. Domestic and regional demand for poultry products and higher-quality vegetable oil is growing, and as more Ghanaian producers are exposed to soybean production and gain access to soybean seed and extension, additional hectares will come under soybean production (United States Agency for International Development/Enabling Agricultural Trade, 2012).

President's Special Initiative

In the 2000s, GoG established Presidential Initiatives for certain industries to speed up development in these areas. In 2001, the President's Special Initiative on Oil Palm was started as part of a set of four Presidential Special Initiatives (PSIs)⁷ that were designed to promote diversity and wealth creation in the productive sector in rural areas (Asante, 2012). One-time leader in the Ghanaian poultry industry, Darko Farms and 19 other local industries have been selected by the presidency to receive special incentive packages from the government to enable them to revive their industries and improve production. These 19 industries were in the poultry, agriculture processing, handicraft and pharmaceutical sectors (Daily Graphic, 22 August 2013).

Financial institutions

The existence of emerging micro financial institutions is strength for the poultry sector to grow. These include the Export Development and Agriculture investment Fund (EDAIF), Pro Credit, Sinapi Aba Trust, Venture Capital Fund and Rural Banks.

Sale of poultry manure

Poultry farmers are now becoming more conscious about income earned from the sale of poultry manure. A 25kg of poultry manure is sold at GHC2.00, if the buyer provides the sack and GHC 2.50 if the buyer does not provide the sack (Patricia Obeng, August 2013, personal communication). The monetary value of poultry manure will be an additional income to the farmers. A study on the quantities of poultry manure produced and its varied uses would be useful information for the poultry industry

⁷ The President's Special Initiative (PSI), launched in 2004, is for garment and textiles; salt mining; cotton growing; oil palm; cassava starch, and distance learning.

For the past five years the poultry sector has not performed well, due to high cost of inputs such as maize, soybean and the importation of cheap poultry products. The growth of the sector in the last five years was slow. The sector will grow rapidly in the next five years when certain actions are taken: encourage the cropping of maize and soybean on large scale in the country; establish an institutional body to control the feed mills and the hatcheries; training of farmers in poultry health and husbandry management to gain some new skills.-Musa Saaka, Manager, Asutsuare Poultry Farm, June 2013.

Commitment of the GoG to the poultry industry

Over the years, GoG has put in place measures to promote and enhance the growth of the poultry industry. Recent attempts include the joint Agriculture Development Bank/Ministry of Food and Agriculture initiative in the pilot broiler out grower programme implemented in 2003. Also, in 2010, GoG supported ten broiler farmers in Ashante, Greater Accra and Western Regions for broiler production for the Christmas celebrations. As part of government's new effort to boost local production of poultry the outlook for 2013 is to support 1 500 farmers in 10 regions with 30 000 brooded cockerels. This is intended to enhance their capacity to produce more meat, increase their incomes and reduce the nation's meat deficit (2013 Budget Statement and Economic Policy, 2013).

Responding to the call for proposal to the Global Agriculture and Food Security Programme (GAFSP), the GoG submitted in May 2013 a proposal about "Integrated maize, soybean and poultry value chain development Project for improved food security and nutrition". These initiatives are indications that there are prospects that the poultry industry will continue to be in the GoG strategic policy framework.

Continuous education for poultry farmers

As the poultry sector is dynamic, it is appropriate that VSD and APD organize over the next five years regular seminars and training workshops for poultry farmers to upgrade their knowledge on current technologies.

With respect to capacity building, training on Hazard Critical Control Point (HACCP) was organized for farmers in Kumasi and Accra in March 2013. This was sponsored by the USA Poultry and Export Council International Poultry Development Programme and the HACCP Consulting Group L.L.C, USA with the theme "Developing and Implementing HACCP Plans in the Meat and Poultry Plants".

It is mandatory for farmers to follow vaccination programmer for most poultry diseases. Annually farmers are trained on disease recognition as part of the policy of the Veterinary Services. In line with the support to the Food and Agriculture sector Development Policy (SFASDEP), Multi Donor Budgetary Support (MDBS) Targets, the Directorates of Veterinary Services and Animal Production organized a one day training seminar on "Good Agriculture Practices" in the livestock and poultry industry. Eighty farmers were trained in March 2013, in Sunyani and Kumasi which are known as the poultry belt of the country (VSD, 2013). Poultry vaccines are made available to farmers timely.

