LIBERIA NATIONAL LIVESTOCK POLICY AND VETERINARY & ANIMAL LAW

MINISTRY OF AGRICULTURE
REPUBLIC OF LIBERIA
MONROVIA, LIBERIA

NATIONAL LIVESTOCK BUREAU

DRAFT REPORT

Supported by: BRAC Liberia

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The study was conducted by a team of national and international consultants specialized in the field of animal and veterinary sciences hired by the BRAC International with the concrescence of the Ministry of Agriculture (MoA), Republic of Liberia to review and finalize the National Livestock Policy of Liberia.

Team compositions:
Mr. Z. Edmord Greaves (National Consultant), County Agriculture Coordinator, Grand Cape Mount County Sub-Office, Ministry of Agriculture, Republic of Liberia and Professor M. Golam Shahi Alam (International Consultant), Department of Surgery & Obstetrics and Dean, Faculty of Veterinary Science, Bangladesh Agricultural University, Mymensingh, Bangladesh.

Methodology:

The international consultant and Adviser, agriculture and livestock, BRAC International, joined the national consultant on 5 May 2014 in a meeting with the BRAC Liberia and spends two weeks in Liberia. The study was conducted in an inclusive manner, with a combination of analytic, investigative and participatory approach. Through a process of consultation with stakeholders, MoA , National Livestock Bureau (NLB) and the BRAC Liberia staff, the following main areas of focus were identified as important topics to be addressed in the Liberia National Livestock Policy: (a) Livestock Sub-Sector in Liberia, (b) Veterinary Services and Animal Health, (c) Institutional Analysis of National Livestock Bureau (NLB) & Department of Livestock (DoL) of the Central Agricultural Research Institute (CARI), (d) Legal and Regulatory Frameworks for Livestock Development, (e) Livestock Breeds and Breeding, (f) Livestock Feeds and Feeding and (g) Livestock Marketing and its Products.

The process followed for developing recommendations began with a thorough review of the literature, with especial emphasis on the previous studies and recommendations of the recently submitted draft copy of Liberia Livestock Policy of 2013. Field trips were conducted to a wide variety of locations throughout Liberia covering a broad range of production and institutional sites. Emphasis was on small scale production and related services aimed at small scale producers. The field trips enabled primary information to be gathered from important stakeholders and discussion with farmers and extension personnel.

Important stakeholder discussions in separate groups were held, mostly during field visits i.e. County Agriculture Officer responsible for Livestock Health and Production, Pigs Breeding Association, Butchers Association etc. Participating smallholders' farmers and other stakeholders, including smallholders' pigs, small ruminants and commercial poultry farms were encouraged offering their views as to what constraints needed to be addressed; where the gaps in extension and services exist and what seemed to be working well. This information was particularly valuable identifying areas of policy strength and weakness. These sessions were informal and unstructured to allow free expression of ideas and opinions. Discussion was quite lively, often leading to debate over the issue at hand, and always leading to useful conclusions incorporated in this policy document. Brainstorming sessions were held with key stakeholders in livestock services, and others representing public and private sectors.

National consultant was encouraged to reflect on the constraints identified and to focus on the issues surrounding the constraints, rather than list technical or other constraints in exclusion of wider deliberation. This lead to identification of potential areas that need to be addressed through policy, development of policy options and for the most important issues, a brief outline of option plans.

These initial findings will be sent to the MoA for their valuable feedback which will be incorporated into this drafted policy document. Further, candid and critical comments are expected for finalization of the Liberia National Livestock Policy 2014.

Acknowledgements: This livestock policy report and action plan is a product of the cooperation and contributions of many people of Liberia. We would like to thank all the precipitants of the meeting of the BRAC Liberian program (5 May 2014), consultative (9 May 2014) and debriefing sessions (15 May 2014) of MoA and others who provided information and input. We are also grateful to Dr. Florence Chenoweth, Honorable Minister; and Mrs. Selau Elizabeth Wiles, Deputy Minister, Ministry of Agriculture, Liberia; Mr. MA Saleque, Adviser, Agriculture & Livestock, BRAC International, Dhaka, Bangladesh; Mr. Mohammed Abdus Salam, Country Representative; Mr. Tamba D. Aghailas, Head of HR & Program Operations; and Mr. Kamanashis Kar, Manager EU Project, BRAC Liberia for their moral support, cooperation and help.
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Contents

