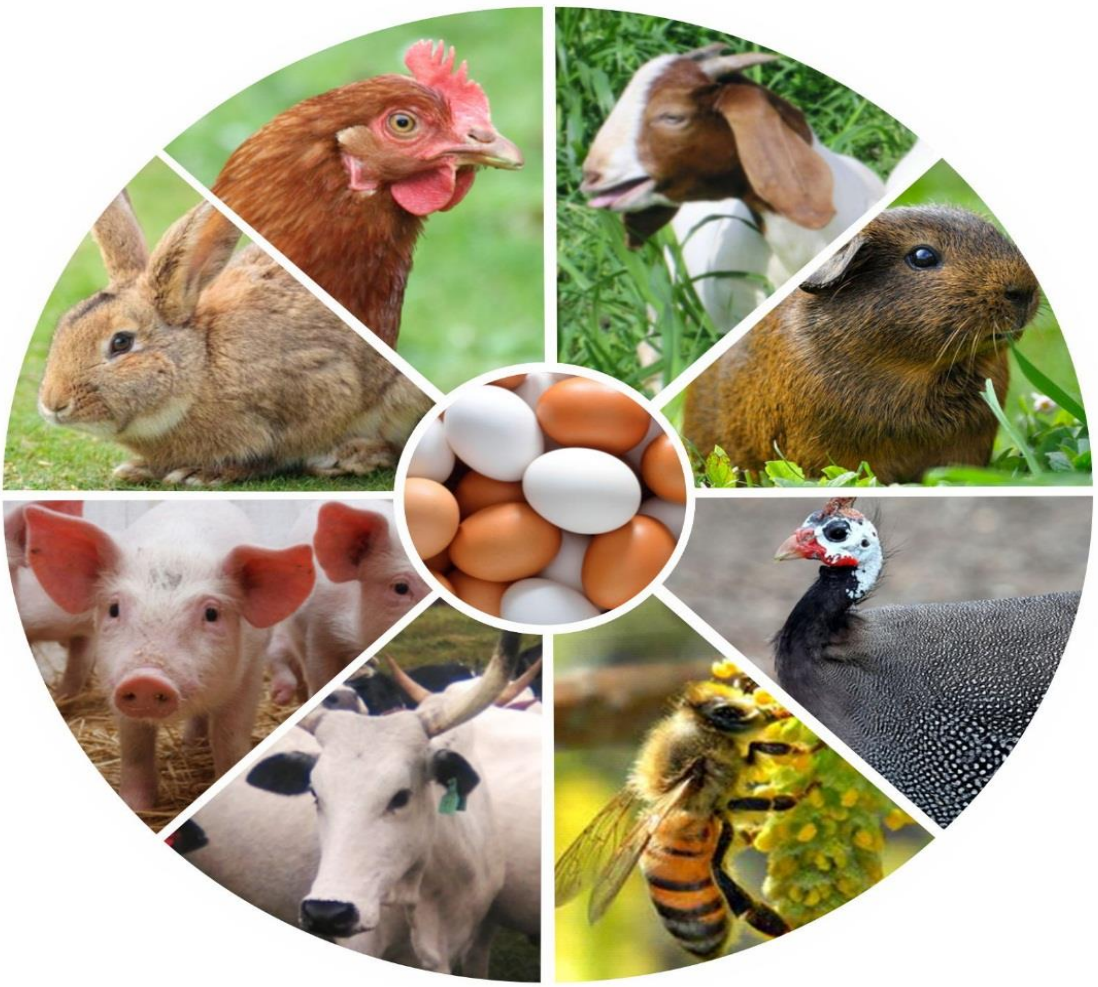
GHANA LIVESTOCK DEVELOPMENT POLICY AND STRATEGY



APRIL 2016

MINISTRY OF FOOD AND AGRICULTURE

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LIST OF ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
APD	Animal Production Directorate
ARI	Animal Research Institute
AUC	Africa Union Commission
CSD	Crop Services Directorate
CSIR	Council for Scientific and Industrial Research
DAES	Directorate of Agricultural Extension Services
DOC	Day Old Chick
DP	Development Partners
DM	Dry Matter
ECOWAS	Economic Commission of West African States
EPA	Environmental Protection Agency
FAO	Food and Agriculture Organisation
FDA	Food and Drugs Authority
FASDEP	Food and Agriculture Sector Development Policy
FBO	Farmer Based Organisation
GDP	Gross Domestic Product
GNAPF	Ghana National Association of Poultry Farmers
GoG	Government of Ghana
GSA	Ghana Standards Authority
GCBSSLOA	Ghana Cooperative Butchers and Small Scale Livestock Owners Association
GSGDA	Ghana Shared Growth and Development Agenda
GSS	Ghana Statistical Service
ha	Hectare
IFAD	International Fund for Agricultural Development
Kg	Kilogram
KNUST	Kwame Nkrumah University of Science and Technology
GLDPS	Ghana Livestock Development Policy and Strategy
MED	Monitoring and Evaluation Directorate
METASIP	Medium Term Agriculture Sector Investment Plan
MMDAs	Metropolitan, Municipal and District Assemblies
MoFA	Ministry of Ministry of Food and Agriculture
MoTI	Ministry of Trade and Industries
MT	Metric Tonne
MTDAP	Medium Term Agricultural Development Program
NDPC	National Development Planning Council
NGO	Non-Governmental Organization
OIE	World Organisation for Animal Health
PBD	Policy and Budget Directorate
SADA	Savannah Accelerated Development Agency

SRID	Statistics Research and Information Directorate
SWOT	Strengths, Weaknesses, Opportunities and Threats
UCC	University of Cape Coast
UDS	University for Development Sciences
UG	University of Ghana
USDA	United States Department of Agriculture
USA	United States of America
USAID	United States Agency for International Development
VSD	Veterinary Services Directorate
WIAD	Women in Agricultural Development
WAAPP	West Africa Agricultural Productivity Program
WASH	West African Short Horn

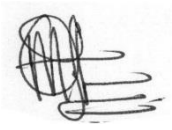
FOREWORD

The livestock sector, including poultry, is an important component of agriculture in Ghana and plays a multifaceted role in providing livelihood support to many Ghanaians especially the rural population. The agriculture sector recorded a growth of 5.2 percent and livestock grew by 5.3 percent in 2014. However, the contribution of the livestock sub-sector to the national GDP does not include the value of secondary products, such as manure, draught power and transport which are provided to the other sectors of the Ghanaian economy.

The livestock sub-sector's main contribution to the national economy is food and nutrition security as it provides animal protein to enhance the nutritional status of the human population. It provides employment generation opportunities to a large part of the population, particularly in the rural areas. It offers prospects for wealth creation, income enhancement, coping mechanism against crop failure, financial security and improvement in rural livelihoods.

The undesirably slow pace of the livestock sub-sector development in the country has created a situation whereby large volumes of ruminants, particularly, cattle, frozen meat and dairy products are imported annually to meet the domestic demand for livestock products. Majority of the national livestock resources are owned by the small scale farmers most of whom live in the rural areas. Hence sustainable development of the livestock sub-sector would lead to more inclusive development and poverty alleviation.

The previous policy document on livestock; Livestock Development Policies and Strategies (2004-2015), was fraught with implementation problems and therefore did not fully address the numerous challenges in the livestock sub-sector. As a result, there was the need to review and design new policies and strategies to address identified problems and constraints of growth and development of the sub-sector. Subsequently, the Ghana Livestock Policy Development and Strategies document was formulated. The expectation is that effective implementation of the comprehensive and coherent policies and strategies in the new policy document will lead to a rapid increase in the growth and development of the livestock sub-sector in the country.



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MINISTER FOR FOOD AND AGRICULTURE

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EXECUTIVE SUMMARY

The livestock sector, including poultry, is an important component of Ghana's agriculture and plays a major role in providing livelihood support to the rural population. The sector contributed in direct products 1.7 and 8.8 percent of national and agricultural Gross Domestic Products respectively in 2012 and 2013, and grew at a rate of 5.2 percent in both years. The contribution of the livestock sector to the national Gross Domestic Product does not include the value of secondary products, such as manure, draught power and transport that are provided to the crop sector.

Ghana is divided into ten administrative regions: Ashanti, Brong Ahafo, Central, Eastern, Greater Accra, Northern, Upper East, Upper West, Volta and Western Regions. The national human population in 2014 was estimated at 26,778,000, about 11,837,000 people lived in rural areas and derived their income from agriculture and related activities. The economic active population engaged in agriculture was 2,343,000 persons.

The Ministry of Food and Agriculture provides policy guidelines for agricultural production. The Ministry is headed by a Minister and assisted by two Deputy Ministers for Crops and Livestock. There is a Chief Director and ten Directors who head the technical directorates. Each region has a Director of Agriculture who is responsible for policy and is assisted by District Directors of Agriculture. The Ministry together with relevant state institutions has over the years developed policies to address the nation's supply deficit of livestock and poultry products due largely to low productivity, high cost and low quality of feed and poor management practices.

The major livestock species kept in Ghana include cattle, sheep, goats, pigs, poultry, grasscutter, rabbit and guinea pigs. A few horses and donkeys are kept in the northern Savannah zones. The major breeds of livestock are the West African Shorthorn, Zebu, Sanga, Jersey, Frisian-Sanga Crossbred and Jersey-Sanga Crossbred Cattle; African Wild Ass Donkey; West African Pony, Arab Barb and Chadian Horses, Djallonké, Sahelian, Djallonké-Sahelian Crossbred Sheep and Goats; Ashanti Black, Large White, Landcrace Pigs and Crossbreds; Domestic Fowl, Duck, Turkey, Guinea Fowl and Ostrich; Rabbit, Grasscutter and Guinea Pigs. Livestock populations in 2014 were cattle 1,657,000 sheep 4,335,000, goats, 6,044,000, pigs 682,000 and 68,511,000 poultry. The traditional livestock genetic improvement system involves the use of supposedly good males, often selected by visual assessment, for upgrading livestock. On-going national genetic improvement programmes are the Open Nucleus Breeding Scheme by Animal Production Directorate and the Broiler Nucleus Lines for the production of grandparent Lines by Animal Research Institute.

The livestock production systems practiced in the country are livestock only and crop-livestock production systems. These systems give rise to a variety of prevailing animal production systems. Whereas each production system may seem similar they are species specific. Sustenance for cattle, and to lesser extent small ruminants, is almost entirely

dependent on grazing of natural pastures and rangelands within the Savannah woodlands, unimproved pastures and bush fallow, with extreme seasonal variation in quantity and quality. Non-ruminant livestock production is constrained by lack of good quality feed, high cost of feed and consistency of supply.

Ghana has 28 schedule livestock diseases. A large number of infectious and metabolic livestock diseases prevalent in the country have serious implication for animal productivity, safety and quality of livestock products. Many of these diseases have zoonotic implications. Animal health care facilities are found largely in towns and cities where their major clients, keepers of pets such as dogs and cats, are found. The smallholder livestock farmer relies mainly on veterinarians or other animal health workers from the public sector where the fees may be minimal as compared to the private sector practitioners. Those in the rural areas sometimes depend on herbal preparations for mortality risk management.

The regulatory bodies with responsibility for feed and livestock product and by-product quality control and certification are Ghana Standards Authority, Animal Research Institute, Food and Drugs Authority. The Environmental Protection Authority inspects and assesses the appropriateness of feed mills, feed additive manufacturing facilities and Veterinary Services Directorate sees to livestock, livestock product and by-product importation, exportation and quality control.

Access to finance and insurance by livestock producers, traders and processors has been inadequate. However, a few banks and financial institutions have supported the growth of the livestock sector. The Development Partners have played key roles in the country's livestock development through budgetary support and direct interventions. They also contribute financial and technical resources to support the livestock sector objectives. The main activities undertaken by the Non-Governmental Organizations promoting livestock sector are supply of improved breeding animals to farmers and provision of livestock extension.

A number of strategic policy measures have been put in place in the past to improve the performance of the livestock sector. The policy instrument that is presently operational to develop the sector is the Ghana Shared Growth and Development Agenda II. The goals are to (i) increase the supply of meat, animal and dairy products from domestic production at the current aggregate level of 30% to 80%, and (ii) contribute to the reduction of the incidence of poverty among farmers from 59% to 30% by the year 2015.

The previous and present policies have largely been ineffective as a result of non-implementation or inadequate implementation of various strategies as well as lack of effective monitoring and evaluation mechanism. The livestock sector continues to be faced by numerous challenges which would require appropriate policies and strategies to address them. There is therefore a need for new comprehensive policy and strategy instrument that

will allow the nation's livestock resources and the various livestock value chain actors to express their potentials to achieve effective development of the sector by 2025. The Ghana Livestock Development Policy and Strategy would provide a roadmap for the effective implementation of appropriate policies and strategies. However, to succeed, the strategies will have to undergo timely implementation and stringent monitoring and evaluation.

1. INTRODUCTION

1.1 GEOGRAPHICAL LOCATION, LAND AREA, POLITICAL ADMINISTRATION AND HUMAN POPULATION

Ghana, officially the Republic of Ghana and formerly the Gold Coast, is situated in the centre of the countries along the Gulf of Guinea in West Africa. The country has an area of 238,530 square kilometers and lies between latitudes 4°44' and 11°11'N and longitudes 01°12'E and 03°11'W. It is bordered on the east, west and north by the Republics of Togo, Côte d'Ivoire and Burkina Faso respectively. There is a 550 km long coastal line in the south.



Figure 1: Administrative Regions of Ghana

The total land area of Ghana is 23,884,245 ha out of which 57 percent is agricultural land (SRID, 2014). The land is predominantly undulating with slopes averaging 3.5 percent. About 70 percent of the country is subject to moderate to severe sheet and gully erosion. Ghana is divided into 10 Administrative regions as follows (capital towns in brackets): Ashanti (Kumasi), Brong Ahafo (Sunyani), Central (Cape Coast), Eastern (Koforidua), Greater Accra (Accra),

Northern (Tamale), Upper East (Bolgatanga), Upper West (Wa), Volta (Ho) and Western (Sekondi) (APD, 2003).

The human population in 2014 was 26,778,000, about 11,837,000 people lived in rural areas and derived their income mainly from agriculture and related activities. The economic active population engaged in agriculture was estimated at 2,343,000 (FAO, 2015). Overall, 45.8 percent of all households in Ghana are agricultural households. A higher proportion (95.1 percent) of the number of the agricultural households is engaged in crop farming (GSS, 2012), while 74 percent of the agricultural households are engaged in livestock rearing alongside crop farming. Only 4.9 percent of the agricultural households are engaged in livestock production alone (MoFA, 2008).

Table 1: Human Population Trend

Value expressed in 1,000 inhabitants							
	Year						
Population segment	2008	2009	2010	2011	2012	2013	2014
Total	23,264	23,824	24,392	24,966	25,546	25,905	26,778
Rural	11,631	11,736	11,837	11,935	12,028	12,121	11,837
Urban	11,633	12,088	12,555	13,031	13,518	13,783	14,941
Agricultural*	55,719	5,872	6,026	6,180	6,332	6,484	6,637

Source: FAO (2015) *Economically active population

1.2 AGRO-ECOLOGICAL ZONES, VEGETATION ZONESAND CLIMATE

Ghana is a tropical country consisting of three broad ecological zones, which are the Forest, Forest-Savannah Transition and the Savannah zones. These are further sub-divided into Forest which comprises Rain Forest and Deciduous Forest, Derived Savannah or Forest-Savannah Transition, Coastal Savannah, Guinea Savannah and Sudan Savannah. The bimodal rainfall pattern in the Forest, Derived and Coastal Savannah zones gives rise to major and minor growing seasons. In the Sudan Savannah and Guinea Savannah zones the unimodal rainfall distribution results in a single growing season. The rainfall determines largely the type of agricultural enterprise carried out in each zone. The main vegetation zones are Guinea Savannah Woodland, Deciduous Forest (Celtis-Triplochiton Association and Antiaris Chlorophora Association), Rain/Deciduous Forest, Rain Forest Thicket and Grassland, Sudan Savannah Woodland Swamp and Lagoonal Vegetation. The climate of Ghana is tropical, the eastern coastal belt is warm and comparatively dry, the south west corner is hot and humid, and the north is hot and dry. Annual average temperatures range from 26.1^0C in places near

the coast to 28.9^{0}C in the extreme north. Temperatures may rise above 40^{0}C though. The climate is usually breezy and sunny (SRID, 2014).



Figure 2: Ecological Zones of Ghana

1.3 LIVESTOCK IN THE NATIONAL ECONOMY

The livestock sector, including poultry, is an important component of Ghana's agriculture and plays a multifaceted role in providing livelihood support to the rural population.The agriculture sector recorded a growth of 5.2 percent and livestock grew by 5.3 percent in 2014 (GSS 2015). The Economic activity in the Livestock subsector increased by 4.5 percent in the 1st quarter of 2015 compared to the 1.3 percent growth recorded in the 4th quarter of 2014. The improvements are attributed to interventions in the sector such as the livestock credit in kind component of the West Africa Agricultural Productivity Program II (WAAPP II, 2014) and the Ghana Broiler Re-vitalization Project (MoFA, 2014). The improvement in performance indicates that there is great potential for the livestock sector in Ghana. The contribution of the livestock sector to the national GDP (see Table 2) however, does not include the value of secondary products, such as manure, draught power and transport which are provided to the crop sector.

The livestock sector main contribution to the national economy is food and nutritional security as it provides animal protein to enhance the nutritional status of the human population. It provides employment generation opportunities to a large part of the population, particularly in the rural areas. It offers prospects for wealth creation, income enhancement, coping mechanism against crop failure, financial security and improvement in rural livelihoods (MoFA, 2008). Over 100,000 households in Ghana depend on livestock for their livelihoods, especially in the northern part of the country (GSS, 2008). Manure from livestock is an invaluable resource to the crop and vegetable farmers for the maintenance of soil fertility and control of soil erosion.

Table 2: Contribution of Agriculture and Livestock to GDP

National GDP	2009	2010	2011	2012	2013*	2014*	Average
GDP at Current Market Prices by Economic Activity (GH¢ Million)							
Agriculture	11,343	12,910	14,155	16,668	19,969	21,642	16,114
Livestock	729	873	1,004	1 162	1,346	1,448	1,094
Share of Livestock (%)	6.43	6.76	7.09	6.97	6.74	6.69	6.8
Distribution of GDP (at Basic Prices) by Economic Activity							
Agriculture	31.8	29.8	25.6	22.9	21.6	19.9	25.3
Livestock	2	2	1.8	1.6	1.5	1.3	1.7
Share of Livestock (%)	6.29	6.71	7.03	6.99	6.94	6.53	6.75
GDP at 2006 Prices by Economic Activity (GH¢ Million)							
Agriculture	6,129	6,453	6,507	6,657	7,003	7,369	6,129
Livestock	502	526	552	581	612	644	569
Share of Livestock (%)	8.19	8.15	8.48	8.73	8.74	8.74	9.28
Growth Rates of GDP at 2006 Constant Prices (Percentage)							
Agriculture	7.2	5.3	0.8	2.3	5.2	5.2	4.33
Livestock	4.4	4.6	5.1	5.2	5.2	5.3	4.97

Source: GSS (2015); *Revised; Current US$1.00 = GH¢ 3.76

Livestock supply not only meat, milk and eggs, but also skins for leather, bones, blood and horns for animal feed. The use of bullocks for land preparation by some small scale farmers in the northern Savannah zones allows farmers to crop larger areas than would have been possible in view of inadequate tractor services and the high cost involved in using tractor power. Livestock provides the cash resource during the non-farming season and a safety net of capital assets to face grave financial difficulties. Livestock may also be sold to increase farm size and to procure inputs such as seeds, fertilizer, farm tools and labour. Livestock stabilizes the socio-economic capability of households by providing reliable income in times when prices of crops are low due to bumper harvest (Oppong-Anane, 2013). Majority of the national livestock

resources are owned by the small scale farmers most of whom live in the rural areas. Hence sustainable development of the livestock sector would lead to more inclusive development and poverty alleviation.