Growth in the Guinea Fowl sector

The FAO project "Enhanced Guinea Fowl Production for the three regions of the Northern Ghana" was implemented from 2010 to March 2013. The project was implemented in the three regions Northern, Upper East, Upper West. It established three Breeding and Demonstration Centres (BDC) at Pong-Tamale (Northern Region), Paga (Upper East Region and Babile (Upper West Region). Each BDC was supplied with incubators of 2 500 eggs capacity, 5 KVA generators, 600 litres refrigerators, 1 000 litres water storage tanks.

Improvement of rural poultry production

The "Vaccines for Neglected Animal Diseases in Africa" project (VACNADA) was launched in December 2010. With the project mass vaccination of rural poultry and extension services, survival rates in rural poultry were to substantially increase the populations in the three regions: Northern, Upper East and Upper West. The project has ended in January 2011.

A project on the poultry sector," Pathways to sustainability in Ghana's Poultry Sector" implemented by the University of Ghana from 2012 to 2014.

The project is of importance to the future of the poultry sector. This project will use the case of poultry production in Ghana to address the question: "Can an analysis of the flows, interactions and relationships between different production systems and innovation pathways-with an explicit focus on the drivers and dynamics of their co-evolution- be used to create a more sustainable poultry sector and strengthen sustainable development more broadly"

Annex I

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Annex II

List of major projects-poultry sector

Support of Government

- (i) In the recent past the government has acted to provide direct support to the poultry industry. In 1999 a special tax of 20% was imposed on poultry meat imports to protect the local industry. However it was revised downwards to 10% soon after and totally removed in 2002. This caused a sharp increase in imports and although an attempt was made to legislate to change a special tax (Act 641 of 2003) this had to be scrapped in 2004 after international protests.
- (ii) In the face of severe maize shortages in Ghana in 2005 the Government through MOFA intervened to import 20 000 metric tonnes of yellow maize to be sold to poultry farmers.
- (iii) Various agricultural development projects undertaken with World Bank loans including National Livestock Services Project (NLSP) (1996-2000) had the objective of increasing meat egg and milk production by 50% by 2020. The research programme which was implemented along with the NLSP National Agricultural Research Project (NARP) and its successor the research component of the Agricultural Sub-sector Improvement Programme (2002-2006) both addressed poultry development constraints.
- (iv) The government has also supported the industry through a programme that facilitates capitalisation and marketing of broiler birds through a joint Government and ADB Broiler Outgrower Scheme initiated in 2003. In this scheme designated processors evacuated matured birds from farms for processing in their plants. The products were then sold to Cold Store wholesalers for distribution. It involved 552000 broiler birds over a 6-month period.
- (v) In 2005 the Government established the Poultry Development Board whose terms of reference include advising government on the growth modernization and sustainability of the poultry industry. The Poultry Development Board is non-functional, very inactive and has not held any meeting or conducted any activity since 2009.
- (vi) **GHC15 million invested in Farmers' Pension Scheme.** The Government has invested as seed money for the Farmers' Pension Scheme intended to improve the welfare of farmers in their old age (Daily Graphic Friday January 14 2011).
- (vii) **Vaccines for Control Neglected Animal Diseases in Africa (VACNADA).** Ghana is one of 14 countries that secured a new project called the Vaccines Against Neglected Animal Diseases (VACNADA) in Africa. The Project is to contribute to poverty alleviation amongst vulnerable rural communities by improving livestock health. The main thrust is to vaccinate against Newcastle Disease (ND) in rural poultry in northern part of Ghana using freeze dry thermotolerant I-2 Newcastle vaccine. The project Vaccines for the Control of Neglected Animal Diseases in Africa (VACNADA) is funded by the European Commission and managed by the African Union-Inter African Bureau of Animal Resources in partnership with GALVmed AU-PANVAC and CIRAD. A total of 4 415 860 rural poultry are to be vaccinated against Newcastle disease using thermotolerant I-2 vaccine in the three regions of the north (Northern Upper West Upper East)
- (viii) **Government cockerel programme in 2010.** The Ministry of Food and Agriculture implemented a cockerel production programme in 2010. A total of 35 000 cockerels were distributed to 1 700 farmers in 25 districts (Budget Stament 2010). These are

the Central Western Greater Accra Eastern and Volta Regions. One cockerel is sold at a subsidized price of GHC2.50 to the farmer (Animal Production Report 2009). The cockerels are brooded for 6-8 weeks before they are sold to farmers. The target beneficiaries are household small holder poultry farmers. The main objectives of the cockerel programme are: To increase household incomes from cockerel production, to increase household meat production, to use this a start up to encourage commercial poultry production

- (ix) **The Afram Plains District Agriculture Development Project.** This is a project funded by the African Development Bank on agriculture development including livestock. A total of 3 7000 cockerels to famers in 38 communities have been distributed in 2009 (ISSER 2010).
- (x) **GIZ-Market Oriented Guinea Fowl Value Chain.** GIZ-Market-Oriented Agriculture Project (GTZ-MOAP) which was started in 2005 promotes the guinea fowl value chain in three regions (Upper East, Upper West and Northern) of the north.
- (xi) **The Northern Rural Growth Programme (NRGP).** The Northern Rural growth Programme (NRGP) started in 2009 and financed by the International Fund for Agricultural Development (IFAD) and the African Development Bank (AfDB)
- (xii) **The FAO-Enhanced Guinea Fowl Production in the Northern Ghana** which has been implemented from 2010 to March 2013. The project was implemented in the three regions of the north (Northern, Upper East, Upper West). The project established three breeding and demonstration Centres (BDC) at Pong-Tamale (Northern Region), Paga (Upper East Region and Babile (Upper West Region). Each BDC was supplied with incubators of 2 500 eggs capacity, 5 KVA generators, 600 litres refrigerators, 1 000 litres water storage tanks.
 - 45 agricultural extension agents were trained;
 - 150 farmers were trained as trainer of trainers;
 - 1500 farmers were selected and sensitized on enhanced guinea fowl production;
 - six demonstration centre attendants, three project site supervisors from MOFA were trained on enhanced guinea fowl production to manage the BDCs and provide technical backstopping to project beneficiaries;
 - 5 430 two-months old guinea fowl were distributed to 181 beneficiary farmers;
 - 181 Guinea Fowl Farmer Groups with membership of 11 per each group has been formed in beneficiary communities.
- (xiii) **National Youth Employment Programme (Block Farming Concept). The Government of the Republic of Ghana has established the Block Farming** in almost all the districts in the country. The purpose of the maize block farming is to increase tremendously the production of maize and soybean both for human and poultry consumption.
- (xiv) **USAID Stamping Out Pandemic and Avian Influenza (STOP AI).** In 2010 USAID Stamping out Pandemic and Avian Influenza (STOP AI) started the implementation of activities focused at improving biosecurity in small holder commercial poultry production and improvement of biosecurity in live bird markets.
- (xv) **National Food Buffer Stock Company.** This was established in 2010. The company purchased and stored 6 949 metric tons of rice and 416 metric tons of maize (Budget Statement 2010). The maize is to be released to poultry farmers to remove shocks from rising price of maize in the open market.
- (xvi) **Micro-finance and Small Loans Centre** In July 2012, a pilot layer programme was implemented for 48 poultry farmers in the Volta Region. Micro-Finance and Small Loans Centre (MASLOC) provided farmers with poultry inputs in kind. These

input included DOCs, poultry feed, veterinary drugs and vaccines and technical support. Each farmer received 250-2000 layers at day-old, poultry feed until the layers were 28 weeks old, and all mandated poultry vaccination. Farmers were trained in poultry health and husbandry management before receiving the DOCs.

Support of Non-Governmental Organisations (NGO's)

Several NGOs are involved in poultry development projects as means of combating rural poverty. Some of them are promoting guinea the fowl value chain in the three regions (Upper West, Upper East and Northern Region) of the north. Table 40 shows these NGOs, their areas of operation and types of poultry they sponsor.