1.4 AGRICULTURAL POLICY

Ghana's modern development policy, including agriculture, has a long history dating back to 1919 when a Ten-Year Development Plan was launched. Agricultural development featured prominently in this and subsequent plans, particularly the promotion of cash crops such as oil palm and cocoa. Ghana's agricultural policies during the pre-independence colonial era were largely biased towards the promotion of mainly industrial crops for export, particularly cocoa and oil palm. A major policy focus of the governments after independence was the modernization of agriculture. The traditional subsistence system of agricultural production was considered obsolete, and incapable of being modernized and adapted to the needs of an expanding economy. .

The Medium Term Agricultural Development Program (1991-2000) was aimed at a sustained annual growth in agricultural GDP of about 4%. The policy reforms focused on the incentive framework for agricultural production, trade and processing. The first Food and Agriculture Sector Development Policy (FASDEP) was developed in 2002 as a framework for the implementation of strategies to the modernization of the agricultural sector. The strategies in that policy were based on the Accelerated Agricultural Growth and Development Strategy (prepared in 1996), and were designed to forge linkages in the commodity value chain. After nearly four years of its implementation, and the development of sub-sector policies and strategies to guide implementation, it became necessary to revise FASDEP to reflect lessons learned and to respond to the changing needs of the sector.

The revised policy (FASDEP II) emphasized the sustainable utilization of all resources and commercialization of activities in the sector with market-driven growth in mind. It however targeted fewer commodities for food security and income diversification, especially for resource poor farmers. Enhancement of productivity of the commodity value chain, through the application of science and technology, with environmental sustainability is emphasized. Greater engagement of the private sector and collaboration with other partners is also pursued to facilitate implementation of policies.

The current policies evolved from previous policies dating as far back as the colonial era. The Colonial Department of Agriculture adhered to an agricultural policy aimed at encouraging, educating and advising farmers to produce crops for export, without much support for the small-scale farmers to produce food for the local market. The First Five Year Development Plan,

1951 to 1956, encouraged large scale farming under public control in a mechanized setting. The Second Five Year Development Plan 1959 to 1964 expanded the role of Agricultural Development Corporation which was established to oversee the plan and promote agricultural development. It established large scale Estate Agriculture to lead the modernization of Agriculture. Thereafter, all governments have tendered to favor large scale capital intensive production over small scale production with no serious consideration on how to deal with agricultural surpluses and raw materials. The National Redemption Council however propounded 'Operation Feed Yourself' Strategy to promote local small scale production. In all the policies mentioned above, livestock was not left out even though very minimum. In the FASDEP, the goals of the livestock policy are to increase the supply of meat, animal and dairy products from domestic production at the current aggregate level of 30% to 80% by the year 2015; and contribute to the reduction of the incidence of poverty among farmers (who are also livestock keepers) from 59% to 30% by the year 2015.

2. STATUS OF THE LIVESTOCK SECTOR

2.1 ANIMAL GENETIC RESOURCES

Ghana has a rich diversity of animal genetic resources that have over the years survived the existing harsh environmental and disease challenges. The livestock species that contribute to food supply and agriculture include cattle, sheep, goats, pigs, poultry (chickens, ducks, turkeys and guinea fowl) and non-conventional livestock, mainly grasscutters and rabbits. A few horses and donkeys are kept in the northern Savannah zones. However there are a large number of wild relatives of domestic species found in Ghana. These include small ruminants like the duikers and antelopes, large ruminants like buffaloes, pigs like warthogs and red river hawks. The characteristics of the major species are as follows:

2.1.1 Ruminants

Cattle: The most prominent cattle breed in the country is the West African Shorthorn (WASH). The name of the breed is coined as a general descriptive term to cover all the variations of small non-humped cattle, generally black and white in colour but sometimes fawn and white. It is an indigenous tough breed of cattle, thick set with short fine-boned limbs. Zebu influence in the WASH becomes much more marked towards the northern frontier of the country and especially towards the north-east where the tsetse challenge is much less as it has developed a degree of tolerance to tsetse-borne trypanosomiasis (AfDB, 2001). The breed was thought to comprise in excess of 65 percent but accounted only 47 percent of the national cattle herd in 2001 (Ahunu and Boa-Amponsem, 2001) and declined to 39.3% in 2011 (Akunzule, 2012).

The decline of the WASH over the years is mainly as a result of non-adherence to conservation methods and the use of exotic and larger breeds for cross breeding purposes. The highest concentrations of the WASH are in the Upper West region, followed by the Northern Region and Upper East Region. They are distributed in smaller concentrations in the seven remaining regions of Ghana. A majority are raised under low-input systems in the Guinea Savannah zone. The Kokombas in the Demon area of Zabzugu and Tatale districts in Upper West Region have formed WASH Breed Association to maintain the pure breed because of their believe that the animal has served their ancestors very well and continue to have adaptive traits that are suitable for their farming systems.

The Sanga, a natural cross between of the WASH and the large humped Zebu cattle, follows the WASH in abundance and are distributed throughout the country, with highest concentration in the Volta Region within the Coastal Savannah zone. The Zebu breeds (mainly White Fulani and Sokoto Gudali), which are susceptible to trypanosomiasis, are found mainly in the tsetse fly free areas of Northern, Brong-Ahafo and Ashanti Regions.

A few N'Dama cattle, which are trypanotolerant, are found in the Northern and Western Regions. There are also several indigenous breed crosses such as the N'Dama x WASH and N'Dama x Sanga (Aboagye *et al*., 2014). A few Jerseys, exotic dairy cattle, are found in the peri-urban areas in the Coastal Savannah zone of the country. Dairy cattle comprising Frisian X Sanga and Jersey x Sanga crossbreds, initially produced through artificial insemination with imported semen at the Amrahia Dairy Farm of MoFA (APD, 2003) are found on dairy farms in the Coastal Savannah zone. Some famers now use bulls with various degrees of exotic genes for mating Sanga cattle for milk production.

Donkeys: The African Wild Ass is the only locally adapted Donkey breed found in the country (APD, 2003). The donkeys are used to cart goods and humans and for draught power.

Horses: The locally adapted horse breeds are the West African Pony, Arab Barb and Chadian Horse. Crosses between the locally adapted breeds and thoroughbreds (introduced in the 1970's) are mainly used for sport (APD, 2003) and are found mainly in the Northern, Upper West and Upper East Regions.

Sheep: The major sheep breed, the indigenous West African Dwarf also known as Djallonké sheep, is distributed nation-wide. The breed is acknowledged for its hardiness, trypanotolerance, prolificacy and suitability for year-round breeding. Although it is a small animal, with an adult weight of 25 to 30 kg in males and 20 to 25 kg in females, the Djallonké does not exhibit traits associated with dwarfism (AfDB, 2001). Due to several breed improvement projects implemented by government and non-governmental organizations (NGOs), crossbreds are now found all over the country.

Goat: Most goats in Ghana are of the indigenous West African Dwarf (WAD) also known as Djallonké, an achondro-plastic dwarf. The adult male weighs 20-25 kg and the female 18-22 kg. The breed is very prolific, precocious and trypanotolerant and are found throughout the country (AfDB, 2001). The highest concentrations are in the Upper West and Upper East Regions under low input systems. Sahelian goats can be found mostly in the Northern and Brong-Ahafo Regions, raised under medium-input systems (Aboagye *et al*., 2014). It is also commonly kept at bacyards in the urban areas.

2.1.2 Non Ruminants

Poultry: The types of poultry kept include the following:

Domestic Fowl: The Ghanaian local or domestic fowl also known as chicken is of various types, the frizzle, barred and naked neck, and is distributed throughout the country. The exotic breeds, comprising Hisex Brown, ISA Brown, Lohmann Brown, Lohmann White, Bovan Brown, used for commercial production are usually imported or hatched locally from established parent stock or imported eggs (APD, 2003) and are found mainly in the urban areas.

Guinea Fowl: The local Ghanaian Guinea fowl is of the Pearl helmeted variety. It is distributed throughout the country, but concentrated in the Guinea and Sudan Savannah zones (Aning, 2006).Some imported breeds can also be found in small numbers from imported keets or eggs (MoFA, 2014). A few commercial strains such as the Galore from France have recently been imported into the country.

Duck: The most important locally adapted Duck breed is the Local Ghanaian duck of the Muscovy variety which is distributed nationwide. There are also a few exotic Peking Green Headed varieties in the Coastal Savannah zone (APD, 2003; Aning, 2006).

Turkey: The local Ghanaian turkeys of white, bronze and buff varieties are distributed nationwide but concentrated in the Upper East, Ashanti and Easter Regions. Exotic California White variety is imported for festive seasons.

Ostrich: A few local varieties of ostrich exist mainly in the Volta and Northern Regions. Exotic ostrich imported mainly from South Africa are located on farms in the Greater Accra and Volta Regions and the number of birds per farm ranges from 3 to 30. It was estimated that there were 4,000 ostriches in the country in 2005. There was a reduction of ostrich farms from 20 in 2006 to only 6 in 2011 (Akunzule, 2012) and the population has therefore decreased significantly.

Pigeon: Local pigeons are distributed throughout the country (Aning, 2006). They are however not generally farmed (APD, 2003).

Pigs: Major breeds of pigs kept in the country are and the indigenous Ashanti Black (Local Black), Large White, Landrace and crosses between the exotic and local breeds. These animals are found in all the agro-ecological zones of the country. The indigenous Ashanti Black pig is found throughout the country and has the highest concentration in the Northern, Upper West and Upper East Regions (MoFA, 2008; Aboagye *et al*., 2014). The exotic pigs are kept mainly by commercial farmers in the middle and southern sectors of the country.

2.1.3 Non-Convectional Livestock

There are a number of non-conventional livestock, also known as micro livestock and small stock, kept in the country, the major ones are rabbits and grasscutters and the minor ones are guinea pigs, quails, snails and bees.

Rabbit: Rabbits kept in Ghana comprise varied genetic combinations of local and exotic breeds. The different breeds of rabbit found are the locally adapted Ghanaian Rabbit and the exotic breeds kept are California, Chinchila, New Zealand White and Flemish Giant breeds. The exotic breeds are popular among the rabbit keepers as a result of their perceived high growth rate and fertility. The crossbreds exhibit various hair colour including white, brown and black either as a whole or in combinations (Osei *et al*., 2012). What are perceived to be exotic breeds are mainly crossbreds which do not exhibit the growth potential of the pure breeds.

Grasscutter: The grasscutter is reared in captivity by farmers in both the urban and rural areas mainly in the middle and southern parts of the country. Grasscutter is one of the commonly consumed species of game meat in Ghana, particularly by those living in the rural areas. The meat is also a delicacy in the urban areas. There is only one locally adapted grasscutter breed, the Local Ghanaian grasscutter. However, different grasscutter strains have recently been introduced into the country from Benin.

2.2 LIVESTOCK POPULATION

Livestock species populations in 2014 were cattle 1,657,000 sheep 4,335,000, goats, 6,044,000, pigs 682,000 and 68,511,000 poultry (SRID 2014). The population increase of the various species from 2009 to 2014 were cattle 15.2 percent, sheep 19 percent, goats 30.7 percent, pigs 30.9 and poultry 58.2 percent (SRID, 2014). The average growth rate from 2009-2014 is cattle 2.88, sheep 3.55, goats 5.5, pigs 5.54 and poultry 9.61 percent. The Transitional and Coastal Savannah zones have the highest (33.68 percent) and lowest proportions (6.21 percent) respectively of country's animal resources.

Table 3: Livestock Population Trend

Values in 1,000 animals

Type of Livestock	2009	2010	2011	2012	2013	2014*
Cattle	1,438	1,454	1,498	1,543	1,590	1,657
Sheep	3,642	3,759	3,887	4,019	4,156	4,335
Goats	4,625	4,855	5,137	5,435	5751	6,044
Pigs	521	536	568	602	638	682
Poultry	43,320	47,752	52,575	57,885	63,732	68,511

Source: SRID (2015) *Provisional

Table 4: Proportion of livestock species in the agro-ecological zones, 2012

Agro-ecological zone	Species						
	Cattle	Sheep	Goats	Pigs	Horses	Donkeys	Poultry
Rainforest/Deciduous	41	930	903	343	9	8	12,902
Transition	257	1,276	1,676	753	32	143	16,219
Guinea Savannah	846	1,042	1763	83	541	2,944	973
Sudan Savannah	254	329	375	27	1,276	9,371	1,369
Coastal Savannah	81	178	202	15	602	47	2,631
Total	148	3,756	4,106	543	2,460	12,513	34,095

Value expressed in 1,000 animals

Source: Livestock Sector Review (2012)

FAO estimates and official country data on livestock populations in West African countries shows that Ghana's share of species populations are 2.18, 0.28, 4.18, 4.38, 4.22 and 12.39 percent for cattle, donkeys, sheep, goats, pigs and poultry respectively.

Table 5: West Africa Live Animal Population in 2013, Head

Country	Cattle	Donkeys	Sheep	Goats	Pigs	Chicken
Cabo Verde	2,116,000	15,300	11,599	189,879	84,559	1,117,000
Benin	436,054	620	860,000	1,716,000	414,000	14,661,000
Gambia	1,590,000	60,000	110,000	267,435	4,873	1,300,000
Ghana	1,590,000	14,350	4,156,000	5,751,000	638,000	63,732,000
Guinea	1,585,585	2,200	1,600,000	1,820,000	104,000	15,500,000
Côte d'Ivoire	1,585,000		1,725,207	1,378,941	362,693	58,380,000
Liberia	10,012,966		275,000	345,000	292,000	7,600,000
Mali	1,850,000	939,835	13,735,523	19,126,806	77,594	36,850,000
Mauritania	10,200,000	170,000	9,100,000	5,650,000	42,500	4,600,000
Niger	20,000,000	1,168,000	10,400,000	13,800,000	8,080,000	17,700,000
Nigeria	10,200,000	1,265,000	39,000,000	58,250,000	460,000	165,000,000
Guinea-Bissau	67,000	5,200	470,000	750,000	386,000	1,900,000
Senegal	578,000	459,000	6,081,000	5,199,000	55,000	48,919,000
Saint HATC	700	400	800	1100	622	8,000
Sierra Leone	435,000		757,500	896,000	1,000,000	11,500,000
Togo	8,912,532	3,400	2,200,000	2,760,000	2,345,188.	25,000,000
Burkina Faso	2,116,000	1,114,628	9,007,585	13486909	84,559	40,991,000
Total	**73,096,837**	**5,217,933**	**99,490,214**	**131,388,070**	**14,431,588**	**514,758,000**

Source: FAO, 2015; Blanks indicate data not available. Saint HATC= Saint Helena, Ascension & Tristan da Cunha

2.3 CONSERVATION OF ANIMAL GENETIC RESOURCES

Indigenous breeds are well adapted to the local environment and require very little economic inputs for their sustenance. Generally not much effort has been directed towards their conservation. In spite of this, indigenous breeds continue to thrive in the face of emerging problems of urbanisation on livestock farming. This will not continue for much longer as the farming system gradually shifts from extensive to intensive as a result of limiting free rangelands due to urbanisation. The National Coordinating Committee on Animal Genetic Resources has been reconstituted to draft a National Strategic Action Plan, educate stakeholders and provide advisory services on the conservation of animal genetic resources to the Government through the Minister of Food and Agriculture. The Government's support to the MoFA breeding stations ensures that a good number of local and locally adapted breeds are kept as part of a national *in situ* conservation programme. For instance the Pong Tamale Livestock Station is conserving the West African Short Horn cattle The Animal Research Institute (ARI) of the Council for Scientific and Industrial Research (CSIR) has assisted farmers in five communities in the Northern Region to conserve the Ghana Shorthorn cattle, and a herd of the breed is being conserved at the institute's station.These cattle will form the basis for future crossbreeding and expansion programmes and also serve as a reserve of local genes for further breeding work. Additionally, capacities of the Animal Science Departments of the universities and research institutions such as the CSIR-ARI are being improved by training of more animal scientists and provision of the necessary infrastructure to research into cryopreservation and other ex situ conservation schemes (APD, 2003). Training in breed conservation is being offered to students by the University of Ghana.

2.4 LIVESTOCK BREEDING PROGRAMMES

2.4.1 Traditional Breeding System

Traditional livestock breeding system involves the use of supposedly good males, often selected by visual assessment, for upgrading flocks in the extensive and semi-intensive systems. Under the extensive systems there is no control over mating. This gives way to mating by aggressive but genetically undesirable males resulting in low genetic improvement (APD, 2003).

2.4.2 Open Nucleus Breeding Scheme

The Open Nucleus Breeding Scheme is the breeding scheme undertaken by APD in its genetic improvement programme. Open Nucleus Breeding Scheme as practiced by APD and its participating breeders (farmers) is based on individual animal performance. The scheme covers the Djallonké sheep and goats, the Ashanti Black Forest pigs and the West African Shorthorn cattle. On-farm selection of males and females are undertaken on participating breeder farms

and on-stations selection at APD breeding farms. This is followed by distribution of selected males to participating breeders for multiplication and the resultant selected male offspring sold to other farmers for mating to improve upon the genetic potential of their flocks. Though the scheme operated quite well it has stalled (APD, 2003).

2.4.3 Broiler Nucleus Lines Production:

The CSIR-ARI has developed a nucleus population of broiler parent stock. Following the approval of an EDAIF grant of GH¢225,000, the Institute's Poultry Farm scaled up its operations to achieve its original objective of revitalizing the poultry industry as a sustainable source of day-old-chicks. Currently, the ARIBRO project has the capacity to produce 30,000 chicks through its modern incubators and hatchery. It, however, produces 10,000 day-old chicks every week.

2.5 LIVESTOCK SPECIES HERD STRUCTURE AND PRODUCTION PARAMETERS

2.5.1 Ruminants

Ruminant livestock herd and flock sizes vary among the different production systems and ecological zones. The average herd and flock sizes in the traditional farming system are as follow: cattle 10, sheep 9 and goats 10 animals. The sizes are higher in the Sudan Savannah, Derived and Guinea Savannah zones than in the Forest and Coastal Savannah zones (MoFA, 2008).

Average daily milk yields of cattle are as follows: WASH 0.5 kg, Sanga 1.0 kg and Zebu 3.0 kg, Sanga x Friesian crossbred6.5 kg, Jersey 14 kg. Average milk per yield per lactation period are as follows: WASH 75 kg, Sanga 220 kg and Zebu 825 kg, Sanga x Friesian crossbred 1,950 kg and Jersey 4,480 kg (MoFA, 2008).Some farmers get as much as 20 kg of milk per day from the crossbreds and Jersey cows. Average body weights are: cattle 200 kg, sheep 25 kg, goats 20 kg and pigs 70 kg (Oppong-Anane, 2013).Average carcass weights are: cattle 125 kg, sheep 15 kg and goats 13 kg, and off take rates are: cattle 11 percent, sheep 30 percent, goats 30 percent and pigs 42 percent (SRID, 2014). The Forest zone has the highest sheep and goat off-take rates with the Sudan Savannah zone having the highest rate for cattle. Parturition rates are: cattle 61.6 percent, sheep 86 percent and goats 96.5 percent. The highest birth rates of cattle, goats and sheep are found in the Forest and Derived Savannah zones respectively (MoFA, 2008).

Average mortality rates are: cattle 13.7 percent, sheep 20.4 percent and goats 32.3 percent. The Sudan Savannah zone has the lowest mortality rates for all the ruminant species while (MoFA, 2008). Under improved management systems as pertains on MoFA Livestock Breeding

Stations, post-weaning mortality rates are 5.3 percent for WASH, 4.8 for Sanga and exotic crossbred cattle. Djallonké sheep mortality is 1.0 percent, 0.2 for Djallonké and 3.3 percent for Sahelian goats (APD, 2008).

2.5.2 Non Ruminants

Pigs: The average pig flock size is 8 animals. Post-weaning mortality rates for the Ashanti Black and Large White pigs are 3.4 and 3.1 percent respectively. Parturition rates are eighty (80%) percent for Ashanti Black pigs and seventy five (75%) percent for Large White pigs (APD, 2008).

Poultry: Domestic fowl size is 16.1 hens per household, cycle of laying/hen/annum is 3.3, eggs per clutch are 12.3 and egg production per household is 635 per annum. The cycle of egg laying per year and egg per clutch are highest in the Forest zone and the Derived Savannah zones respectively (MoFA, 2008)

2.5.3 Non-conventional Livestock

Rabbits and Grasscutters: Rabbit holding ranges from 5 to 25 animals per farm. Organised mating of rabbits result in 3 to 5 kindlings per year, and a doe produces 16 kits on the average per year. The medium-scale commercial holdings have 112 rabbits. An average rabbit holding has a ratio of 10.8 percent bucks, 27.8 percent does and 61.3 young rabbits (Osei *et al*., 2012). Birth and weaning weights of grasscutter are 123.6 and 535.6 grams respectively. Litter size at birth and weaning are 4.3 and 3.8 animals respectively. Pre-weaning daily gain is 6.9 grams; post weaning (2 to 4 months) daily weight gain is 413 grams, 6.8 grams from 2 to 4 months, 6.2 grams from 4 to 6 months and 6.2 grams from 6 to 8 months. Pre-weaning mortality is 11.2percent and post-weaning mortality is 12.3percent (Annor *et al*., 2012).

2.6 LIVESTOCK PRODUCTION SYSTEMS

The livestock production system in Ghana may be broadly categorized into three, these are the High, Medium and Low-input systems. The high-input system includes all the various forms of intensive management of livestock. The medium-input system is made up of all the semi-intensive management practices with varying degrees of confinement and feed supplementation, and the low-input system has most farmers keeping more than one animal with subsistence-type farm sizes predominating (Aboagye *et al*., 2014). The livestock production system may be also categorized into livestock only system and crop-livestock production system also known as mixed farming system, where about 74 percent of the rural households cultivate crops and rear some livestock (MoFA, 2008). Whereas the each production system may seem similar they are species specific.

2.6.1 Ruminant Production Systems

Cattle: There are three cattle production systems, extensive, semi-extensive and commercial systems. The extensive beef cattle production system is the main cattle production system practiced in the country and is based mainly on extensive grazing by smallholder herds. It may be linked with a milk production system whereby milk is shared between the herdsman and the calf, with the surplus going to the market (Okanta, 1992). Very few cattle farms fall under the semi-intensive system where the feeding is supplemented with crop residues. In this system, some herds of cattle are owned mainly by professionals and businessmen living elsewhere with little or no involvement in the management of the animals. The very few cattle found in intensive system are on institutional farms. The system is also practiced by about a hundred households keeping Friesian-Sanga crossbreds or Jersey cows at backyards in the peri-urban areas of the Greater Accra and Eastern regions.

Small Ruminants: The extensive small ruminant production system consists largely of free grazing village flocks of Djallonké sheep and goats normally exhibiting poor productivity. Diseases, mostly helmithiasis and *peste des petits ruminants*, are the main causes of poor productivity and high mortality among the animals. The system is progressively changing into semi-intensive system where simple pens are provided for the animals, and is based on limited grazing and cut and carry of forages, and the use of household wastes, mainly cassava pellets and peels, and plantain and yam peels. Other available crop residues and crop by-products such as groundnut tops, maize stover and rice straw are also used. The intensive system is similar to that of the semi-intensive except that in the former all the feed is provided in the pen. The system supplies fattened rams and bucks for the urban market, particularly during religious festivities. Crossbreds of the Djallonké sheep and goats with the long-legged and larger Sahelian sires are common in the intensive system (Oppong-Anane, 2012).

2.6.2 Non-Ruminant Production Systems

Poultry: Various species of poultry, mainly domestic chicken, guinea fowl and ducks, are kept in the rural and a few urban households under semi-intensive production system for home consumption and sale of the surplus. In this system management is rudimentary and inputs, in the form of feed and health care, are minimal with not much provision made for housing and breeding. High mortality of birds in this system results mostly from viral diseases. The intensive or commercial poultry keeping is the best organized livestock enterprise in the country and operates mainly in the peri-urban and urban areas in the Coastal Savannah and Forest zones.

There are two major lines of commercial poultry industry, namely layer production for eggs and broiler production for meat. Both are highly intensive high capital outlay, and demand efficient and effective management, proper feeding and effective disease prevention and control to

succeed. The commercial sector can be categorized into large scale (over 10,000 birds), medium-scale (500-10,000 birds) and small-scale (50-500 birds). The large scale farms form about 20 percent of the total poultry sector producing mainly eggs (USDA, 2008). Layer keeping for egg production is preferred to broiler production as farmers obtain better prices for their products as there is no competition with imported table eggs. The commercial poultry industry has adequate infrastructure in terms of housing for the production of meat and eggs to meet the nation's requirements if it were to produce at full capacity. There is however inadequate infrastructure in terms of hatcheries, feed mills, processing plants, cold storage facilities and transportation of live birds and frozen chicken (USAID, 2008).

The commercial production of exotic guinea fowl started in Greater Accra and Ashanti Regions before 2001. Currently the demand or guinea keets is low and are only hatched on demand by two hatcheries located in Accra and Kumasi from fertile eggs imported from Belgium. A few farmers and community hatcheries in the northern regions produce indigenous guinea fowl keets. Overall the number of exotic guinea fowl produced is small and represents 7.1 percent of the poultry population. Guinea fowl farming is currently practiced by almost every rural household in the northern Savannah zones for income generation, customary rites, festive occasions as well as cash buffer against food insecurity (FAO, 2014).

All ostrich farms are reared under semi intensive system in the Greater Accra and Volta Regions. There were about 4,000 ostriches in the country in 2005. The number of ostrich farms reduced from 20 in 2006 to only 6 in 2011. Similarly, exotic duck production which was vibrant between 2001 and 2005 with an estimated annual production of 36,000 ducks (FAO, 2014) has reduced significantly

Pigs: Semi-extensive pig production pertains under the traditional smallholder practice in the rural areas. The system is based mainly on the indigenous Ashanti Black Forest pig, which is found throughout the country but concentrated in the Upper West, Upper East and Northern regions in low input systems. Crosses between the indigenous and exotic breeds are also used in this system. The pigs are kept in pens and given minimal feed, and in some cases, they are allowed to scavenge for food. The intensive pig production system, based mainly on the exotic Large White and Landrace breeds and their crosses, is practiced mainly in the southern areas of the country. The highest concentrations of exotic crosses are found in Western, Volta and Central regions in high input systems. This system is commercialized and may be classified as small, medium or large scale (Oppong-Anane, 2012).

2.6.3 Non-Conventional Livestock Production Systems

The non-conventional livestock such as rabbit and grasscutter are kept under intensive system. It is usually non-commercial and family-consumption oriented in the rural areas but mainly commercial in the urban and peri-urban areas. Attempts were being made by ARI and APD as well as some private farmers to domesticate the grasscutter (APD, 2003).

2.6.4 Crop-Livestock Mixed Systems

Sheep and sometimes pigs are integrated into crop production systems. This is mainly found on oil palm, citrus and coconut plantations. Livestock farmers who practice this system show higher standards of stock husbandry than the agro-pastoralists. The biomass of the plantations comprises various shrubs, grasses and forage legumes. In a few cases, effort is made to introduce leguminous forages such as *Centrosema sp*. and *Stylosanthes sp*. into the biomass by oversowing during the dry season.

2.7 COMMERCIALIZATION OF LIVESTOCK PRODUCTION

The proportions of production systems falling under commercial production were estimated in 2008 as follows; cattle 3.3 percent, sheep 6.7 percent, goats 5.1 percent, pigs 58.8 percent, and all exotic poultry are kept under the commercial system (MoFA, 2008). The proportions have not changed much since then as a result of several weaknesses in commercialisation of livestock and in particular that of ruminants such as inadequate supply of breeding stock, low productivity of local breeds, inadäquate feed during the dry season, inadäquate technical-knowhow, lack of effective farmer based associations, poor management practices, non-existence of animal identification and traceability systems, high incidence of parasitic infestation and poor enforcement of laws and regulations. However, there are several strengths and opportunities and in particular in poultry production for commercialisation such as the existence of large unused housing and feed mills capacities, increasing urban population and middle class of consumers, availability of expertise in various fields within the livestock sector. Though not all the commercial farms are modernized, the stated proportions of commercialization also go for modernization of the livestock farms with the exception of pig production which still depends on a large number of small-scale farmers who have profit margin as a motive but use unimproved facilities and methods in production. Modernization of the nation's livestock production, including pig production, is estimated at 5.0 percent. This value does not include farms keeping exotic poultry (MoFA, 2008). The Ghana Commercial Agriculture Project is a government initiative that seeks to broaden and deepen private sector investment in agriculture, enhances the role of commercial agriculture and strengthens the agricultural value chains (MoFA, 2015). The project is currently promoting crops such rice and maize but is yet to promote livestock production.

2.8 FEEDS AND FEEDING

2.8.1 Ruminant Feeds and Feeding

Sustenance for cattle, and to lesser extent small ruminants, is almost entirely dependent on grazing of natural pastures and rangelands within the Savannah woodlands, unimproved pastures and bush fallow, with extreme seasonal variation in quantity and quality (Oppong-Anane, 2012). There are no lands reserved for grazing in the country with the exception of fodder banks established in the Afram Plains District under the Afram Plains District Agricultural Development Project. Even though some communities have grazing lands oversown with hardy and nutritious leguminous forages for communal use, it is mainly on state livestock stations that land is reserved for grazing. Supplementary feeds in the form of crop residues and cut-forages are provided to ruminant livestock particularly during the dry season. Where opportunities of sales during festivities arise, ruminant livestock are fattened with additional feed inputs such as wheat, maize and rice bran. The bulk of the feed in the extensive production systems lacks adequate nutrients for satisfactory productivity. Supplemental feeding is therefore critical in these systems. In some communities, where cropping is undertaken, mainly in the immediate environs of settlements, sheep and goats are let loose only after the crops have been harvested to avoid damage to the crops. Otherwise they are tethered and graze in limited areas and moved to different areas daily to ensure access to adequate forage (Oppong-Anane, 2012).

2.8.2 Non-Ruminant Feeds and Feeding

Non-ruminant livestock production has been severely constrained by lack of feed of good quality and consistency. It is only in the intensive systems of commercial poultry and pig production that livestock tend to be fed adequate rations for satisfactory productivity. Acute shortage of feed occurs in the intensive rearing systems partially due to escalating prices of maize and other major feed ingredients, including agro-industrial by-products, thus raising the cost of poultry and pig production. Commercial feed millers supply poultry feed mostly to the medium and small-scale poultry producers while the large-scale producers prepare their own feed. Only a few of the commercial pig farms obtain feed from the commercial feed millers, having switched to on-farm feed production to cut down on feed cost. About 90 percent of feed produced by commercial feed millers is layer feed. Broiler feed is primarily purchased by small-scale backyard poultry producers.

Locally produced feed ingredients, particularly for non-ruminant feed are maize, plant proteins such as soymeal, copra cake, palm kennel cake and cotton seed cake. A major feed processing plant, Ghana Nuts Limited which was incorporated in 2001 as a private limited liability company has an annual capacity of 75,000 metric tonnes of soymeal and 8,500 metric tonnes of cottonseed meal and 36,000 metric tonnes of shea butter per annum (FAO, 2014).

2.8.3 Non-Conventional Livestock Feeds and Feeding

Rabbit production is commonly based on low cost feeding, using locally available feedstuffs as well as kitchen scraps comprising vegetables, plantain peels and tubers in addition to forages. Forages fed are mainly grasses such as Guinea grass (*Panicum maximum)* and elephant grass (*Pennisetum purpurem)* as well as leguminous plants such as *Cajanus cajan* and *Centrosema pubescens*. Other plants such as sweet potato (*Ipomea sbatatas*) leaves and cassava (*Manihote sculenta*) stem and leaves are also used. *Moringa oleifera*leaves and the tender stems have become important as rabbit feed supplements in view of their high nutritional and medicinal properties. Commercial rabbit farms tend to use poultry feed, usually mash, which is then mixed with high fibrous feeds such as wheat bran for feeding rabbits since commercial rabbit feed is not readily available. Agro-industrial by products such as wheat bran, maize bran, groundnut haulms, cowpea haulms and residues of tuber crop processing comprise a major feed source for commercial rabbit farms (Osei *et al*., 2012). The feeding of the grasscutter is similar to that of the rabbit. Grasscutters are fed mainly on forages with variable nutritional concentration. The major forages fed to the grasscutter are *Panicum maximum* and *Pennisetum purpureum*. In commercial production the diet is supplemented with poultry mash, cassava and agro-by products.

2.9 RANGE AND FORAGE RESOURCES

The range and forage resources of the country comprise about 26,000 km^2 or 11 percent of the total land area of unimproved pastures. If the unreserved Savannah woodland area of 63,000 km^2 (i.e., 26 percent of the total land area) is added then the potentially available land area of pasture is 89,000 km^2 or 37 percent of the total land area (SRID, 2014). Additional forage may be provided by portions of the bush fallow. The growth pattern of forages follows the rainfall pattern within the different agro-ecological zones. In the Coastal Savannah area, there is a growing season of seven months and a "non-growing" period of five months while in the Northern Savannah area, the growing season lasts for five months and the "non-growing" period for seven months. The annual total dry matter (DM) yields are 1,965 and 2, 170 kg/ha in the Coastal and Guinea Savannah zones respectively. In both zones, about 80 percent of the yields are achieved within the growing season. The ligneous species within the natural pastures are estimated to give forage DM yield of 700 to 1,000kg/ha/annum. The nutritive value of the natural pasture herbage varies over the year according to the season. Protein content is high (8-12 percent DM) at the beginning of the rains but may drop to as low as 2 to 4 percent DM in the dry season. Phosphorus levels also vary ranging between 0.16 and 0.06 percent DM. Forages from shrubs and fodder trees are very high in protein (12 percent DM) and also in minerals and vitamins. The annual Total Digestible Nutrients, Digestible Protein and Digestible Nitrogen production levels are 5.93, 0.84 and 0.13 million tonnes respectively. The total forage

production in the country is estimated at 10,600,000 tonnes of which some 70 percent emanate from grassland herbage (Agrovets Consultancy, 1989).

Large portions of the natural range and forage resources of the country are often destroyed by bush fire. Bush fires occur mainly as a result of illegal and uncontrolled burning of bush after harvest to remove rank vegetation, or for hunting or just for fun. The incidence of bush fires can be correlated with human presence, as indeed can cattle density, since fires occur most frequently in areas with very high cattle populations. Damage done by fire to the natural pastures is very significant and is a major contributing factor in the decline in the condition of both natural and sown pastures as well as the greatest constraint to the success of oversowing natural pasture with forage legumes. Uncontrolled bush fire destroys standing hay and crop residues lying in the field which would otherwise be used by ruminant livestock. Although there have been efforts at educating the farming communities against bush burning, the impact has not been very effective. This may be due partly to lack of collaboration among the sectors in anti-bush fire campaign and inadequate logistic support for firefighting volunteers (Alhassan *et al.,* 1999).

Another source of damage to the range and forage resources is by transhumant cattle which has been going on for many years and so far no lasting solutions to the problem have been found. Though the negative impact of overgrazing by local herds of cattle may appear small, the influx of transhumant livestock predisposes the country to drastic overgrazing and damage to the soil that would be difficult to reverse. The migrant herdsmen often cause damage to rangeland resources by setting fire in the bush to enhance re-growth of new forage for their cattle. The cattle also constitute a potential means of introducing certain disease pathogens into the indigenous livestock. The Economic Commission of West African States Protocol on Livestock and Transhumance allows herdsmen within the West African sub-region free access to countries in the sub-region with their livestock, which include cattle, provided they have valid health certificates covering their animals and use specific routes or corridors assigned by the state to specific grazing reserves (GSAP, 2011). However, almost all the transhumant cattle entering the country are not covered by health certificates and enter the country through unapproved routes.

2.10 PRODUCTION OF LIVESTOCK/MEAT PRODUCTS

Table 6: Trends in annual production of meat, milk and eggs

Product	Year					
	2008	2009	2010	2011	2012	2013*
Beef	25.4	19.8	20.0	20.6	21.1	21.9
Mutton	15.9	16.4	16.92	17.5	16.4	18.7
Goat	13.7	18.3	19.2	20.3	21.2	22.4
Pig	17.0	17.51	18.0	19.07	20.22	21.4
Poultry	44.5	33.8	37.2	41.0	46.31	51.0
Milk, total	37.2	37.7	38.7	39.0	41.0	39.0
Eggs, total	33.7	36.7	36.7	39.8	40.0	NA
Total product	**187.4**	**180.2**	**186.7**	**197.3**	**206.3**	**135.4**

Value in 1,000 metric tonnes

Source: FAO (2015); *SRID (2014) NA = Not Available

The total domestic meat production (excluding non-conventional livestock) for 2013 was 135,412 metric tonnes, comprising 21,863 metric tonnes beef, 18,703 metric tonnes mutton, 22,429 metric tonnes goat, 21,432 metric tonnes pork and 50,985 metric tonnes poultry (SRID, 2014).

2.11 LIVESTOCK DISEASES

Ghana has 28 schedule livestock diseases. These are Foot and Mouth, African Swine Fever, Anthrax, Dermatophilosis, Rabies, Newcastle, Trypanosomiasis, Gumboro, Rinderpest, Contagious Bovine Pleuropneumonia, Swine Erysipelas, Black Quarters, Glanders, *Peste Des Petits Ruminants*, Contagious Pustular Dermatitis (ORF), Bovine Spongyform Encephalopathy, Haemorrrhagic Septicaemia, Fowl Plague (Highly Pathogenic Avian Influenza), Brucellosis, Lumpy Skin Disease, Mange, Epizootic Lymphangitis, Fowl Typhoid, Pullorium (Bacillary White Diarrhoea), Fowl Pox and African Horse Sickness (VSD, 2014). The major disease occurrences in are Newcastle disease and Gumboro in poultry, *Peste des petits ruminants* in sheep and goats, Bovine tuberculosis, Foot and Mouth, Trypanosomiasis, Dermatophilosis, Anthrax and Contagious bovine pleuropneumonia in cattle, sheep and goats, African Swine Fever in pigs, Rabies in dogs (VSD, 2015). Ghana officially reported HPAI/H5N1 in 2007, which only affected domestic poultry (FAO, 2009). There was another outbreak of HPAI in 2015. Livestock diseases prevalent in the country have serious implication for animal productivity, and safety and quality of livestock products, and many of these diseases have zoonotic implications.

Table 7: Cases of major diseases reported in livestock

Diseases	Species	2010	2011	2012	2014	2014
Foot and mouth disease	Bovine	1071	851	519	281	149
PPR[1]	Caprine/Ovine	355	2272	1439	1084	479
CBPP[2]	Bovine	121	125	136	83	224
African swine fever	Swine	210	567	29	1875	943
Newcastle disease	Avian	45339	56993	17753	11669	28798
Anthrax	Bovine/Caprine/Ovine	13	567	29	1875	943
Rabies	Canine/Feline	40	45	52	51	100
Bovine tuberculosis	Bovine	231	181	177	127	100
Dermatophilosis	Bovine	299	309	121	59	15
Trypanosomiasis	Bovine	78	132	40	52	126
Gumboro	Avian	25381	15868	22998	17378	67728

Source: VSD (2015)[1]*Peste des petits ruminants* [2]Contagious bovine pleuropneumonia

Animal health care facilities are found largely in towns and cities where their major clients, keepers of pets such as dogs and cats, are found. The smallholder livestock farmer largely relies on veterinarians or other animal health workers from the public sector where the fees may be minimal as compared to the private sector practitioners (Akunzule, 2012). In view of the relatively high cost of the orthodox veterinary drugs some smallholder livestock and poultry producers in the rural areas depend on herbal preparations for mortality risk management. Disease and parasitic conditions such as poisoning, anthrax, diarrhoea, fowl lice, fractures, Newcastle, bloat, retained placenta, skin disease, snake bites, wounds, tick infestation, worm infestation and fowl pox are treated by some farmers employing herbal plant parts and other ethno-veterinary preparations (Yidana *et al*., 2008).

3. LIVESTOCK AND ENVIRONMENTAL ISSUES

Climate variability and change constitute a major threat to national development and manifests in increasing levels of desertification in the northern Savannah, and undermines the agriculture potential and the economic viability of the northern ecological zone and its capacity to contribute to national development (NDPC, 2014). Though the livestock sub-sector has assumed an often unrecognized role in global warming, it is one of the most significant contributors to the most serious human-induced greenhouse-gases. Uncontrolled grazing, particularly by transhumant cattle in the northern Savannah zones of the country, reduces the carrying capacity of the rangelands and cause land degradation. A total of 26,307.5 ha of grassland is burned annually in the country (FAO, 2015) emitting large volumes of carbon dioxide into the atmosphere and reducing further the forage available for grazing. Livestock also share water resources with humans in some communities resulting in water scarcity and pollution. The hot environment that pertains in the extreme north of the country may impair livestock production, reproductive performance and health status.