The NGOs have identified rural poultry development as an effective short-term means of improving livelihoods and improved rural protein intake. The interventions are in the form of support for village chicken vaccination against Newcastle Disease and establishing smallholder layer and exotic cockerel production for eggs and meat. In some places exotic cockerels have been used for genetic improvement of village chickens but this has not been an intended output.

TABLE 40
Non-Governmental Organizations in poultry development/Guinea Fowl value chain

NGO	Operational Region and (Districts)	Type of Family Poultry	Date commenced and status
Sankofa Foundation	Greater Accra Region Dangme East Northern Region Dangme West	Layers Cockerels	2005; on-going
Ghana Poultry Network	Kassena-Nankana District Eastern Region Akwapem South	Layers Cockerels	2000-on-going
TRAIAS	Upper East Municipal Bolgatanga	Guinea Fowl	2011-on- going
ACDEP	Upper East Upper West Northern Regions	Guinea fowl	On-going

Source: Akunzule A (2011) with additional information from personal interviews.

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Annex IV

Import procedure

Advertisement

Ministry of Food and Agriculture

Procedure for the Importation of Meat and Meat Products into Ghana

The Ministry of Food and Agriculture wishes to inform all importers of meat and meat products that the following procedure shall apply for the importation of meat and meat products into Ghana:

1. Apply to the Minister of Food and Agriculture for approval to import meat or meat product. The application must contain the following information;
 - a) full description of the type of product (descriptions such as poultry product beef product will not be accepted);
 - b) specific country of origin (for example if the country of origin is Europe indicate the specific country and not European Union). In the case of the United States of America specify the state and if from Canada please specify the province;
 - c) quantity of each product to be imported in kilograms.
2. The Minister of Food and Agriculture may either approve or reject the application;
3. The importer will be informed whether his/her application has been approved or not. If approved the approval will indicate the product and the quantities approved;
4. The importer may then place his/her orders for the specific quantities of the product(s) and from the specific country as approved by the Minister.
5. The importer then obtains an interim import permit from the Director of Veterinary Services at least two weeks before the expected date of arrival of the products;
6. The ports of entry for meat and meat products shall continue to be Tema Seaport and Kotoka International Airport;
7. Upon arrival of the products at the port the importer will then be issued with a final import permit by the Director of Veterinary Services after the payment of the appropriate fees to enable the importer to clear the products from the port.
8. Importers are to note that approval will not be granted to any importer who brings in products before applying for permit.

NOTE: The approval to import the issuance of the interim and final import permits will depend on the animal health situation in the country of origin of the product(s).

Annex V

Identification of customs stations and products of zoo sanitary certificates-Ghana

1 Customs Stations at International Airports

- 1.1 Kotoka International Airport: Customs station at the airport in Accra- imports of Day-old chicks hatching eggs and poultry products.

2. Customs Stations at Seaports

- 2.1 Tema harbour: Customs station in Tema harbour - Imports of poultry meat and poultry feed.
- 2.2 Takoradi harbour: Customs station in Takoradi harbour- No imports of poultry products through this harbour.