Inadequate and irregular rainfall affects forage and crop production, and non-ruminant production which relies on maize as the major feed ingredient could be affected resulting in its shortage and high cost of feed. Methane gas produced in the digestive system of ruminants and to lesser extent non ruminants as a result of enteric fermentation in Ghana in 2012 amounted to 380,680 gigagrams (FAO, 2015). Furthermore, the practice of burning the hair off carcasses of cattle, sheep and goats with vehicle tyres introduces hydrocarbon into the atmosphere and also contaminate the carcasses. Some livestock farms sited within or near settlements causes nuisance to the communities since the wastage emanating from the farms are not properly managed.

Since 2010 Ghana has undertaken several initiatives towards the development of comprehensive programmes as part of processes leading to enhancing national adaptation to climate change. A national Climate Change Policy has been developed with focus of achieving sustainable socio-economic growth. Various platforms concerned with climatic change discourse and action exist in the country. Notable among them is the Ghana Climatic Change, Agriculture and Food Security Platform being hosted by the Animal Research Institute. The Platform is making efforts aimed at linking research, policy and community people through information sharing and action at all levels for Climate Smart Agriculture and Food Security.

4. IMPORTATION OF LIVESTOCK, LIVESTOCK PRODUCTS AND FEED INGREDDIENTS

4.1 IMPORTATION OF LIVESTOCK AND LIVESTOCK PRODUCTS

Large quantities of meat, meat and dairy products are imported each year to partially meet the demand and supply of animal protein from local sources. A total of 21,131, cattle, 16,728 sheep and 16,953 goats were imported into the country for slaughter in 2013. Importation of frozen meat and livestock products in the same year were bovine (beef and buffalo) 22,155.8 metric tonnes, poultry 60,786.3 metric tonnes, mutton 3,251.1 metric tonnes, pork 2,064.6 metric tonnes, milk and dairy products 38,187.5 metric tonnes. The imports increased 33 percent from 2004 to 2013. Poultry constituted the highest import each year and was 43 percent of the total imports for 2013, followed by dairy products which constituted 30 percent of the imports (SRID, 2014).

Table 8: Imports of Meat and Dairy Products

CATEGORY	2007	2008	2009	2010	2011	2012	2013
BOVINE							
Beef	16,250.4	13,135.1	12,338.4	11,175.9	14,823.2	16,703.5	21,250.8
Buffalo	8,109.0	7,366.8	4,454.5	2,563.9	2,025.0	1,495.0	905.0
Sub-Total	24,359.4	20,501.9	16,792.9	13,739.8	16,848.2	18,198.5	22,155.8
POULTRY							
Chicken	63.276.3	89,889.0	67,068.6	69,810.8	86,372.5	73,788.4	58,999.3
Turkey	3,514.7	3,352.8	1,980.2	1,351.7	1,033.0	1,293.7	1,789.0
Duck	0.0	16.0	30.8	0.0	4.0	78.3	0.0
Sub-Total	66,791.0	93,257.8	69,079.6	71,162.5	87,409.5	75,160.4	60,786.3
OTHER							
Mutton	6,887.1	5,961.3	6,153.1	4,285.2	4,520.0	2,574.8	3,251.1
Pork	10,551.5	5,487.4	3,150.2	2,507	2,507	1,785.8	2,064.6
Processed Meat	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub-Total	17,438.6	11,448.7	9,303.3	7,001.9	7,027.0	4,360.6	5,315.7
MILK	2,659.9	2,718.9	11,406.4	27,323.0	27,619.0	24,727.5	38,187.5
GRAND TOTAL	**111,248.9**	**127,927.3**	**106,582.2**	**119,227.2**	**138,903.7**	**122,445.3**	**126,445.3**

Value expressed in metric tonnes

Source: SRID (2014).

4.2 IMPORTATION OF FEED INGREDIENTS

Feed ingredients such as fish meal, vitamins and mineral supplements and non-nutritive feed additives in the form of enzymes, antibiotics, probiotics as well as premixes, concentrates and complete feeds, soymeal and to a lesser extent, groundnut cake and yellow maize (for poultry feed) are imported. The quantity of livestock feed ingredients imported in 2014 amounted to 53,459.83 metric tonnes comprising 8,475.97 metric tonnes fishmeal, 714.47 metric tonnes premix, 11,818.63 metric tonnes concentrate and 32,450.77 metric tonnes soymeal (APD, 2015). A quantity of 378.05 metric tonnes of crude palm kernel, 70.51 metric tonnes of wheat bran, 107.69 metric tonnes of copra cake and 752.93 metric tonnes of oil cake was exported in 2011(MoTI, 2012)

Table 9: Types and Quantities of Livestock Feed Ingredients Imported, 2010-2014.

Item	Quantity (metric tonnes)				
	2010	2011	2012	2013	2014
Fishmeal	10,638.84	12,624.31	9,719.82	6,255.11	84,75.97
Premix	672.33	1,030.35	1,534.07	1,155.96	714.47
Concentrate	9,058.15	5,516.28	10,488.44	15,494.75	11,818.63
Soya bean	315.95	16,923.59	12,954.14	9,000.07	32,450.77
Groundnut Cake	-	174	-	-	-
Maize	-	-	759.49	-	-
TOTAL	**20,685.27**	**36,267.52**	**35,455.96**	**31,905.89**	**53,459.83**

Source: APD (2015).

5. LIVESTOCK VALUE CHAIN ACTORS

Various actors operate within the country's livestock value chain, each contributing to the improvement of the nation's livestock industry and in particular those of the poultry and pig industries. They are however faced with numerous constraints which must be addressed in order to improve the nation's livestock industry. The actors comprise Capacity Building and Regulatory Services Providers, Development Partners and Non-Governmental Organisations, Investment and Financing Institutions, Input Providers, Farmers, Processors, Market Operators and Consumers.

5.1 CAPACITY BUILDING AND REGULATORY SERVICE PROVIDERS

There are a number of government institutions undertaking research into livestock production and health care, provision of livestock development services such as the Animal Production Directorate, Veterinary Services Directorate and Agricultural Extension Services Directorate of MoFA and those providing quality control and certification of livestock inputs and products and veterinary pharmaceuticals, biologicals and probiotics.

5.1.1 Animal Production Directorate

The functions of the Animal Production Directorate of the MoFA are to (i) ensure effective and efficient implementation of government policies on livestock and poultry, (ii) promote the development of appropriate technologies on management, breeding, nutrition and housing of livestock, (iii) control of animal feed quality both from local and imported sources, (iv) recommend the issuance of permits and waivers for importation of animal production inputs, (v) promote the use of crop residues and agro industrial by-products in feeding livestock and poultry, (vi) promote the improvement of the nutritive quality of rangelands by over- sowing with legumes, and (vii) promote the development of processing and marketing of livestock and poultry products. The Directorate undertakes the production and supply of genetically improved breeding stock for breeders for multiplication and dissemination to other farmers. It also produces for farmers dual-purpose cattle for high milk yield. It also provides subject matter specialists for livestock production (APD, 2014).

5.1.2 Veterinary Services Directorate

The Veterinary Services Directorate of MOFA undertakes the following services: (i) Control and eradication of endemic, epizootic and other diseases through vaccination and quarantine,(ii) Diagnosis and control of diseases,(iii) Control of endo- and ecto-parasites through spraying, dipping and use of anti-helminthes, (iv) Provision of laboratory services; (v) Control of imported livestock, imported meat and meat products and hatching in order to prevent the introduction

of contagious and infectious diseases into the country, (vi) Meat inspection, (vii) Anti-rabies vaccinations of companion animals, (viii) Livestock census, (ix) Laboratory diagnosis of diseases and (x) Training selected farmers (Community Animal Health Workers) to offer primary health care. The capacities of national and ten regional laboratories have been built over the years to diagnose animal disease. The directorate is responsible for issuing import permits for live animals and livestock products (FAO, 2014).

5.1.3 Agricultural Extension Services Directorate

The Directorate of Agricultural Extension Services (DAES) of MoFA oversees agricultural technology diffusion through the management of an extension delivery service and ensures that appropriate technology is transferred to actors in the livestock/meat and milk value chains in the country. The core functions of the directorate are (i) Extension Policy formulation and Planning, (ii) Coordination of Extension activities, (iii) Provision of Technical support to the regions and districts in the planning and implementation of extension activities; (iv) Monitoring and Evaluation of extension activities under MoFA. Ghana's agricultural extension policy is the Unified Extension System geared towards improving extension delivery.

5.1.4 Training and Research Institutions

Formal training in livestock production and health is provided by agricultural colleges run by the Human Resources and Manpower Development Directorate of MoFA and the Universities. The agricultural colleges award diplomas in general agriculture with the exception of the Animal Health and Production College which awards diploma in veterinary science. The universities award diploma and undergraduate degrees in agriculture and veterinary medicine, as well as graduate degrees in animal science. Some Polytechnics and newly established universities undertake training in aspects of animal science.

Table 10: Academic institutions

Institution	Location and Region	Year of Establishment	Current Award
Animal Health and production College	Pong-Tamale, Northern	1960	Diploma(2008)
Damongo Agricultural College	Damango, Northern	1968	Certificate
Kwadaso Agricultural College	Kwadaso, Ashanti	1952	Diploma(2007)
Ejura Agricultural College	Ejura , Ashanti	1963	Certificate
Ohawu Agricultural College	Ohawu, V.R.	1964	Diploma(2007)
University of Ghana	Accra, Greater Accra	1948	Diploma, BSc, BVM, MSc, MPhil, PhD
Kwame Nkrumah University of Science and Technology	Kumasi, Ashanti	1952	BSc, DVM, MSc, MPhil, PhD
Cape Coast University	Cape Coast, Central.	1962	Diploma, BSc, MSc, PhD
University for Development Studies	Tamale, Northern	1992	BSc, MSc
University of Education-Winneba	Mampong, Ashanti	1992	Diploma, BSc
Methodist University College	Wenchi, Ashanti	2000	Diploma, BSc

5.1.5 Quality Control Agencies

There are several regulatory bodies that have the responsibility for ensuring feed quality control and certification. These are:(i) Ghana Standards Authority (GSA) which provides the standard for animal feeds and feed ingredients,(ii) APD which sees to the control of feed quality both from local and imported sources, and collect feed samples from commercial feed millers across the country for analysis(iii) ARI which analyses the feed samples brought to it by APD for the determination of the nutrient quality, (iv) VSD which controls importation of livestock and livestock products (v) Food and Drugs Authority (FDA) sees to food safety issues including the inspection of feed mills and provides certification for the use of feed products and (vi) Environmental Protection Authority (EPA) inspects and assesses the appropriateness of the feed mills and feed additive facilities and provides certification to commence production (Oppong-Anane, 2012).

Food and Drugs Authority: The Food and Drugs Authority (FDA) is mandated to implement Food and Drugs Law of 1992 (PNDCL 305B), which regulates the manufacture, importation, exportation, distribution, use and advertisements of food, drugs, cosmetics, medical devices and household chemicals with respect to ensuring their safety, quality and efficacy. As part of

its mandate, FDA ensures the safety and wholesomeness of foods (including meat and milk and their products) and the safety and efficacy of veterinary drugs. The Animal Products Unit of FDA has the following functions: Regulation of processing, transport and storage of animal products (including eggs and honey); Inspection and audit of meat processing and cold storage facilities; Training of personnel in the processing, handling and storage of animal products; Consumer education on food safety in relation to animal products. The Feed Safety Unit of FDA sees to a strict adherence to Good Feed Manufacturing Practices by industry to assure the safety and quality of animal feed (imported and locally manufactured) and hence the safety of human food of animal origin.

Ghana Standards Authority: The Ghana Standards Authority (FDA) was set up in 1973. The Authority is the custodian of the Weights and Measures Decree. The functions of the authority are to establish and promote standards for the manufacturing of high quality goods and services in Ghana, to improve the levels of standard in industry and commerce, to promote productivity and efficiency in work places, to promote standards in public health, safety and welfare for consumers of various goods and services. The authority also provides formula for commercial feed manufacturing.

5.2 DEVELOPMENT PARTNERS AND NON GOVERNMENTAL ORGANISATIONS

A large number of Non-Governmental Organizations (NGOs) and Development Partners (DP) promote agriculture in the country. However, only a few of them are involved in the livestock sector

5.2.1 Development Partners

The agricultural sector has a long history of support from Development Partners (DPs). The DPs also known as donor communities have played a major role in livestock development in the country through budgetary support and direct interventions. The DPs contribute financial and technical resources to support the achievement of agricultural sector objectives within the parameters of the prevailing policy framework continue to seek new opportunities to harmonise and align their assistance according to the Government's Harmonisation Action Plan. They engage constructively in on-going policy dialogue on all policies relevant to agriculture and related sectors, participate in and support the livestock sector monitoring and evaluation efforts, facilitate government management of financial and technical assistance and participate in and support sector monitoring and evaluation efforts (FASDEP II). The Agricultural Sector Working Group was set up as a policy dialogue platform for engaging Government of Ghana (GoG) and DPs on the delivering of the "Accelerated Agricultural Modernisation' of GSGDA (2010-2013).

5.2.2 Non-Governmental Organisations

The main activities undertaken by the NGOs in the livestock sector are: supply of improved breeding animals to farmers, provision of livestock extension and training for Community Livestock Workers. The major NGO in the livestock sector is Heifer International. However there are others that occasionally promote livestock activities such as ACTION AID-Ghana, World Vision International, TECHNOSERVE, CARE International, Opportunities Industrialisation Centre, Rural Enterprises Project, Presbyterian Church Agricultural Service, IAEP-Bee keeping, Widows and Orphans Movement, ACDEP, and Evangelical Presbyterian Church Rural Development Project. They generally support both men and women while some concentrate on the vulnerable in the society. Heifer International, the only NGO devoted to dairy production imported from Jersey cattle form South African for farmers in 2008.

5.2.3 Ghana Society of Animal Production

The Ghana Society of Animal Production was formed in 1987 as a professional society for animal production scientists with a mission to promote the advancement of animal production in Ghana for the benefit of society. The objectives of the society are to facilitate the acquisition and application of science and technology in animal production, to establish communication links between members involved in research, extension, education, policy formulation and implementation, to influence research, training and national policy in animal production and related industries and to maintain professional standards among members.

5.2.4 Ghana Veterinary Medical Association

The Ghana Veterinary Medical Association was formed in 1974 with the broad objective of helping in the development of a viable and vigorous poultry and livestock industry so as to increase supply of meat and other livestock products, to protect public health by the control of zoonotic diseases and to alleviate pain and suffering in animals. The achievements of the association include the elimination of Rinderpest disease, low prevalence of transmissible diseases and existence of vibrant poultry industry.

5.2.5 Veterinary Council

The Veterinary Council was established in 1993 by an act of parliament to regulate veterinary practice in the country. The Council is responsible for the registration of veterinary surgeons. There were 200 registered veterinarians in the country in 2015, with 60 in active service in MoFA, 22 retired and the rest in other public institutions such as the security agencies and universities, as well as in private practice and veterinary drugs supply companies (Veterinary Council, 2015).

5.2.6 Ghana Cooperative Butchers and Small Scale Livestock Owners Association

The Ghana Cooperative Butchers and Small Scale Livestock Owners Association (GCBSSLOA) is an apex body of independent associations of butchers, livestock owners and dealers, meat cutters and livestock marketers with representation in all the regions of the country and a membership of over 20,000 across the country. The objective of the Ghana Cooperative Butchers and Small Scale Livestock Owners Association) is to seek the welfare of their members in getting fair deals for live animal trade especially in the importation of ruminant livestock from neighbouring countries. The association has also been active in leveraging government for the welfare of transhumant cattle herders who provide significant portion of the meat requirement of the country.

5.3 INVESTMENT AND FINANCING INSTITUTIONS

Financing of the agricultural sector in Ghana had been characterized by a number of constraints during the period 1983-2001. First, financial sector liberalization and monetary policy in general resulted in very high agricultural lending rates of the order of over 45 percent per annum and a crowding out of agriculture in formal domestic credit allocation, precipitating a fall in the share of agriculture during the period. Since the initiation of financial sector liberalization, the formal financial institutions have tended to allocate smaller proportions of domestic credit to agriculture and, indeed, to direct productive activities. These financial institutions have rather tended to invest in treasury bills and other high-interest bearing assets. This has been because of the lower effective return on lending to the agricultural sector. Although access to finance by livestock producers, traders and processors continuous to be difficult, a few banks and financial institutions such as Agriculture Development Bank, Ghana Venture Capital Trust Fund and Micro-Finance and Small Scale Loans Centre have supported the growth of agriculture including livestock in the country (NDCP,2014). Recently the Rural Banks are playing a major role in agricultural financing in the rural communities, however not much goes into the livestock industry. Some of the conditions required by financial institutions in credit provision include membership to a viable association, preferably one being facilitated by an NGO, collateral security, and capacity of holdings, among others.

5.4 INPUT PROVIDERS

5.4.1 Feed Millers

The livestock feed mill industry has been in existence in Ghana since the early sixties. Of the more than twenty three feed mills registered with the Ghana Feed Millers Association most have gone into liquidation. There were eight commercial feed mills in Ghana as at April 2013 located in the Greater-Accra, Eastern and Ashanti Regions. They are Agricare Ltd, Kosher Feeds,

Hiligifred Feed Mills, New Age Feed Ltd., Flour Mills of Ghana Ltd, Alhassan Farms, Central Feed Mill Ltd. and Greater Accra Poultry Farmers Association. The total installed capacity of these feed mills was 51.5 metric tonnes/hour with an annual production potential (assuming they operate at full capacity) of 123,600 metric tonnes/annum (APD, 2013). Most of the feed mills went into liquidation due to low patronage of the commercially produced animal feed due to the folding up of a number of the medium and small scale farms as they could not compete with the low priced imported poultry products as well as the inconsistent and low quality of some of the feed occasioned by the rising cost of the feed ingredients. Because of lack of confidence in the quality and consistency of supply of the feed most of the small-scale poultry farmers and all the pig farmers use self-prepared diets in feeding their animals (Oppong-Anane, 2012). The commercial feed companies produce mainly poultry and pig feeds which are distributed countrywide.

5.4.2 Equipment Manufacturers and Suppliers

There are very few local livestock equipment manufactures producing mainly basic equipment such as poultry drinkers and feeding troughs. Simple incubators are also manufactured for hatching chicks by small scale farmers. Most of the equipment used by the industry is imported by the feed and veterinary pharmaceutical importers.

5.4.3 Veterinary Pharmaceuticals, Biologicals and Probiotics

There are a few importers of veterinary vaccines. However, a number of companies such as Frankatson, Maridav, Reiss and Co. and Multivet import veterinary pharmaceuticals comprising mainly coccidiostats, antibiotics, acaricides and tryponocides, as well as biologicals and feed additives. They companies distribute products to retailers across the country and also operate as retailers. Best Environmental Technologies Limited is the only producer of probiotics in the country.

5.4.4 Hatcheries Operators

There were 8 hatcheries with capacities between 28,500 to 450,000 chicks in 2012. These are Darko Farms, Mfum Farms, Jerusalem Farms, Asayam Farms, Besease Farms, Akropong Farms and Topman Farms. The hatcheries are located mainly in the Ashanti and Greater Accra Regions (Akunzule, 2012). All the hatcheries produced well below their installed capacities on account of low demand for locally produced DOC. 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 locally produced DOC which either have high mortalities from week 1-10 of age or low laying performance of the

birds. On the other hand, most of the imported DOCs have lower mortality rates throughout the life of the bird and good laying performance (FAO, 2014). Imported DOCs and parent stock in 2012 were 1,088,865 broilers, 4,481,602 layers, 9,286 turkeys and 126,288 parent stock. There are a number of individuals and associations owing incubators of various capacities, provided by NGOs and SADA, in the three northern Regions that hatch guinea fowl keets for farmers within the locality. The day-old chicks produced by the local hatcheries do not meet the demand of poultry farmers and they have to resort to procuring imported starter chicks.

5.5 LIVESTOCK PRODUCERS

On the basis of objective of livestock keeping and level of investment and the livelihood strategies they adopt, the livestock producers in the country can be grouped into three categories as Commercial, Multiple Role and Semi-Commercial (dual-purpose) (LDPS, 2004). They could also be grouped as Small Scale, Medium Scale, Large (commercial) Scale, Livestock only and Livestock cum Crops (APD, 2003). The main objective of small scale livestock producers is for subsistence and for satisfying household consumption. The medium and large scale livestock producers are commercial enterprises with the motive of producing for the general market and improving ones financial status.

5.5.1 Commercial Livestock Producers

The commercial livestock producers can be put into three categories: those who operate small scale enterprises and those who operate medium and large industrial enterprises. The large commercial scale producers are relatively small in number. Both groups of producers are found mainly in the peri-urban and urban areas.

5.5.2 Multiple-Role Livestock Producers

There are two categories of multiple-role livestock producers; the poor and non-poor. The poor multiple-role producers have mainly motives that are not profit oriented. These include the use livestock as a form of savings and credit, widening asset base, providing security/reducing vulnerability, building social capital, financing planned expenditure, supplementing food (meat, eggs and milk) and providing draught power. This group of livestock producers tends to be in the rural areas and to them livestock keeping constitutes an integral part or their wider livelihood strategy. They depend on their wealth status and keep varying sizes and combination of species (LDPS, 2004).

5.5.3 Poor-Multiple Role Livestock Producers

The Poor-Multiple Role Livestock Producers combine both profit and livelihood roles and operate their enterprises mainly in the rural areas keeping mixed animals to generate household incomes (LDPS, 2004).

5.6 LIVESTOCK SLAUGHTER

There are a few dedicated abattoirs and slaughter houses for the slaughtering of cattle, sheep, goats and pigs in which the meat is inspected by the VSD and the Environmental Health Unit of the Ministry of Local Government and Rural Development. Poultry however, are not slaughtered nor inspected in abattoirs since slaughtering of live birds mainly takes place at the farm level. Slaughter houses with appropriate facilities are not available in the rural areas. However, each of the 138 administrative district capitals has basic facilities (slaughter houses or slab) for slaughtering. The country has two modern abattoirs located at Tema and Kumasi with annual slaughter capacities of 2,000 and 6,500 cattle respectively. They are, however, which are currently underutilised. There is also a private abattoir in Accra with modern slaughtering and primary processing (FAO, 2014). A total of 200,819 cattle, 68,344 sheep, 118,632 goats, 24,062 pigs and 2,824 other animals were slaughtered for meat in 2013 (SRID, 2014). However, since the available slaughter data does not take into account the large number of slaughter that goes on informally at homes throughout the country without meat inspection, these figures might be rather low.

5.7 MEAT AND MILK PROCESSORS

5.7.1 Meat Processing

The growth of meat processing in the country has been very slow as a result of the difficulty of getting raw materials, mainly in the form of meat and chicken, as well as the high cost of production. The industry is dominated by a few small scale operators using basic and mostly outdated equipment which affect efficiency and quality of products. Meat processing is rudimentary and there are only a few large scale meat processing plants in the country, mostly in Accra and Kumasi. The two large scale chicken processors, namely Darko Farms and Asamoah and Yamoah Farms all located in the Ashanti region with a combined processing capacity of 15,000 birds per day. Johnny Food and Meat Complex and Santinos commenced activities recently. The processing activities are concentrated on cutting and packaging fresh local poultry, beef and pork, and making sausages. A few large scale farmers have the capacity to cut up birds into portions and package them as economy pack. Some poultry producers attempt to process their produce (especially broilers) although this does not usually go beyond dressing the birds and turning them out as whole dressed birds (Ameleke *et al*., 2003). The main

constrain to production by the factories are occasional shortage of livestock and poultry, high cost of inputs, high cost of maintenance, breaking down of processing equipment, power fluctuations and outrage and unskilled labour.

5.7.2 Milk Processing

The dairy industry in Ghana is characterized by near total dependence on bulk milk and dairy imports which have been increasing annually since 2006. A total of 83 companies imported milk and dairy products from Belgium, Bulgaria, Argentina, Bulgaria, Greece, Hong kong, China, Taiwan, Denmark, Korea Republic, New Zealand, France, Germany, Italy, United Kingdom, China, Canada, United States, Lebanon, Netherlands, India, Morocco, Ireland and from 2011 to 2013 (MoTI, 2014). There are a few large milk factories in Ghana manufacturing, recombining, reconstituting milk powder and re-packing imported milk products based in Accra and Kumasi. However majority of milk processors in the country, estimated at about 500, produce mainly yoghurt from imported milk powder and locally produced milk. Artisanal milk products, 'wagashi' (cheese), 'mayishanu' (butter) and 'madala' (yoghurt) are normally prepared on a small scale by the households of the herdsmen for limited customers or on a larger scale when there is no market for fresh milk (Apori *et al.*, 2012).

5.8 MARKETING OF LIVESTOCK

Trade within the West Africa sub-region is dominated by live animals rather than processed products. Livestock traded include animals of all species and breeds cattle, sheep, goats, pigs and poultry. Most of the cattle traded in the country originate from northern West African countries such as Burkina Faso, Mali and Niger. The imported ruminants ranged from 8,891 to 21,131 cattle, 6,594 to 16,738 sheep and 4,498 to 16,953 goats from 2007 to 2013. A total of 16,953 ruminant livestock was imported in 2013 (VSD, 2014). Importation in 2011 reduced as a result of the political crises in Côte d'Ivoire. Traders also obtain supplies locally from farm gates and primary collection markets. Itinerant traders within the country also buy cattle and small ruminants and either send them to the village/town market for retailing or sell to other traders who buy and transport them to the urban or coastal markets. The large amount of capital required for such transaction and transportation of the animals constitutes a relatively big capital outlay which restricts competition in the livestock import trade (Oppong-Anane, 2012).

Table 11: Live Animal Imports

Year	Cattle	Sheep	Goats
2007	8,891	6,594	4,498
2008	1,081	1,401	1,514
2009	10,119	4,987	6,098
2010	1,1389	4,843	3,711
2011	9,384	2,835	2,495
2012	23,622	9,840	10,008
2013	21,131	16,738	16,953

Source: VSD (2014)

There are a number of poultry traders operating in the country though they are not well organized. Some traders go to farms and purchase animals especially spent layers in bulk for further retailing. They usually sell these birds in the open market. Pig traders have well established market channels and outlets with end consumers. They usually buy from farmers without the use market weight to determine prices but rather bunch up whole herds and bargain. Wholesalers of meat are normally butchers as well as processors and importers who operate cold stores and deal in dressed and cut up portions of beef, mutton, goat meat, pork and chicken. Retailers of meat involve butchers and farmer distribution outlets mainly for dressed and portioned birds. Other retailers are live bird markets, table top sellers and small cold store operators (Oppong-Anane, 2012). Milk and dairy products are sold by supermarkets, smallholder retailers in market places, small holder traders, fuel stations, mobile vendors and at the markets (Apori *et al*., 2012).

5.9 TRANSPORTATION OF LIVESTOCK AND LIVESTOCK PRODUCTS

Transportation of live animals is generally poor and includes the use of bicycles, motorcycles, pick-ups and other commercial vehicles. The vehicles are without proper tailgate or facilities for partitioning. Meat is also poorly transported in open taxis, pick-ups and other commercial vehicles. There are however a few companies like Johnny Food and Meat Complex which use meat vans for the delivery of meat. Transportation of animals also goes with over loading of animals, high transport charges and unauthorised tariffs en route and high risk of mortality. There are no refrigerated vehicles to transport fresh meat with concomitant consequences to meat quality.

5.10 CONSUMERS

There are two main consumers of poultry, meat and livestock products, industrial and domestic consumers. The industrial consumers include catering concerns such as fast-food sellers, hotels, and restaurants located mainly in the urban areas. They normally purchase meat and processed meat in the form of whole carcasses or portions and further process these in cooked forms such as fried and grilled meat. They may also turn the meat into other products such as frankfurters and sausages. Household consumers purchase meat and poultry in all forms, as live animals and birds, dressed whole animals and chicken, portions of meat and chicken. By far the most important forms in which chicken is purchased is by household consumers are live birds and portions. Beef, mutton, goat and pork are procured from butcheries and shops in portions (Ameleke *et al*., 2003). Imported milk and dairy products are consumed by majority of the population, while milk from domestic sources is usually consumed by the Fulani stockman and his household.

6. PAST AND PRESENT LIVESTOCK SECTOR DEVELOPMENT POLICIES

6.1 PAST LIVESTOCK SECTOR POLICIES

Over the years, a number of strategic policy measures have been put in place to improve the performance of the livestock sector. The policy instruments include the Seven Years Development Plan of 1st Republic, Accelerated Agriculture Development Strategy (1996), Medium Term Agricultural Development Plan (MTADP), METASIP 1991-2000, the implementation plan for MTADP, Ghana Poverty Reduction Strategy (GPRS I), Food and Agriculture Sector Development Policy 2002 (FASDEP I) and Ghana Shared Growth and Development Agenda I (GSGDA 2010-2013). Some of these policies have been implemented in projects such as the National Livestock Services Project, Agriculture Sub Sector Investment Project, Livestock Development Project, Afram Plains District Agriculture Development Project and West Africa Agricultural Productivity Project. Also several studies addressing the development of the livestock sector have been carried out since 1995. The studies include: (i) National Animal Breeding Plans for the Republic of Ghana, 1995, (ii) State of Ghana's Animal Genetic Resources 2003, (iii) The role of Livestock in Rural Livelihoods in Ghana 2002, (iv) Ghana Livestock Growth Trend 2008, (v) Pro-Poor Risk HPAI reduction strategies in Ghana, 2008, (vi) Poultry Value Chain, 2008, (vii) OIE PVS Evaluation Report of the Veterinary Services of Ghana 2008, (viii), PVS Gap Analysis Report Ghana, 2011, (ix) Livestock Sector Review 2010 and 2012, (x) Review of the livestock/meat and milk value chains and policy influencing them in Ghana, 2013.

6.2 PRESENT LIVESTOCK SECTOR DEVELOPMENT POLICIES

The policy instrument that is presently operational to promote the livestock sector performance is Ghana Shared Growth and Development Agenda II (GSGDA II 2014 – 2017). LSDPS and FASDEP II programmes ended in 2015. The goals LSDPS and FASDEP II were to (i) increase the supply of meat, animal and dairy products from domestic production at the current aggregate level of 30 percent to 80 percent, and (ii) contribute to the reduction of the incidence of poverty among farmers from 59 percent to 30 percent by the year 2015. None of these goals were likely to have been fully achieved within the programme period. This necessitated the ongoing review of the FASDEP II and METASIP. The thrust of the review was based on findings during the mid-term review of the METASIP in 2014 which identified the need to enhance prioritization, efficiency and effectiveness of interventions, harmonize mechanisms of interventions; mainstream use of a value chain approaches; enhance institutional capacity development; increase financing of rural infrastructure; improve coordination and governance, among others.There is currently an effort to enhance resource mobilization including an advocacy for increased public sector resources (national budget and external partners) and

leveraging of private sector resources and the need to improve access to finance from commercial banks to support implementation of the METASIP.

Strategies for Input Supply: Waiver of duties on imported agricultural production inputs (GSGDA); Improve access to quality feed and water (FASDEP II; LDPS); Encourage establishment and management of grazing fields and stock water (LDPS); Support private sector process, package and distribute crop residue and industrial by-products as feed (LDPS); Promote domestic supply of quality day old chicks (LDPS).

Strategies for Production and Health include: Encourage improvement of indigenous breeds (FASDEP II; LDPS; Develop commercial poultry as the priority for improving meat supply in the short term, while measures are implemented to transform smallholder production into profitable enterprises (FASDEP II); Create awareness on intensive urban and per-urban livestock farming (FASDEP); Build operational and management capacity of farmers (LDPS); Improve the dispensation of animal health services (LDPS; GSGDA II; FASDEP II); Institute punishment for illegal slaughtering and processing of animals (LDPS);Strengthen and enforce quarantine regulation on livestock movement (LDPS); Reduce livestock keeper/extension ratio (LDPS).

Strategies for Processing, Marketing and Trading include: Design appropriate interventions to address processing and marketing of livestock (LDPS; FASDEP II); Encourage private sector to take up milk production ventures (LDPS); Educate producers, collectors and vendors on hygienic milk handling (LDPS); Enforce the use of approved vehicles for movement of livestock and meat (LDPS); Advocate fair trade practices (LDPS; FASDP II); Impose tariffs on imported meat (LDPS).

Strategies for Research and Statistics include: Involve all livestock keepers in priority setting and research agenda formulation (LDPS); Research-extension committees to put greater emphasis on extension of livestock technologies (LDPS); Strengthen Research-Extension-Farmer Linkages (GSGDA II); Strengthen coordination and collaboration between research institutions(GSGDA II); Reserve portion of proposed research fund for livestock research (LDPS); Organise periodic livestock census to provide reliable data for planning (LDPS); Facilitate the development of livestock statistics and monitoring system (FASDEP II).

Strategies for Cross-Cutting and Cross-Sectoral are: Improve environmental management, including climate change and biodiversity (GSGDA II); Initiate ECOWAS control programme of polythene bags menace (LDPS); Improve access to operators of technology (GSGDA; FASDEP); Improve access to appropriate financial instruments (LDPS; GSGDA II; FASDEP II); Establish a Livestock Development Council (LDPS).

Whereas most of the strategies in the various policy instruments were initiated and some successes achieved, majority of the strategies were not implemented in full. Since the policies, LDPS and FASDEP II ended in 2015 and GSGDA II will end in 2017, coming in force Ghana Livestock Policy Development Strategy will ensure continuous implementation of the uncompleted strategies as well as implementation of new strategies to modernise the livestock sector to achieve food and nutritional security and employment generation.

7. GHANA LIVESTOCK DEVELOPMENT POLICY AND STRATEGY

7.1 RATIONALE

A number of gaps have been identified in the previous and present livestock policies and strategies, for instance OIE PVS Gap Analysis Report for Ghana (OIE, 2011) identified gaps in the Livestock Development Policy and Strategy for 2005 to 2015, including under-resourced laboratories, outdated existing legal and regulatory frameworks that fail to address key areas as meat inspection, lack of animal identification system, ability to control the illegal entry of animals from neighbouring countries, weaknesses in the mechanisms for the registration of veterinary drugs and related biological and lack of control of veterinary product sales including powerful antibiotics and hormones which could create human health, animal health and environmental risks. A review of the LDPS and enacting of new legislation on animal health and disease control in accordance with OIE standards and a number of recommendations, including fostering better working links between Animal Health and Animal Production to create effective collaboration in delivering livestock technical services, reviewing and processing the enactment of the draft meat regulations, provision of measures to remove the weaknesses in current mechanisms for the registration of veterinary drugs and related biologicals, control of veterinary product sales, enactment of animal welfare legislation and provision of animal identification and traceability systems to improve the competency of VSD to prevent and control animal diseases were made. As a result a draft bill to improve the performance of the livestock sector has been produced.

The LDPS has largely been ineffective as a result of non-implementation and inadequate implementation of various strategies as well as lack of effective monitoring and evaluation mechanism. The livestock sector continuous to be faced by challenges, such as increased incidence of emerging and re-emerging animal diseases, vulnerability to exotic diseases, inadequate supply of vaccines and drugs, shortage of feed and fodder, lack of improved breeding stock, inadequate infrastructure, inadequate financing, research and technology dissemination, overgrazing by local and transhumant cattleand the need to promote domestic livestock production for import-substitution, especially in the poultry sector. Also an effective private sector participation in animal health delivery systems, production, capacity building, value addition, and marketing of livestock and livestock products that is central to the commercialization of the livestock sector has not been realised. Many of these challenges would require appropriate policies and strategies to address them. There is therefore a need for new comprehensive policies and strategies that will allow the nation’s livestock resources and the various livestock value chain actors to express their potentials to achieve effective development of the sector by 2025. The Ghana Livestock Development Policy and Strategy (GLDPS) would provide a roadmap for the effective implementation of livestock policies and strategies that would ensure sustainable and faster growth of the livestock sector, promote and

develop poultry and livestock production for food and nutrition security, create employment opportunities and income generation through research, effective technical support, extension services, investment and financing, agri-business and industry, whilst ensuring that gender and environmental issues are adequately addressed. GLDPS is a prerequisite to the enactment of a comprehensive Veterinary and Livestock Improvement Bill that will ensure appropriate synergies between animal health and production and lead to productive, profitable and sustainable livestock industry. The veterinary health component of the legislation will incorporate standards prescribed under the OIE including prevention and control of notifiable diseases, issue of permits and international veterinary certificates for import, export and transit of animals and animal products and veterinary pharmaceuticals, establishment of quarantine stations, regulation of slaughter houses and animal welfare. It will also prescribe the establishment of Ghana Veterinary Service to replace the Veterinary Services Directorate of MoFA with appropriate structures aimed at achieving efficient livestock disease prevention and control in the country. The animal production component will include registration of establishments that keep animals, animal identification and traceability, animal genetic resources, sustainable development of the livestock sector, collection and sale of semen and ova, hatcheries and animal feeds. To succeed, the strategies will have to undergo stringent implementation and monitoring.

7.2 FORMULATION PROCESS

The consultant undertook an in depth audit of relevant policy documents on the national livestock sector in order to put in perspective the past and present situation of the country's livestock sector. Stakeholders in the livestock sector including MDAs, DPs, Training and Research Institutions, Private Sector Organizations, Civil Society and Non-Governmental Organizations, Parliamentary Select Committee on Agriculture and representatives of different Stakeholder Groups in the livestock value chain including livestock producers, traders, and consumers were identified. Representatives of most of the stakeholder groups were invited to the launching of the formulation of the GLDPS and a national consultative workshop. Five sector working groups, cattle, small ruminants, pigs, poultry and non-conventional livestock production, were established to deliberate and produce information on constraints and challenges within the respective production systems and formulate strategies to rectify the identified problems aimed at achieving a vibrant and sustainable livestock industry. Cross-cutting and cross sectoral issues were also tackled. The workshop was followed by additional stakeholder consultations by the consultant with some primary producers, input suppliers and training institutions that were not presented at the national consultative workshop. The outcome of the workshop and the consultations formed the basis for formulating a draft document. The draft GLDPS document was circulated to stakeholders for their comments after which two validation workshops were held to present a second draft document for discussion.

The reviews, comments and discussions provided additional inputs into the formulation of the vision policies and strategies for the GLDPS.

7.3 VISION, GOALS AND OBJECTIVES

7.3.1 Vision

The vision of the livestock sector is:

> A modernized, competitive and sustainable livestock industry culminating in a structurally transformed national economy and evident in food and nutritional security, employment generation, equity and poverty reductionwhile preserving the environment.

7.3.2 Goals

The goals of the GLDPS are:

1. To enhance the supply of meat, livestock and dairy products from domestic sources, innovation, generation and utilization, capacity and entrepreneurship skills of livestock value chain actors.
2. To enhance access to livestock markets, services and value addition.

These goals are consistent with those of the Livestock Development Strategy for Africa (AUC, 2014).

7.3.3 Objectives

The overall objective of the GLDPS is to develop a competitive and more efficient livestock industry that increases domestic production, reduces importation of meat and livestock products and contributes to the improvement of the livelihoods of all livestock value chain actors and the national economy while protecting the environment, preserving livestock biodiversity and ensuring bio-security.

The specific objectives are:

1. To support the existing livestock production systems for improving production, productivity and income of livestock producers, most of which are women and small scale farmers.
2. To strengthen overall animal health cover through early warning system, prevention, control and eradication of disease.

3. To support training, research and development initiatives on issues pertaining to livestock sector for improving livestock production, productivity and health as well as the profitability of the entire livestock value chain.
4. To improve the production and productivity of livestock by promoting and disseminating technologies developed by the research system.
5. To promote conservation and genetic improvement of indigenous breeds of livestock.
6. To increase availability of feed and fodder resources to meet the requirement of various species of livestock to attain optimal productivity.
7. To encourage value addition of livestock products.
8. To create an enabling environment to attract investment and finance for improving livestock infrastructure, production, processing, value addition and marketing.