3. Customs Stations at Border Entry Points (Border Posts)

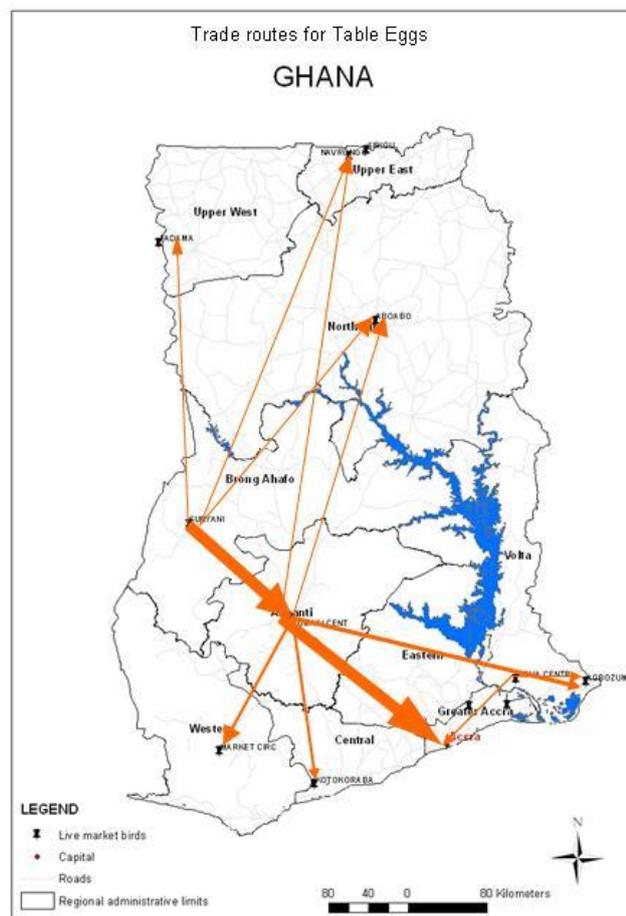
- 3.1 Ghana-Togo- Benin: Customs station at Aflao. Imports of fish for poultry feed live birds and poultry products.
- 3.2 Ghana-Togo: Customs stations at Akanu and Tatale. Imports of live birds eggs and guinea fowl and guinea fowl eggs
- 3.3 Ghana –Burkina Faso: Customs stations at Paga Tumu Hamile and Kulungugu. Imports of live birds table eggs guinea fowl and guinea fowl eggs
- 3.4 Ghana –Côte d'Ivoire: Customs stations at Elubo Gonokrom Osei Kojokrom Half Assini and Sampa. Imports of live birds and table eggs and hatching eggs poultry feed and poultry products.