7. 4 POLICY ISSUES AND STRATEGIES FOR LIVESTOCK SECTOR DEVELOPMENT

The proposed strategies for GLDPS are aimed at poverty alleviation and improved sustainable and environmentally friendly livestock production and productivity, improving general animal health and delivery systems, effective control of livestock diseases, marketing, trade and value addition and strengthening of institutional and human resources capacities of the livestock sector. Since the issues of concern in the livestock sector are interdependent, the implementation of the strategies should address all of them holistically for the interventions to be effective. The implementation of the strategies is time bound. The period of implementations are indicated as Short Term (1 to 3 years), Medium Term (4 to 7 years) and Long Term (1 to 10 years). The GLDPS is to provide guidelines for the drafting of the Veterinary and Livestock Improvement bill.

The issues to be addressed are grouped into nine strategic intervention areas as follows:

1. Livestock Input Supply
2. Livestock Production
3. Livestock Health and Welfare
4. Marketing, Demand, Value Addition and Import Substitution
5. Livestock Development Services and Capacity Building
6. Investments and Financing of Livestock Sector
7. Governance, Regulatory and Institutional Arrangements
8. Cross Cutting and Cross-Sectorial Issues

7.4.1 Intervention Area 1: Livestock Input Supply

The major inputs into livestock production are breeding stock including starter chicks, feed, equipment and veterinary pharmaceuticals, biologicals and probiotics. The installed capacities of the few hatcheries in the country producing day old chicks are underutilised and their outputs are inadequate to meet demand of poultry producers. This has led to the importation of large quantities of the day old chicks and parent stock, some of which are of poor quality. The activities of the hatcheries are not well regulated and monitored, and routine vaccinations aimed at preventing some scheduled diseases are sometimes not done. These result in the production of low quality chicks susceptible to diseases and of low productivity thus impacting negatively on the incomes of poultry producers, investment and employment opportunities and national nutritional and food security. Other than APD, ARI and the university farms that produce limited numbers of breeding stock, there are no commercial farms producing breeding cattle, sheep, goats and pigs in the country.

The quality of some commercial feed is poor and do not meet the minimum standards for efficient production of poultry and livestock. The cost of manufactured feeds is often high as a result of the high cost of imported feed ingredients and seasonal availability of maize, which is the major ingredient of livestock feed. These negatively affect the productivity of the animals and profit margins of poultry and pig producers. Commercial feed millers should be encouraged to use lesser known and less expensive feed ingredients such as cassava as partial replacement for maize in livestock feed. Though the importance of non-conventional livestock is increasing, the feed mills do not usually produce specific feed to meet the nutritional requirement of these animals.

Veterinary pharmaceuticals, biologicals and probiotics are also major inputs into health care of livestock and in particular poultry. The cost of some drugs is beyond the means of most small scale farmers and the efficacy is sometimes poor. None of the pharmaceutical firms in the country produce vaccines and drugs for livestock. All livestock vaccines are therefore imported with the exception of Newcastle and anthrax vaccines that are manufactured locally by the VSD Laboratories at Pong Tamale and Accra.

Issues

1. Inadequate supply of genetically Improved breeds;
2. Inadequate adherence to hatchery regulation and operations;
3. Low quality and high cost of feed; and
4. Inadequate and low quality of veterinary pharmaceuticals.

Issue 1: Inadequate supply of Genetically Improved Breeds

Policy Guidelines

1. Encourage breeding stock improvement;
2. Provide adequate breeding stock to farmers;
3. Encourage training of livestock breeders; and
4. Encourage the establishment of livestock breeding centres.

Strategies

1. Provide attractive packages to encourage graduate students in breeding (Whole Period);
2. Resource national livestock breeding stations to carry out breeding programs (Short Term);
3. Facilitate private participation and investment into livestock breeding (Whole period);
4. Establish modern artificial insemination centres to produce and process quality semen for breed improvement and increase coverage (Medium term);
5. Support graduates in non-conventional livestock production (Whole Period);
6. Establish linkages with other breeding centres to share information on non-conventional livestock production (Short Period); and
7. Strengthen existing MoFA breeding centres to produce more breeding stock (Short Term).

Outputs

1. Attractive packages provided to encourage graduate students in breeding;
2. National breeding stations resourced to carry out breeding programs;
3. Private sector participation and investment into livestock breeding facilitated;
4. Modern artificial insemination centres to produce and process quality semen established and coverage increased;
5. Graduates in non-conventional livestock production supported;
6. Linkages with breeding centres to share information on non-conventional livestock production established;
7. Heavy and meaty breeds of non-conventional livestock produced; and
8. Existing MoFA breeding centres strengthened to produce more breeding livestock to produce more breeding stock.

Responsibility

MoFA (APD), Universities, ARI, NGOs and Private Sector.

Issue 2: Hatchery Regulations and Operations

Policy Guideline

1. Certify hatcheries, develop protocols and regulate hatchery operations.

Strategies

1. Enact Hatchery Law (Short Term);
2. Monitor the enforcement of hatchery policy (Whole Period);
3. Register hatcheries and take inventory of their capacities (Whole Period);
4. Create awareness of hatchery operators on hatchery standards and regulations (Whole Period); and
5. Enforce appropriate vaccinations of poultry against scheduled diseases (Whole Period).

Outputs

1. Hatchery Law enacted by parliament;
2. Hatchery Law enforced;
3. Hatcheries registered and inventory of capacities taken;
4. Awareness of hatchery operators on hatchery standards and regulations created; and
5. Appropriate vaccinations of poultry enforced.

Responsibility

MoFA (VSD and APD), FDA,MMDAs

Issue 3: Low Quality and High Cost of Feed

Policy Guidelines

1. Develop capacity for cost effective feed formulation and production;
2. Encourage local production of good quality feed;
3. Encourage provision of appropriate feed for non-conventional livestock; and
4. Encourage appropriate storage of feed and feed ingredients.

Strategies

1. Develop protocols for the operations of feed mills (Short term);
2. Create awareness and train feed mill operators on feed standards (Whole Period);
3. Undertake feed quality control and certification of feed mills (Whole Period);
4. Build capacity of feed mill operators in proper feed formulation and production (Whole Period);

5. Facilitate private sector investment in feed production (Whole Period);
6. Develop simple feed formulations based on locally available feed ingredients for all livestock species (Short Term); and
7. Construct new and maintain existing community based silos for feed ingredients (grains) (Whole Period).

Outputs

1. Protocols for operations of feed mills developed
2. Feed mill operators trained on feed standards
3. Feed quality control and certification of feed mills enforced
4. Cost effective and high quality feeds formulated and produced
5. Capacity of feed mill operators built
6. Simple feed formulation for all livestock species based on local ingredients developed and disseminated to feed millers and livestock producers
7. Community – based silos for feed ingredients (grains) constructed and maintained

Responsibility

MoFA (APD, National Buffer Stock Company), FDA, CSIR-Animal Research Institute, Universities, and Private Sector

Issue 4: Inadequate and Low Quality of Veterinary Pharmaceuticals, Biologicals and Probiotics

Policy Guidelines

1. Promote local capacity for the production of veterinary pharmaceuticals, biologicals and probiotics; and
2. Regulate manufacturing, importation and distribution of veterinary pharmaceuticals, biologicals and probiotics.
3. Strategies
4. Provide education on prudent and proper use of veterinary pharmaceuticals, biologicals and probiotics (Whole Period);
5. Conduct routine efficacy test on veterinary pharmaceuticals, biologicals and probiotics (Whole Period);
6. Develop and enforce regulations on veterinary pharmaceuticals, biologicals and probiotics (Whole Period);
7. Increase local production of pharmaceuticals, biologicals and probiotics (Short Term);
8. Promote the use of probiotics for preventing incidence of bacteria based diseases and enhancement of the immune system of livestock (Whole Period);

9. Regulate practices of veterinary pharmaceutical firms (Whole Period);
10. Enforce quality control measures on locally produced and imported veterinary pharmaceuticals, biologicals and probiotics (Whole Term). and
11. Enforce registration of producers, importers, distributors and retailers of veterinary pharmaceuticals, biologicals and probiotics (Whole Period).

Outputs

1. Education on prudent and proper use of veterinary pharmaceuticals, biologicals and probiotics provided;
2. Routine efficacy test on veterinary pharmaceuticals, biologicals and probiotics conducted;
3. Regulation on production, importation and sale of veterinary pharmaceuticals, biologicals and probiotics developed and enforced;
4. The capacity of pharmaceutical companies and VSD laboratories developed for local production of specified veterinary pharmaceuticals, biologicals and probiotics;
5. The use of probiotics for preventing incidence of bacteria based diseases and enhancement of the immune system of livestock encouraged;
6. Production of specified pharmaceuticals, biologicals and probiotics by local manufacturers regulated;
7. Quality control measures of locally produced and imported veterinary pharmaceuticals, biologicals and probiotics enforced; and
8. Importers of veterinary pharmaceutical, producers, importers, distributors and retailers registered.

Responsibility

MoFA (VSD), FDA, GSA, MMDAs, Private Sector, Research Institutions and Universities.

7.4.2 Intervention Area 2: Animal Production

The low production and reproductive performance of indigenous breeds of livestock coupled with limited supply of improved livestock to farmers has led to poor production and productivity of the livestock industry. This affects the nation's ability to provide sufficient and affordable quantities of quality meat and livestock products to meet demand. The situation has also been exacerbated by existing extensive, low input and output production systems; as well as the poor husbandry practices undertaken by most livestock farmers. These conditions impact negatively on the incomes of livestock producers, investment and employment opportunities and national food security. The situation can be improved through various measures including production of improved breeds and appropriate stock managing practices. The factors that contribute to low livestock productivity include the following:

Issues

1. Erosion of genetic material of indigenous breeds;
2. Low production of non-conventional livestock;
3. Inadequate supply of livestock feed and stock water;
4. Inappropriate livestock housing structures;
5. Poor husbandry practices;
6. Non-registration of establishments that keep livestock;
7. Non-existence of animal identification and traceability systems; and
8. Inadequate artificial insemination of animals.

Issue 1: Erosion of genetic materials of indigenous breeds

Policy Guideline

Promote conservation of genetic material of indigenous breeds.

Strategy

1. Conserve genetic indigenous material through the establishment of gene banks (Whole Period);
2. Improve the existing livestock breeding stations; and
3. Establish open nucleus breeding schemes.

Output

1. Gene banks established for the conservation of genetic material of indigenous breeds;
2. Existing livestock breeding stations improved; and
3. Open nucleus breeding schemes established.

Responsibility

CSIR-ARI, Tertiary Academic Institutions, MoFA (APD), Livestock Breeders, FBOs

Issue 2: Low Production of Non-conventional Livestock

Policy Guidelines

1. Promote production of non-conventional livestock; and
2. Undertake research on production of non-conventional livestock.

Strategies

1. Identify and disseminate appropriate and affordable technologies for increased production of non-conventional livestock (Short Term);
2. Facilitate research into production of non-conventional livestock; and
3. Promote consumption of non-conventional livestock meat (Whole Period).

Outputs

1. Appropriate and affordable technologies for increased production of non-conventional livestock identified and disseminated to producers;
2. Research into production of non-conventional livestock facilitated; and
3. Consumption of non-conventional livestock meat promoted to entice increased production.

Responsibility

MoFA (APD, VSD, DAES, WIAD), MMDAs, FBOs, NGOs , Private Sector.

Issue 3: Inadequate supply of Livestock Feed and Stock Water

Policy Guidelines

1. Encourage establishment of grazing lands and provision of good quality and affordable livestock feed;
2. Promote zoning of land for livestock production; and
3. Increase stock water availability.

Strategies

1. Develop alternative, sustainable and affordable feed resource for livestock (Short Term);
2. Create and develop grazing reserves for ruminant livestock;
3. Facilitate zoning of land for livestock production particularly in peri-urban areas;
4. Facilitate private sector investment in feed production (Whole Period); and
5. Develop and increase stock water availability (Whole Period).

Outputs

1. Alternative, sustainable and affordable feed resources for livestock developed;
2. Grazing reserves for ruminant livestock created and developed;
3. Land for livestock production particularly in peri-urban areas zoned;
4. Private sector to investment in feed production facilitated; and
5. Increase stock water availability increased.

Responsibility

MoFA, MLNR (Lands Commission), MMDAs, Private Sector, Traditional Authorities, and NGOs.

Issue 4: Inappropriate Livestock Housing Structures

Policy Guideline

1. Encourage the use of appropriate livestock housing structures.

Strategies

1. Design and/or utilise appropriate prototype livestock housing structures using affordable local materials (Short term); and
2. Sensitise farmers on the need to use appropriate housing for livestock (Whole Period).

Outputs

1. Appropriate prototype livestock housing structures using affordable local materials designed; and
2. Farmers sensitised on the need to build appropriate housing for livestock.

Responsibility

MoFA (APD, DAES), MMDAs, FBOs, Private Sector.

Issue 5: Poor Livestock Husbandry Practices

Policy Guideline

1. Promote improved livestock husbandry practices.

Strategies

1. Identify and disseminate appropriate livestock husbandry practices (Short Term);
2. Build capacity of livestock farmer based organisations and farmers in livestock husbandry practices (Whole Period); and
3. Increase the extension agent/farmer ratio to improve farmer access to appropriate livestock husbandry practices.

Outputs

1. Appropriate livestock husbandry practices identified and disseminated;
2. Capacity of livestock farmer based organisations and farmers built in livestock husbandry practices; and
3. Extension agent/farmer ratio increased to improve farmer access to appropriate livestock husbandry practices.

Responsibility

MoFA (APD, DAES), MMDAs, NGOs, Private Sector, Universities, Research institutions.

Issue 6: Registration of establishments that keep livestock

Policy Guidelines

1. Promote registration of establishments that keep livestock on a temporary or a permanent basis.

Strategies

1. Facilitate formation of livestock farmer based organisations (Whole Period); and
2. Identify and register of livestock keepers (Whole Period).

Outputs

1. Livestock farmer based organisations formed; and
2. Livestock keepers identified and registered.

Responsibility

MoFA (APD, VSD, DAES), MMDAs, NGOs, Farmer Based Organisations.

Issue 7: Animal identification and traceability systems

Policy Guideline

1. Promote identification and traceability of livestock.

Strategies

1. Identify and register livestock keepers (Whole Period); and
2. Enforce the establishment and implementation of animal identification and traceability systems for selected species (Whole Period).

Outputs

1. Livestock keepers identified and registered; and
2. Animal identification and traceability systems for selected species established and implemented.

Responsibility

MoFA (APD, VSD, DAES), MMDAs, NGOs, FBOs.

Issue 8: Inadequate artificial insemination of animals

Policy guidelines

1. Promote the establishment of artificial insemination centers and points; and
2. Promote the practice of artificial insemination.

Strategies

1. Register artificial insemination centers and points (Whole Period);
2. Establish Livestock Breeder Societies (Short Term);
3. Register Livestock Breeder Societies (Short Term);
4. Register artificial insemination operators (Whole Period);
5. Approve animals for the purpose of collection of semen (Whole Period); and
6. Approve importation and exportation of semen, ova and eggs (Whole Period).

Outputs

1. Artificial insemination centers and points registered;
2. Livestock Breeder Societies established;
3. Livestock Breeder Societies registered;
4. Artificial insemination operators registered;
5. Animals for the purpose of collection of semen approved; and
6. Importation and exportation of semen, ova and eggs approved.

Responsibility

MOFA (APD, VSD), MMDAs, Livestock Breeders Societies, Private Sector.

7.4.3 Intervention Area 3: Animal Health and Welfare

The high prevalence of livestock diseases in the country such as transboundary, vector borne, zoonoses and emerging diseases present a big challenge to the livestock industry.The diseases, in particular Newcastle disease, Gumboro, *Peste des petits ruminants*, Bovine tuberculosis, Foot and Mouth disease, Trypanosomiasis, Dermatophilosis, Anthrax and Contagious Bovine Pleuropneumonia (CBPP) and African Swine Fever in pigs, have serious implication for animal productivity in terms of quality and/or quantity of meat, milk, eggs, and manure output and traction power, causing food insecurity especially in poor households.The mechanisms for disease surveillance and early warning, diagnosis, treatment, tracking and prevention of the diseases, infrastructure for ensuring bio-security, proper quarantine systems and services to prevent the spread of diseases across the country are inadequate. Livestock are subject to stress during catching, transportation, pre-slaughter and slaughter. Deprivation of food, water

and freedom of normal movement and unfamiliar surroundings, noises and sensations lead to additional stress. Stray dogs and other free-roaming animals are also subjected to stress resulting from food and water deprivation. Measures to ameliorate the stress encountered by animals and stray dogs are undeveloped or not available.

Issues

1. Weak enforcement of biosecurity and lack of bio-certification of livestock farms;
2. Low vaccination coverage and poor vaccine management and administration of livestock against endemic diseases;
3. Inadequate livestock disease surveillance, control and early warning systems;
4. Poor state of veterinary laboratories;
5. Inadequate enforcement of regulations on veterinary pharmaceuticals, biologicals and probiotics usage;
6. High incidence of parasitic infestation;
7. Low awareness and inadequate information on non-conventional livestock diseases;
8. Weak competencies for international trade;
9. Inappropriate animal welfare practices; and
10. Inappropriate use of traditional/ethno veterinary practices.

Issue 1: Weak enforcement of biosecurity and lack of bio-certification of livestock farms

Policy Guideline

1. Promote biosecurity and bio-certification on livestock farms.

Strategies

1. Sensitize livestock farmers, in particular intensive poultry and pig farmers, on bio-security protocols (Whole Period); and
2. Enforce sanctions on commercial livestock farms that fail biosecurity test (Whole Period).

Outputs

1. Livestock farmers sensitized on bio-security protocols for livestock farms; and
2. Commercial livestock farms that fail biosecurity test are penalised.

Responsibility

MoFA (VSD), EPA, MMDAs, Poultry Farmers, FBOs and Traditional Authorities.

Issue 2: Low vaccination coverage and poor vaccine management and administration of livestock against endemic diseases

Policy Guideline

1. Enforce vaccination of livestock against endemic diseases.

Strategies

1. Review vaccination schedules for livestock diseases(Short term);
2. Undertake routine vaccination against specified livestock diseases (Whole Period); and
3. Establish vaccination schedules for different ecological zones (Short Term).

Outputs

1. Vaccination schedules reviewed;
2. Routine vaccination against specified livestock diseases undertaken;
3. Vaccination schedules for different ecological zones established

Responsibility

MoFA (VSD), MMDAs, Poultry Farmers, and Private Sector.

Issue 3: Livestock Disease Surveillance and Early Warning Systems

Policy Guidelines

1. Promote and support disease surveillance and early warning systems; and
2. Prevent outbreak of scheduled diseases.

Strategies

1. Establish necessary legal framework and financial support for livestock disease surveillance and early warning systems;
2. Resource VSD to raise competency levels for disease surveillance and early warning livestock disease detection (Whole Period);
3. Strengthen the capacity of VSD to prevent the spread of transboundary animal diseases and zoonoses (Whole Period);
4. Develop and evaluate relevant livestock surveillance programmes for selected diseases (Short term);
5. Strengthen existing emergency warning systems (Short Term);
6. Build capacity of livestock farmers on early detection of livestock diseases (Whole Period);

7. Enforce appropriate compulsory disease prevention measures at the farm level (Whole Period);
8. Enforce ban on livestock movement during diseases outbreak periods (Whole Period);
9. Vaccinate livestock against contagious and infectious diseases (Whole Period); and
10. Compensate farmers whose farms are affected by specified disease outbreaks (Whole Period).

Outputs

1. VSD resourced to undertake effective livestock disease surveillance and provide early warning systems;
2. The capacity of VSD strengthened to prevent the spread of transboundary livestock diseases and zoonoses;
3. Relevant livestock surveillance programmes developed for selected diseases;
4. Relevant livestock surveillance programmes for selected diseases developed and evaluated;
5. Existing emergency warning systems strengthened;
6. Capacity of livestock farmers on early detection of diseases built;
7. Appropriate compulsory measures at the farm level enforced;
8. Ban on livestock movement during outbreak periods enforced;
9. Livestock vaccinated against contagious and infectious diseases; and
10. Farmers whose farms are affected by specified disease outbreaks compensated.

Responsibility

MoFA (VSD), MMDAs, Ghana Police Service, Poultry Farmers.

Issue 4: Poor State of Veterinary laboratories

Policy Guidelines

1. Promote the upgrading and updating of technical capacity of laboratory personnel; and
2. Promote the upgrading and updating of facilities and equipment of veterinary laboratories.

Strategies

1. Improve capacity of human resource of selected laboratories to undertake specified diagnostic procedures and investigations (Whole Period);
2. Provide relevant and regular continuous education for laboratory personnel (Whole period);

3. Upgrade the veterinary laboratories to enable improved diagnostic performance of the laboratories (Short Term); and
4. Rehabilitate the regional laboratories (Short Term).

Outputs

1. Human resource capacity of selected laboratories to undertake specified diagnostic procedures and investigations improved;
2. Relevant and regular continuous education for laboratory personnel provided;
3. Selected veterinary laboratories upgraded to enable improved diagnostic performance of the laboratories; and
4. Regional laboratories rehabilitated.

Responsibility:

MoFA (VSD), MMDAs, Universities, Research institutions, equipment manufacturers.

Issue 5: Poor Enforcement of Regulations on Veterinary Pharmaceuticals Biologicals and Probiotics and Usage

Policy Guidelines

1. Discourage importation of fake veterinary pharmaceuticals, biologicals and probiotics; and
2. Encourage proper use of veterinary pharmaceuticals biologicals and probiotics.

Strategies

1. Enforce strict adherence to regulations on importation of veterinary pharmaceuticals, biologicals and probiotics (Whole Period);
2. Monitor veterinary pharmaceuticals, biologicals and probiotics at points of entry and in veterinary and agro chemical shops (Whole Period);
3. Train community livestock workers on proper use of veterinary pharmaceuticals, biologicals and probiotics (Whole Period);
4. Improve on training of veterinarians and para-veterinarians on proper usage of veterinary pharmaceuticals, biologicals and probiotics (Medium Term); and
5. Sensitise farmers on proper usage of veterinary pharmaceuticals, biologicals and probiotics (Whole Period).

Outputs

1. Strict adherence to regulations on importation of veterinary pharmaceuticals, biologicals and probiotics enforced;
2. Veterinary pharmaceuticals, biologicals and probiotics at points of entry and in veterinary and agro chemical shops monitored;
3. Community livestock workers trained on proper use of veterinary pharmaceuticals, biologicals and probiotics;
4. Farmers sensitised on proper usage of veterinary pharmaceuticals, biologicals and probiotics; and
5. Training of veterinarians and para- veterinarians on proper usage of veterinary pharmaceuticals, biologicals and probiotics improved.

Responsibility

MoFA (VSD), Veterinary Council, FDA, MMDAs

Issue 6: High Prevalence of Livestock Diseases

Policy Guideline

1. Promote prevention and control of livestock diseases.

Strategies

1. Train community health workers on disease recognition, routine prevention and control of livestock diseases (Whole Period); and
2. Create farmer awareness on the need for disease recognition, routine prevention and control of poultry and livestock diseases (Whole Period).

Outputs

1. Community livestock health workers trained on disease recognition, routine prevention and control of poultry and livestock diseases; and
2. Farmer awareness on the need for disease recognition, routine prevention and control of poultry and livestock diseases created.

Responsibilities

MoFA (VSD, DAES), MMDAs

Issue 7: Low level of Awareness and Inadequate Information on Non-Conventional Livestock Diseases

Policy Guidelines

1. Promote research into non-conventional livestock diseases; and
2. Promote awareness on non-conventional livestock diseases.

Strategies

1. Document non-conventional livestock diseases (Short Term);
2. Initiate research to find solutions to non-conventional livestock diseases (Short Term);
3. Make available research findings to animal health practitioners and farmers (Medium Term); and
4. Create awareness on existence of non-conventional livestock disease.

Outputs

1. Non-conventional livestock diseases documented;
2. Research initiated to find solutions to non-conventional livestock diseases;
3. Research findings on non-conventional livestock diseases made available to animal health practitioners and farmers; and
4. Awareness on existence of non-conventional livestock disease created.

Responsibility

MoFA (VSD DAES), MMDAs, Universities, Research Institutions

Issue 8: Inadequate Capacity for Control of Transboundary Livestock Diseases

Policy Guideline

1. Promote appropriate measures for the control of transboundary livestock diseases.

Strategies

1. Strengthen capacity of VSD to prevent the spread of transboundary livestock diseases (Whole Period);
2. Establish and apply quarantine and border security procedures based on international standards (Short Time); and
3. Rehabilitate existing international livestock Border Inspection Points and build new ones built where necessary (Short Term).

Outputs

1. Capacity of VSD to prevent the spread of transboundary animal diseases strengthened;
2. Quarantine and border security procedures based on international standards established and strengthened; and
3. Existing international livestock Border Inspection Points rehabilitated and new ones built where necessary.

Responsibility

MoFA (VSD), MMDAs, Security Services

Issue 8: Inadequate compliance to livestock slaughter protocols

Policy Guidelines

1. Promote strict compliance to livestock slaughter protocols.

Strategies

1. Sensitise slaughter house operators on livestock slaughter protocols (Whole Period);
2. Enforce anti and post mortem inspection at slaughter facilities (Whole Period); and
3. Enact new legislation to enable VSD to perform all functions relative to meat inspection (Short Term).

Outputs

1. Slaughter house operators sensitised on livestock slaughter protocols;
2. Strict anti and post mortem inspection at slaughter houses enforced; and
3. New legislation enacted to enable VSD to perform all functions relative to meat inspection.

Responsibility

Cabinet, Parliament, MoFA (VSD), Attorney Generals Department, MMDAs and Private sector.

Issue 9: Inappropriate Animal Welfare Practices

Policy Guideline

1. Promote appropriate animal welfare practices through a science-based approach.

Strategies

1. Create awareness in humane treatment of animals (Whole Period);
2. Train farmers, transporters and slaughter house workers in appropriate handling, transportation, pre-slaughter and slaughter practices (Whole Period); and
3. Provide shelter, feed and care for stray dogs and other free-roaming livestock (Whole Period).

Outputs

1. Awareness of humane treatment of animals among farmers, transporters and slaughterhouse workers are created;
2. Farmers, transporters and slaughterhouse workers are trained in appropriate handling, transportation and pre-slaughter and slaughter practices; and
3. Shelter, feed and care for provided for stray dogs and other free-roaming livestock.

Responsibility

MoFA (VSD, APD, DAES), Agricultural Colleges, Polytechnics, Universities, MMDAs and Pet Breeders.

Issue 10: Inappropriate Traditional/Ethno Veterinary Practices

Policy Guideline

1. Promote appropriate traditional/ethno veterinary practices.

Strategies

1. Identify specialists in traditional/ethno veterinary practices (Short Period);
2. Produce a manual on traditional/ethno veterinary practices (Short Period);
3. Train farmers, community livestock workers and veterinarians in appropriate traditional/ethno veterinary practices (Whole Period);
4. Register traditional/ethno veterinary drugs (Whole Period); and
5. Register traditional/ethno veterinary practitioners (Whole Period).

Outputs

1. Specialists in traditional/ethno veterinary practices identified;
2. Manual on traditional/ethno veterinary practices produced;
3. Farmers, community livestock workers and veterinarians trained in appropriate traditional/ethno veterinary practices;
4. Traditional/ethno veterinary drugs registered; and
5. Traditional/ethno veterinary practitioners registered.

Responsibility

MoFA (VSD), FDA, Private Sector, CSIR-ARI, Universities and MMDAs.

7.4.4 Intervention Area 4: Marketing, Demand, Value Addition and Import Substitution

Livestock marketing and processing infrastructure in the country are inadequate and some of them are outmoded. Livestock marketing is characterized by lack of grading of livestock and livestock products, lack of fattening of animals to improve quality prior to marketing and processing, poor handling, presentation and packaging of livestock products. There is very little value addition in the livestock value chain. Processing, and packaging costs are high and quality control measures, knowledge and skills among actors in the value chain are inadequate. A major challenge is how to improve value addition at affordable cost in the livestock value chain.

The domestic production of meat is inadequate to meet the national demand and is supplemented with importation of large numbers of cattle, sheep and goats, large quantities of meat, processed meat and dairy products to supplement supply of animal protein from local sources. There is therefore a high potential demand for meat in the country. The gap between domestic supply and demand of meat could be partially filled by increasing production of meat and in particular broiler chicken and non-conventional livestock. However the production of these products is low in view of the low patronage by consumers and competition with imported chicken. The entire chain of livestock product supply, from the slaughtering to consumption is required to ensure quality, safety and suitability of products for human consumption. Livestock products have to be free of contaminants, toxins, pathogens, pesticides and antibiotic residues, harmful additives and adulterants.

The main challenges facing livestock and livestock product marketing and value addition are indicated below:

Issues

1. Inadequate and poor market, slaughter and processing infrastructure;
2. Poor packaging and absence of traceability;
3. Poor handling of livestock products;
4. Poor haulage of livestock and livestock products;
5. Low demand for locally produced chicken, milk and non-conventional livestock;
6. Inadequate capacity of stakeholders in marketing of livestock and livestock products;
7. Inadequate capacity of stakeholders in value addition to livestock product; and
8. Inadequate livestock markets.

Issue 1: Inadequate and Poor Market, Slaughter and Processing Infrastructure

Policy Guideline

1. Promote setting up of appropriate market, slaughter and processing plants.

Strategies

1. Rehabilitate existing strategic livestock holding grounds (Whole Period);
2. Provide incentives for establishing satellite abattoirs, slaughter houses and processing plants (Whole Period);
3. Build capacity of personnel for slaughter and livestock product processing (Whole Period);
4. Develop protocols for operation of slaughtering facilities and processing plants (Short Term); and
5. Promote and develop dynamic and conducive private-public partnership to provide market, slaughtering and processing of infrastructure (Whole Period).

Outputs

1. Existing livestock holding grounds rehabilitated;
2. Incentives for establishing satellite abattoirs, slaughter houses and processing plants provided;
3. Capacity of personnel for slaughter and livestock product processing built;
4. Protocols for operation of slaughtering facilities and processing plants developed; and
5. Dynamic and conducive private-public partnership promoted to provide markets, slaughtering and processing infrastructure.

Responsibility

MoFA (APD, VSD), MMDAs, GCBSSLOA and Private Sector.

Issue 2: Poor Handling of Livestock products

Policy Guidelines

1. Promote hygienic handling of livestock products; and
2. Promote production and safety of livestock products.

Strategies

1. Enforce cold chain regulations for livestock products (Whole Period);
2. Enforce livestock products safety regulations (Whole Period); and
3. Provide training on safe handling of livestock products (Whole Period).

Outputs

1. Cold chain for livestock products from output centers to the consumer enforced;
2. Livestock product safety regulations enforced; and
3. Training on safe handling of livestock products provided.

Responsibility

MoFA (APD, VSD, DAES), FDA, MMDAs and GCBSSLOA

Issue 3: Poor Packaging and Absence of Traceability

Policy Guideline

1. Promote appropriate packaging and traceability of livestock products.

Strategies

1. Train butchers and processors in appropriate packaging and handling of livestock products (Whole Period); and
2. Initiate and put in place a system of traceability of livestock products (Short Term).

Outputs

1. Butchers and processors trained in packaging and handling of livestock products; and
2. A system of traceability of livestock products initiated and made effective.

Responsibility

MoFA (VSD, APD, WIAD), FDA, MMDAs, GCBSSLOA Training Institutions, Security Services

Issue 4: Poor Haulage of Livestock and Livestock Products

Policy Guideline

Encourage the use of appropriate vehicles for haulage of livestock and livestock products.

Strategies

1. Enforce the use of appropriate vehicles for livestock transportation (Whole Period); and
2. Enforce the use of refrigerated vehicles for livestock products transportation (Whole Period).

Outputs

1. The use of appropriate vehicles for livestock transportation enforced; and
2. The use of refrigerated vehicles for transporting livestock products enforced.

Responsibility

MOFA (VSD), MMDAs, FDA, GCBSSLOA and Ghana Police Service

Issue 5: Low Patronage for Locally Produced Poultry and Non-Conventional Livestock

Policy Guideline

1. Encourage patronage and consumption of locally produced poultry and nonconventional livestock.

Strategies

1. Promote patronage and consumption of locally produced chicken and non-conventional livestock (Whole Period);
2. Enact and enforce regulation to ensure that at least 40 percent importation request for chicken is procured from local sources (Short Term);
3. Create a poultry and livestock development fund (Short Term); and
4. Create a poultry and livestock council (Short Term).

Outputs

1. Patronage and consumption of locally produced poultry and non-conventional livestock promoted;
2. Legislation to ensure that at least 40 percent of imported chicken comes from local sources enacted and enforced;
3. Poultry and livestock development fund is created and operative; and
4. Poultry and livestock council created.

Responsibility

Parliament, MoFA (APD, VSD, DAES), MMDAs, GCBSSLOA, National Poultry Famers Association, National Rabbit and Grasscutter Farmers Association

Issue 6: Inadequate Capacity of Stakeholders in Marketing of Livestock and Products

Policy Guideline

1. Promote capacity building of stakeholders in marketing of livestock and products.

Strategies

1. Prepare training module on marketing of livestock and livestock products (Short Term);
2. Promote marketing of livestock and livestock products (Whole Period); and
3. Train stakeholders in marketing of livestock and livestock products (Whole Period).

Outputs

1. Training module on marketing of livestock and livestock products prepared;
2. Marketing of livestock and livestock products promoted; and
3. Stakeholders trained in marketing of livestock and livestock products.

Responsibility

MoFA (APD, WIAD, HRDM) CSIR-ARI, Polytechnics, Universities, National Livestock Farmers' Associations, Private Sector

Issue 7: Low Capacity of Stakeholders in Value Addition to Livestock Products

Policy Guideline

1. Encourage capacity building of stakeholders in value addition to livestock products.

Strategies

1. Prepare training module on value addition to livestock products (Short term);
2. Promote value addition to livestock products (Whole Period); and
3. Train stakeholders in value addition to livestock products (Whole Period).

Outputs

1. Training module on value addition to livestock products prepared;
2. Value addition to livestock products promoted; and
3. Stakeholders trained in value addition to livestock products.

Responsibility

MoFA (APD, WIAD), CSIR-ARI, Polytechnics, Universities, National Livestock Farmers' Associations, Private Sector and MMDAs.

Issue 8: Inadequate Livestock Markets

Policy Guideline

1. Promote creation of satellite livestock markets.

Strategies

1. Identify satellite livestock markets (Short Term); and
2. Facilitate expansion of satellite livestock markets (Medium Term).

Outputs

1. Satellite livestock markets identified; and
2. Expansion of satellite livestock markets facilitated.

Responsibility

MoFA (APD, VSD), MMDAs, Livestock Farmers' Associations, GCBSSLOA and Private Sector.

7.4.5 Intervention Area 5: Livestock Development Services and Capacity Building

Livestock development services including training, research, extension and inadequate farmer knowledge and skills are limiting factors to the development of the livestock industry. Inadequate knowledge and skills among smallholder livestock farmers include entrepreneurial skills, marketing skills and negotiation skills. Extension staff are better placed to impart such skills but they are few and deficient in the requisite knowledge. Inadequate knowledge and skills of District Agricultural Officers (DAOs) and Agricultural/Animal Production Officers in business and entrepreneurship emanate from weaknesses of curricula in providing the appropriate training. Furthermore, most of the DAOs are crop biased and do not handle livestock issues effectively. The livestock training institutes are constrained by inadequate infrastructure and training facilities and in particular laboratories. Though skilled and qualified manpower for most disciplines in the livestock sector are available the numbers are inadequate. There is also a disconnection between policy makers, academia and the livestock producers. Some trainers also need retooling to up-date their knowledge for effective dissemination of appropriate knowledge to extension staff and farmers.

Issues

1. Inadequate research and extension services in the livestock sector;
2. Inadequate funding for livestock research; and
3. Weakness in curriculum development for agricultural training institutions.

Issue 1: Inadequate research and extension services in the livestock sector

Policy Guidelines

1. Promote extensive research in the livestock sector.
2. Promote extension services in the livestock sector.

Strategies

1. Disseminate research outcomes and extension packages to value chain actors and findings implemented (Whole Period);
2. Build a database for livestock extension service providers (Whole Period);
3. Encourage private sector organizations, and in particular NGOs, to provide extension services(Whole Period);
4. Develop formal continuing education to improve the competencies of APD, VSD and DAES technical personnel and research scientists (Whole Period);
5. Empower research institutions and universities training man power to carry out demand driven research (Whole Period);
6. Resource research institutions and tertiary academic institutions carrying out research and training of students (Whole Period);
7. Ensure that research findings reach down to the farmer level (Whole Period);
8. Recruit to increase the number of extension officers on the field (Whole Period); and
9. Provide regular training to community livestock workers (Whole Period).

Outputs

1. Research outcomes and extension packages disseminated;
2. Database for extension service providers made available;
3. Events to sensitize stakeholders to provide extension services conducted;
4. Formal continuing education of APD, VSD and DAES technical personnel and research scientists developed to improve their competencies;
5. Research institutions and tertiary academic institutions training man power empowered to carry out demand driven research;
6. Research institutions and universities carrying out research and training of students are adequately resourced;

7. Research findings disseminated to farmer;
8. Number of extension officers are on the field are increased; and
9. Regular training provided to community livestock workers.

Responsibility

Researchers, CSIR, MoFA (APD, VSD, SRID, DAES), Tertiary Academic Institutions, Private Sector

Issue 2: Inadequate Funding for Livestock Research

Policy Guideline

1. Promote funding for livestock research.

Strategy

1. Create awareness of the importance of research in livestock development (Whole Period);
2. Sensitise financial institutions and potential donors on the need for research in livestock issues (Short Term);
3. Provide incentives for institutions that support research in the livestock sector (Whole Period);
4. Establish special fund for livestock research (Short Term);
5. Develop database of all research carried out in the livestock sector (Short Term); and
6. Disseminate research findings to stakeholders in the livestock sector (Whole Period).

Outputs

1. Awareness of the importance of research in livestock development created;
2. Financial institutions and potential donors sensitized on the need for research in livestock issues;
3. Incentives provided for institutions that support livestock research;
4. Special fund for livestock research established;
5. Database of all research carried out in the livestock sector developed; and
6. Research findings disseminated to stakeholders in the livestock sector.

Responsibility

Researchers, CSIR, MoFA (APD, VSD, SRID, PPBD, MED), Ministry of Environment Science, Technology and Innovation, Tertiary Academic Institutions, Media and MMDAs.

Issue 3: Weakness in curriculum development for agricultural training institutions

Policy Guideline

1. Upgrade livestock training curricula to ensure appropriate human resource development for the livestock sector.

Strategy

1. Set up a body to review existing curricula in Tertiary Agricultural Institutions (Short Term);
2. Prepare appropriate curricula for the training of students at the various levels in entrepreneurial, marketing and negotiation skills (Short Term);
3. Coordinate revision and adoption of curricula (Whole Period); and
4. Adopt revised curricula for training of students (Short Term).

Outputs

1. A body to review curricula in Tertiary Agricultural Institutions set up;
2. Appropriate curricula for the training of students at the various levels in entrepreneurial, marketing and negotiation skills prepared;
3. Revision and adoption of curricula coordinated; and
4. Revised curricula for training of students adopted.

Responsibility

MoFA (HRMD, APD, VSD, PPBD), Ghana Education Service, CSIR, Tertiary Agricultural Institutions and FBOs.

7.4.6 Intervention Area 6: Investments and Financing of Livestock Sector

The ability of the livestock sector to achieve its growth potential is directly influenced by the availability and accessibility to credit. Inadequate finance and low level of investments are critical weaknesses in the sector. The banking and other financial system have over the years provided inadequate support to the livestock sector in comparison to that of the crop sector. Apart from problems of collateral for individual livestock input suppliers, producers, processors and traders, loan repayment conditions including high interest rates are prohibitive to the development of the livestock sector. The high cost of accessing credit has limited the expansion and commercialization of the livestock industry. Livestock production requires reasonable protection against risks due to occurrence of natural calamities and disease outbreaks. However, insurance coverage for such emergencies is largely unavailable. Provision of credit and insurance needs to be encouraged and made accessible to farmers and other actors engaged in livestock businesses along the value chain.