Source: Akunzule 2009

Annex VI

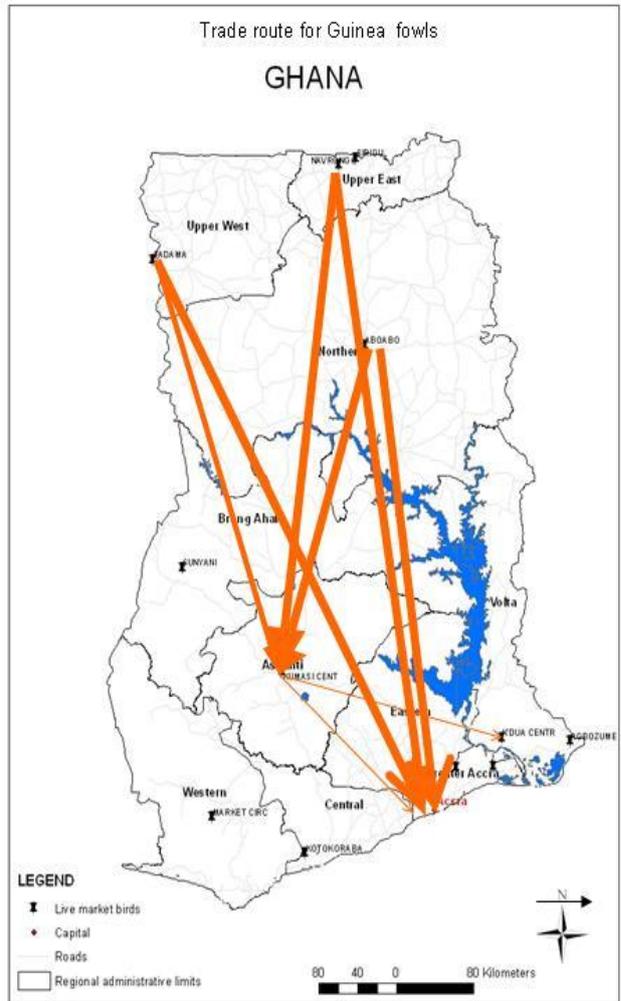
Maps

Figure 16: Trade routes for table eggs



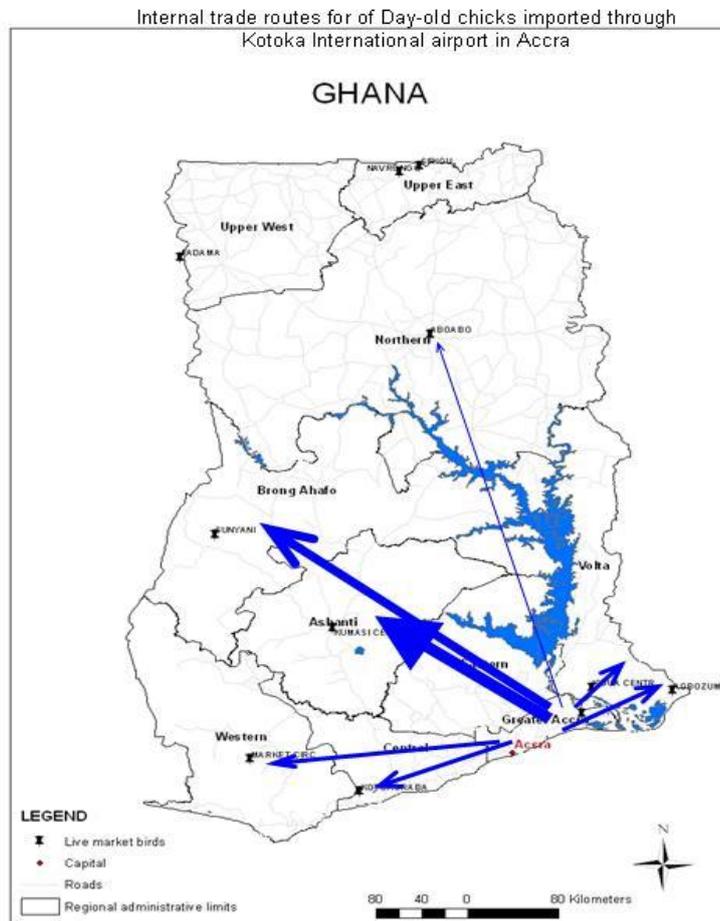
Source: Adapted from Akunzule (2008)

Figure 17: Trade routes for guinea fowl



Source: Adapted from Akunzule (2008)

Figure 18: Internal trade routes for DOC imported through Kotoka International Airport



Adapted from Akunzule (2008)

Annex VII

Production record sheet (sample for layer)

Age in Wks	No of birds	Death	No Cull ed	No of Eggs					%	Feed Consum ed kg	Drug	Remark	
				9:00	12:00	3:00	5:00	Total					
1	897	0	0	580	45	60	12	697	77.70	120kg	Free	Water	
2	897	0	0	460	178	102	20	760	84.70	120kg	Free	Water	
3	64	897	0	0	482	111	80	16	689	76.80	100kg	Free	Water
4		897	0	0	452	156	60	14	682	76.00	100kg	Free	Water
5		897	0	0	522	79	100	28	729	81.20	130kg	Free	Water
6		897	0	0	471	126	64	33	694	77.30	120kg	Free	Water
7		897	0	0	522	168	30	12	732	81.60	120kg	Free	Water
8		897	0	0	588	70	83	17	758	84.50	120kg	Free	Water
9		897	0	0	551	103	77	13	744	82.90	120kg	keproceryl	Water
10	65	896	0	0	540	130	50	12	732	81.60	120kg	keproceryl	Water
11		896	0	0	512	134	70	10	726	81.00	120kg	keproceryl	Water
12		895	0	0	493	141	80	23	737	82.30	120kg	keproceryl	Water
13		895	0	0	427	180	83	27	717	80.10	100kg	Benvet	Water
14		895	0	0	465	181	64	20	730	81.50	100kg	Free	Water
15		895	0	0	524	111	70	11	716	80.00	120kg	Free	Water
16		893	22	0	515	144	55	17	731	81.80	120kg	Free	Water
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Annex VIII