Issue: Inadequate private and public sectorInvestment and Lack of Insurance Services for Livestock Sector

Policy Guidelines

1. Encourage private sector in particular financial institutions, DPs and NGOs to provide credit for livestock production, marketing and processing;
2. Ensure adequate public sector investment in the livestock sector; and
3. Encourage insurance institutions to develop policies and products to support the livestock sector.

Strategies

1. Provide incentive packages to financial institutions prepared to set aside a certain proportion of their loan portfolios to support the growth of the livestock sector (Whole Term);
2. Develop livestock investment guidelines (Short Term);
3. Develop livestock programs and projects for investment by the public and private sectors (Short Term);
4. Disseminate guidelines and programs for investment by public and private sector (Short Term);
5. Conduct livestock investment and insurance promotion campaigns (Short Term)
6. Sensitize financial institutions to provide credit and insurance for the livestock sector (Short Term)
7. Promote livestock keeping as a business to attract finance (Whole period);
8. Sensitize smallholder actors in the livestock value chain to form associations to enhance their potential to access credit and insurance (Short Term);
9. Encourage financial institutions to provide credit for livestock production, marketing and processing (Whole Period);
10. Encourage DPs and NGOs to increase grants and credit to small-scale actors in the value chain (whole Period);
11. Promote public-private-partnerships for investment across the livestock value chain (Whole Period); and
12. GoG to set up a fund to target livestock industry and funds made accessible (Whole Period).

Outputs

1. Incentive packages provided to banks prepared to set aside a certain proportion of their loan portfolios to support the growth of the livestock sector;
2. Livestock investment guidelines developed;

3. Livestock programs and projects for investment by the public and private sectors developed;
4. Guidelines and programs for investment by the public and private sectors disseminated to potential investors;
5. Livestock investment and insurance promotion campaigns conducted;
6. Financial institutions sensitized to provide credit for livestock sector;
7. Livestock keeping as a business promoted to attract finance;
8. Smallholder actors in the livestock value chain sensitized to form associations to enhance their potential to access credit and insurance;
9. Financial institutions encouraged to provide credit for livestock production, marketing and processing;
10. DPs and NGOs encouraged to increase grants and credits to small-scale actors in the livestock value chain;
11. Public private partnerships for investment in livestock sector promoted; and
12. A fund to target livestock industry is set up by GoG and made accessible.

Responsibility

Cabinet, Parliament, Ministry of Finance, MoFA (PBD), Financial Institution, DPs, NGOs, MMDAs, Private Sector, FBOs.

7.4.7 Intervention Area 7: Governance, Regulatory and Institutional Arrangements

A number of regulatory institutions, such as FDA, GSA, VSD and APD have the responsibility for providing regulatory services in the livestock sector such as importation and exportation of livestock and livestock products, feed ingredients and feeds, vaccines and drugs, hatchery operations and manufacturing of feed. The ECOWAS Protocol on Transhumance seeks to provide free passage of animals across the borders of all member states. However, in view the fact that transhumance has health, social, environmental, economic and political implications the protocol prescribes certain conditions that must be adhered to. Some of the laws and regulations on animal production and health are outdated and need to be rationalized and harmonized or updated, while new ones have to be put in place. The Government is in the process of enacting Veterinary Service and Animal Production legislations that seek to address some of these problems. For effective development of the livestock sector the regulatory bodies have to be fully operational and their roles in the livestock sector need to be clearly defined, harmonized and coordinated to avoid contradictory and overlapping enforcements.

Issues

1. Inadequate and outdated laws and regulations;
2. Poor coordination of regulatory activities;
3. Low enforcement of laws and regulations; and
4. Poor cross border harmonisation within ECOWAS.

Issue 1: Inadequate and Outdated Laws and Regulations

Policy Guidelines

Promote updating of laws regulating the livestock sector; and

Strategies

1. Review laws and regulations in the livestock sector (Short Term);
2. Update laws and regulations that require modification (Short Term);
3. Develop and enact veterinary service and animal production bill (Short Term); and

Outputs

1. Laws and regulation in the livestock sector reviewed;
2. Laws and regulations that require modifications updated;
3. Veterinary service and animal production bill enacted; and

Responsibilities

Cabinet, Parliament, MoFA (APD, VSD, PBD), Ministry of Justice and Attorney General's Department, GSA, FDA, MMDAs (NADMO, Environmental Health) and Security Agencies

Issue 2: Poor Coordination of Regulatory Activities

Policy Guidelines

1. Encourage effective harmonization of regulatory activities; and
2. Promote effective coordination among regulatory bodies.

Strategies

1. Create awareness of regulatory institutions on all the laws and regulations in the livestock sector (Short Term);
2. Set up inter-institutional committee to harmonize the laws and regulatory activities in the livestock sector(Short Term);

3. Harmonize activities of the regulatory institutions (Short Term); and
4. Ensure effective coordination among regulatory bodies (Short Term).

Outputs

1. Awareness of regulatory institutions on all the laws and regulations in the livestock sector created; Inter-institutional committee established to work out modalities for harmonizing regulatory activities in the livestock sector;
2. Activities of the regulatory institutions harmonized; and
3. Effective coordination among regulatory bodies ensured.

Responsibility

MoFA (APD, VSD), MMDAs, GSA, Ministry of Health (FDA), and Ministry of Environment, Science, Technology and Innovation (EPA).

Issue 3: Poor Enforcement of Laws and Regulation

Policy Guideline

1. Enforce laws and regulations of the livestock sector

Strategies

1. Identify institutions to enforce each law and regulation of the livestock sector (Short Term);
2. Create awareness among actors in the livestock sector on the laws and regulations of the sector (Whole Period); and
3. Monitor activities of actors in the livestock sector and institute sanctions against defaulters of laws and regulations (Whole Period).

Outputs

1. The institutions to enforce each law and regulation of the livestock sector identified;
2. Awareness among actors in the livestock sector on the laws and regulations of the sector created; and
3. Activities of actors in the livestock sector monitored and sanctions instituted against defaulters of laws and regulations.

Responsibility

MoFA (APD, VSD), MMDAs, GSA, Ministry of Health (FDA), and Ministry of Environment, Science, Technology and Innovation (EPA) and Security Services.

Issue 4: Poor Cross Border Transhumance Harmonisation within ECOWAS

Policy Guideline

1. Promote cross border transhumance harmonization

Strategies

1. Ensure that herders are in possession of ECOWAS International Transhumance Certificate and identity papers issued by the competent authorities in their countries of origin (Whole Period);
2. Insist on Health Certificate or evidence of disease free cattle as conditions for entry;
3. Register herds at entry points (Whole Period);
4. Ensure that entry is subject to periods prescribed for entering by migrating livestock (Whole Period);
5. Designate and enforce approved entry and exit points for herders (Whole Period);
6. Designate areas for permissible activity and prescribe fees and duration of stay in the country (Whole Period);
7. Ensure that there is no crossing of borders during the night (Whole Period);
8. Herders are to ensure that transhumance livestock are under constant guard both while on the move and during grazing (Whole Period);
9. Apprehend and impound stray animals (Whole Period);
10. Determine where transhumance animals may be stopped (Whole Period); and
11. Expulse herds from the jurisdiction in appropriate cases on grounds of public order, security or public health (Whole Period).

Outputs

1. Herders are in possession of ECOWAS International Transhumance Certificate and identity papers issued by the competent authorities in their countries of origin;
2. Health Certificate or evidence of disease free cattle made as conditions for entry;
3. Herds are registered at entry points;
4. Entry subjected to periods prescribed for entering by migrating livestock;
5. Approved entry and exit points for herders are designated;
6. Areas for permissible activity are designated and fees and duration of stay in the country are prescribed;
7. No crossing of borders allowed during the night;
8. Transhumance livestock are kept by herders under constant guard both while on the move and during grazing;
9. Stray animals are apprehended and impounded;

10. When to stop transhumance animals are determined; and
11. Herds are expulsed from the country in appropriate cases on grounds of public order, security or public health.

Responsibility

MoFA (APD, VSD), EPA, MMDAs, Security Services, Traditional Rulers, Community Opinion Leaders and ECOWAS member states.

7.4.8 Intervention Area 8: Cross Cutting and Cross-Sectoral Issues

Livestock development in Ghana is influenced by several factors such as the environment, gender, finance and investment and other issues that are outside the sole jurisdiction of any specific interventional area. Factors such as land use have consistently created serious conflicts between herdsmen and crop farmers. Some farms are wrongly sited within or near settlements and in some cases are nuisance to the communities when the waste generated is not properly managed, while others have to close down or relocate as a result of emerging settlements. These factors need to be mainstreamed in livestock development policy and addressed to achieve holistic development of the livestock sector.

Issues

1. Livestock and Environment;
2. Gender inequality;
3. Land use policy;
4. Livestock policy implementation; and
5. Data collection and livestock statistics.

Issue 1: Livestock and Environment

Policy Guidelines

1. Encourage the reduction of the negative effects of livestock production on the environment; and
2. Encourage prevention of polythene bags menace.

Strategies

1. Promote confinement of livestock and establishment of fodder banks as an alternative to grazing (Whole Period).
2. Strengthen research on impact of climate change on livestock production and mitigation measures (Whole Period);

3. Build farmers' capacity and promote private sector involvement in the conversion of farm yard manure into compost and biogas (Whole Period);
4. Promote safe use of agro-chemicals and veterinary pharmaceuticals (Whole Period);
5. Promote agro-forestry in livestock production (Whole Period);
6. Promote soil and water conservation in the range land (Whole Period);
7. Strengthen Water Users Associations in communities (Whole Period);
8. Discourage indiscriminate disposal of polythene bags (whole Period);
9. Enforce by-laws on bush fire (Whole Period);
10. Promote the collection, conservation and utilization of crop residues (Whole Period);
11. Initiate control programme of polythene bags menace (Short Term); and
12. Undertake measures to prevent polythene bags menace (Whole Period).

Outputs

1. Confinement of livestock among farmers promoted and fodder banks established as an alternative to grazing;
2. Research on impact of climatic change on livestock production and mitigation measures strengthened;
3. Farmers' capacity to convert farm yard manure into compost and biogas developed;
4. Safe use of agro-chemicals and veterinary pharmaceuticals promoted;
5. Agro-forestry in livestock production promoted;
6. Soil and water conservation in rangelands promoted;
7. Water Users Associations in communities strengthened;
8. Indiscriminate disposal of polythene bags discourged;
9. By-laws on bush fire enforced;
10. Collection, conservation and utilization of crop residues promoted;
11. Control programme of polythene bags menace initiated; and
12. Measures to prevent polythene bags menace undertaken.

Responsibility

MoFA (APD, VSD, PPRSD, DAES, CSD), EPA, FDA, MMDAs, Forestry Commission, Research Institutions, Ministry of Education, NGOs, FBOs, Traditional Rulers, Community Opinion Leaders

Issue 2: Gender Inequality

Policy Guideline

1. Encourage service and financial providers to be gender sensitive

Strategies

1. Provide equal access of technology transfer for youth, women and the physically challenged (Whole Period);
2. Provide equal access to finance for youth, women and the physically challenged (Whole Period); and
3. Develop and implement programmes that will support the development of youth, women and the physically challenged (Short Term).

Outputs

1. Equal access to technology transfer for youth, women and the physically challenged ensured;
2. Equal access to finance for youth, women and the physically challenged ensured; and
3. Programmes that support the development of youth, women and the physically challenged developed and implemented.

Responsibility

MoFA (WIAD, APD, DAES), Ministry of Gender, Children and Social Protection, Research Institutions, Tertiary Academic Institutions, Financial Institutions, NGOs, FBOs, Traditional Rulers and Community Opinion Leaders

Issue 3: Land Use Policy

Policy Guideline

1. Promote a land use policy which provides land for livestock production, marketing and processing.

Strategies

1. Enact by-laws to create land banks for livestock production, marketing and processing (Short Term);
2. Register lands for livestock farming and protect them from human settlements (Short Term);
3. Promote feedlot and grazing land development for livestock production (Whole Period);

4. Establish fodder banks in communities (Whole Period); and
5. Register and monitor activities of transhumant herdsmen (Whole Period).

Outputs

1. By-laws creating special reservation areas for animal agriculture enacted;
2. Lands for livestock farming registered and protected from human settlements;
3. Feedlot and grazing land development for livestock production promoted;
4. Fodder banks in communities established; and
5. Transhumant herdsmen registered and their activities monitored.

Responsibility

Parliament, Lands Commission, MoFA, MMDAs, EPA, Traditional Rulers,
Community Opinion Leaders, Security Services

Issue 4: Livestock Policy Implementation

Policy Guideline

Promote awareness of the GLDPS and its implementation

Strategies

1. Print and distribute GLDPS document to all stakeholder groups in the livestock value chain (Short Term);
2. Upload document on MoFA website (Short Term);
3. Advertise the document through electronic and print media (Whole Period);
4. Produce abridged and simplified version of the policy document in major Ghanaian languages and make available to farmers especially at the community level (Short Term);
5. Hold workshops and seminars and undertake visits to communities (Whole Period);
6. Prepare an implementation manual showing timelines, roles and responsibilities (Short Term); and
7. Monitor and evaluate the implementation of the policies and strategies (Whole Period).

Outputs

1. GLDPS document printed and distributed to all stakeholder groups in the livestock value chain;
2. GLDPS document uploaded on MoFA website;
3. The GLDPS document advertised in the electronic and print media;

4. Abridged and simplified version of the policy document produced and made available to farmers especially at the community level;
5. Workshops and seminars held and visits to communities undertaken;
6. Implementation manual showing timelines, roles and responsibilities of strategies prepared;
7. Implementation of the policies and strategies monitored and evaluated and where necessary modified;

Responsibility

MoFA (MED, PBD, APD, VSD, SRID, DAES), Ghana Bureau of Languages, Media, MMDAs, DPs, NGOs and other stakeholder groups.

Issue 5: Livestock Census and Data Collection

Policy Guidelines

Ensure accurate, timely and regular collection livestock data.

Strategies

1. Develop protocol for the collection of livestock data (Short Term);
2. Develop collaboration between GSS and relevant institutions in livestock census and data collection (Short Term);
3. Prepare budget for livestock data collection (Short Term);
4. Provide funding for livestock data collection (Short Term);
5. Build capacity for livestock data collection and analysis (Short Term); and
6. Collect, analyse and disseminate livestock data (Whole Period).

Outputs

1. Protocol for collection of livestock data developed;
2. Collaboration between GSS and relevant institutions in livestock census and data collection developed;
3. Budget for livestock data collection prepared;
4. Funding for livestock data collection provided;
5. Capacity for livestock data collection and analysis built; and
6. Livestock data collected, analysed and disseminated.

Responsibility

GSS, MoFA (VSD, APD, SRID, MED), DPs, NGOs, FBOs

7.5 INSTITUTIONAL FRAMEWORK FOR IMPLEMENTATION OF STRATEGIES

Successful implementation of the GLDPS requires a committed action on the part of the Government to provide the essential support while MoFA plays the leading role in the implementation and coordination of the policies and strategies. Development Partners and NGOs that support the livestock sector will provide technical support in the implementation of some specific activities. As was in the case of FASDEP II the key considerations in the implementation will be efficient allocation of resources, strengthening linkages between different stakeholders and coordinating their activities.

7.6 COORDINATION MECHANISM

The National Steering Committee, which will be chaired by the Minister for Food and Agriculture or his representative, will comprise representatives of the Parliamentary Select Committee on Food and Agriculture and Cocoa Affairs, all relevant ministries, other relevant public institutions, DPs, NGOs, the private sector (input suppliers, livestock farmers and agribusinesses). The National Livestock Policy Hub will serve as the technical committee, and a sub-committee of the National Steering Committee. The National Steering Committee will provide the overall guidance and coordination in the implementation of the GLDPS, while the National Livestock Policy Hub will provide technical support to the National Steering Committee and other relevant actors in the process of implementing and monitoring the various strategies of the GLDPS. The National Livestock Policy Hub will provide overall supervision of all issues related to the implementation of the GLDPS, and also act as the Secretariat of the National Steering Committee.

7.7 MONITORING AND EVALUATION

Monitoring and Evaluation entail collecting, collating and analysis of data for decision making, and it is essential in tracking dynamic processes of implementation of the GLDPS. The purpose of monitoring is to find out whether the implementation of the policies and strategies are effective, and if not how they should be modified to ensure that they are effective. Monitoring will tell whether the various actors are doing what they were expected to do and whether they are achieving what they were supposed to achieve in implementing the strategies. The Monitoring and Evaluation will focus on further strengthening the system to ensure that robust, reliable, and timely data is generated for the assessment of implementation of the policies and strategies. The monitoring exercise will be used to assess the continued relevance and performance of each strategy as well as the flexibility of, and need for changes to the strategies.

Various implementation units comprising PBD and MED of MoFA, DPs and other stakeholders will conduct regular independent or joint impact assessments of the implementation of the strategies by the use of following criteria: Efficiency, Effectiveness, Impact, Relevance and Sustainability. Formal assessments will be carried out by independently contracted consultants. Verifiable indicators will be used for monitoring the differential impact that the implementation of the strategies has on stakeholders and the sector as a whole. PBD, MED and SRID will collaborate and coordinate data collection and supervision of monitoring and evaluation. Monitoring and evaluation will be carried out in a participatory and gender sensitive manner.

7.8 RISKS AND ASSUMPTIONS

The overall success of the project depends on the assumptions that the on-going macro-economic policies in the agricultural sector will remain favourable for stakeholders within the livestock sector to intensify their activities profitably, so that more of them will adopt improved practices. It is also assumed that the Government, DPs and NGOs will continue to financially support the relevant activities of the strategies that fall under public sector responsibility. Putting in place appropriate measures to implement the policies and strategies during the early part of implementation will minimize risks.

The main assumptions relating to effective implementation of the GLDPS are that:

1. There is minimal or no outbreaks of livestock diseases;
2. The professional capacity of MoFA, relevant MDAs and the private sector continues to improve and that they are actively engaged in and committed to the implementation of the policies and strategies;
3. The Government provides enabling environment and adequate funds for implementation of strategies;
4. Funds for implementation of strategies are timely released;
5. The DPs and other donors provide technical assistance and sufficient supplementary funds for implementation of the strategies; and
6. There is adequate response of MoFA, other relevant MDAs to the GLDPS initiatives.

8. CONCLUSIONS

The livestock sector is an important component of Ghana's agriculture and plays a major role in providing livelihood support to the rural population, and contributes significantly to the national economy in terms of food and nutritional security. However, the sector continues to be faced with numerous challenges, many of which would require implementation of appropriate policies and strategies to be fully addressed. Though the previous and present policies and strategies geared towards developing the nation's livestock sector have helped to improve the performance of the sector, the country is still dependant on excessive imports of livestock and livestock products to meet the demand for animal protein.

The policy instrument that is currently operational to promote the livestock sector performance will end in 2017, by a time none of the set goals are likely to be fully achieved. The GLDPS seeks to provide harmonised interventions that would ensure the achievement of set objectives that will lead to a sustainable and rapid growth of the livestock sector. Responsibilities for implementing strategies have been spelt out and timelines for implementation provided. It is important that strategy implementations are monitored and progress made evaluated at regular intervals. Mid-term Monitoring and Evaluation ought to be carried out in assessing the progress and limitations in the implementations for redress where necessary. The Government's commitment to providing an enabling environment and adequate resources for the implementation of the policies and strategies in the GLDPS will be crucial in achieving the expected outputs.

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10. ANNEXES

Annex 1: Images of Indigenous Livestock Breeds in Ghana



Sanga cattle



West African Shorthorn cattle



Gudali bull



N'Dama cow



Djallonké ram



Djallonké doe



West African Dwarf nanny goat



West African Dwarf Billy goat



Ashanti Black pig



Local Grasscutter



Local Rabbit



Local Ghanaian chicken



GHANA LIVESTOCK DEVELOPMENT POLICY AND STRATEGY







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