Characteristics of selected farms

Name	Established	Workers			Available stock		Feed mill on farm	Common diseases
		Permanent	Casual	Family	Layers	Broilers		
Royal Golden Egg	2000	20	12	10	30 000	0	Yes	CRD Coccidiosis
Aban Farm Ltd	2004	20	15	5	47 000	60 000	Yes	CRD ND Coccidiosis
Deiku Farms Ltd	1999	6	1		10 000	0	No	CRD Coccidiosis
A.M. Unity Farms	1996	50	60	0	90 000	70 000	Yes	CRD
I.M. Unity Farms	2003	48	30	6	60 000	60 000	Yes	CRD
B.M. Unity Farms	1982	60	20	10	120 000	10 000	Yes	Akate
Asutsuare Poultry Farms Ltd	1991	55	150	0	62 000	12 000	Yes	
Delawin Farms Ltd	1981	10	2	5	35 000	0	Yes	Mycotoxycosis Infectious coryza Egg drop syndrome
Sydals Farm Ltd	1981	90		42	85 000	0	Yes	Fatty liver Syndrome Mycotoxycosis
Jerusalem Agricultural Ltd	2003	36	15	0	12 500	0	Yes	

Source: Review Field Data 2011

Annex IX

Poultry farms in Tema area before and after outbreaks of Avian Influenza in 2007

FARM	No. Layer birds in 2007	No. of layer birds in 2011	Status in 2011
1 Sydals Farms	92 241	85 000	Actively operating
2 Korankye Farms	130 000	0	Closed down
3 Mackba Farms	14 000	0	Closed down
4 Letap Farms	30 000	0	Closed down
5 Coka Appiah & Mensah Farms	3 000	0	Closed down
6 LIT Farms	5 000		operating
7 Annord Quainoo Farms	3 000	0	closed
8 Agrimat Staff Farms	4 000	0	Closed down
9 Q Farms	9 500	0	Closed down
10 Aqua Farms	9 500		Scaling down(in distress)
11 Job Experimental Farms	3 500	0	closed down in pig
12 Hopeland Farms	2 500		operating Seasonal operating with broilers
13 Rev Donkor Farms	1 500		operating
14 Adjei Kojo Township Farm	1 500		operating
15 Dufie Farms	3 000	0	Closed down
16 Agri Vision Farms	3 000		Scaling down(in distress)
17 Franko Farms	2 500	0	Closed down
18 Delawin Farms	14 000	35 000	Actively operating Seasonal operating with broilers
19 Effort Farms	2 800		operating
20 Mensah Farms	3 000		operating
21 Rosyvon Farms	1 000	0	closed
22 Eddievin Farms	4 800		operating
23 Edusei Poku Farms	1 400		operating
24 Nukpor Farms	2 000		operating

Source: Review Field Data 2011

Annex X

Feed formulation for different ages of birds at Koforidua

Chick Mash (Day 1 – 8 Weeks)		
Feed Ingredient	Quantity (Kg)	Composite (%)
Maize	550	54.78
Soy Bean	200	19.92
Wheat Bran	100	9.96
Fish Meal	100	9.96
Oyster Shells	50	4.98
Salt	2	0.199
Pre-Mix	2	0.199
Total	1004	100

Grower Mash (8 Weeks – 18 Weeks)		
Feed Ingredient	Quantity (Kg)	Composite (%)
Maize	500	49.80
Soy Bean	100	9.96
Wheat Bran	300	29.88
Fish Meal	50	4.98
Oyster Shells	50	4.98
Salt	2	0.199
Pre-Mix	2	0.199
Total	1004	100

Layer Mash (18 Weeks – 24 Weeks)		
Feed Ingredient	Quantity (Kg)	Composite (%)
Maize	500	49.80
Soy Bean	100	9.96
Wheat Bran	200	19.92
Fish Meal	100	9.96
Oyster Shells	100	9.96
Salt	2	0.199
Pre-Mix	2	0.199
Total	1004	100

Broiler Starter (Day 1 – 6 Weeks)		
Feed Ingredient	Quantity (Kg)	Composite (%)
Maize	600	59.76
Soy Bean	150	14.94
Wheat Bran	50	4.98
Fish Meal	150	14.94
Oyster Shells	50	4.98
Salt	2	0.199
Pre-Mix	2	0.199
Total	1004	100

Broiler Finisher (6 Weeks – 8/9 Weeks)		
Feed Ingredient	Quantity (Kg)	Composite (%)
Maize	650	64.74
Soy Bean	100	9.96
Wheat Bran	100	9.96
Fish Meal	100	9.96
Oyster Shells	50	4.98
Salt	2	0.199
Pre-Mix	2	0.199
Total	1004	100