EXECUTIVE SUMMARY

Liberia Livestock Policy, which was drafted in 2013 was neither officially approved nor implemented, leaving the country's livestock sub-sector without a nationally directed plan for public support services. With the assistance of development partners, the livestock sub-sector policy was reviewed and important recommendations were made for change (LASIP, 2000; Rhissa, 2007; FAPS, 2008; PRS 2008; LASIP, 2010; Crowlwy *et al*., 2011; CPF Liberia, 2012; KwakuAgyemang, 2013). Most of those recommendations were considered valid but have yet to be implemented, including the strongest recommendation calling for institutional reform of the National Livestock Bureau (NLB) by redefining its functions and organizational structure. A further review of the livestock sub-sector, with purpose of fine-tuning of the drafted Liberia Livestock Policy of 2013 and formulating Liberia National Livestock Policy with support of BRAC Liberia funded by the European Commission (EC), was requested by the Ministry of Agriculture (MoA). This document presents findings of policy options, based on the review, built around detailed findings of seven individual thematic studies, which made a concerted effort to build on information already presented. The purpose of this document was to assist the MoA in formulating the Liberia National Livestock Policy and action plan. The seven thematic studies include: (i) Livestock Sub-Sector in Liberia, (ii) Veterinary Services and Animal Health, (iii) Institutional Analysis of National Livestock Bureau (NLB) & Department of Livestock (DoL) of the Central Agriculture Research Institute (CARI), (iv) Legal and Regulatory Frameworks for Livestock Development, (v) Livestock Breeds and Breeding, (vi) Livestock Feeds and Feeding, (vii) Livestock Marketing and its Products.

The study was conducted in a participatory manner with the involvement of livestock farmers and associations, inputs providers, private/community small poultry, pigs, goats, sheep and cattle entrepreneurs, Non Government Organizations (NGOs) and public and private sectors organizations, ministries, universities faculties, and donor representatives and was guided by the Country Programming Framework (CPF Liberia, 2012) Liberia with fine-tuning of the drafted Liberia Livestock Policy by Kwaku Agyemang (2013).

Livestock (including poultry) is a growing sub-sector and it contributes to household and community economy and employment with sustenance and food security in Liberia. Livestock is an integral component of the agricultural economy performing a role in the livelihoods of poor people. Traditional systems accounted for 100% of the holdings of cattle, goats and sheep; 58% of pigs and 100% of guinea fowl (CPF Liberia, 2012). Livestock perform various functions, including provision of food, nutrition, income, savings, draft power, manure, transport and a host of other social and cultural functions. These changes have been prompted by a rapid growth in demand for livestock products due to increases in income, rising population numbers and urban growth. This phenomenon has been referred to as the "Livestock Revolution".

The contribution of agricultural Gross Domestic Product (GDP) accounted for 61% (2008) and the livestock sub-sector accounts for about 14% of GDP and given a target

to expand domestic production to satisfy 50% or more of the national need. The share of the livestock sub-sector is increasing due to expansion of poultry, small ruminants (goats & sheep) and pig production of smallholder farmers. These are reared by traditional farmer's using local, low productive breeds of animals with inappropriate techniques. Farmers have access to few service- delivery inputs, and receive limited or no public support services. No dairy production is undertaken in Liberia for household consumption and/or commercial purposes. The livestock sub-sector offers greater employment opportunities, particularly for rural poor, many of whom regard livestock as their only livelihood option. Livestock provide 60% of the labor force, GDP per capita growth is 7.3 (2009-2013). More than 70% people are engaged in agriculture, including livestock. Small-scale poultry farming during 2013-2014 has created opportunities for self-employment. Women are major players producing 60% of agricultural products and constituting the majority of smallholder producers and labor, facing challenges in accessing land, productive inputs, credit, training as well as their lack of participation in decision-making processes (CPF Liberia, 2012).

The importance of livestock production has increased in Liberia as witnessed by the growth of the sub-sector over the last few years and the contribution to employment. Household-based livestock farmers are dominated and most of them rear chickens and very little else, 24% and 43% household are involved in livestock and poultry production, respectively (MoA, 2008; LISGIS, 2008-2009). The numbers of livestock in Liberia are estimated to be 8,275 cattle, 120,114 goats, 48,600 sheep, 70,520 pigs, 1,270,875 chickens and 53,350 ducks (MoA Annual Report, 2010 - 2013; KwakuAgyemang, 2013) and show the steady growth of livestock compared to crop, fisheries and forestry. There has been increased in number of livestock (41.2%) and poultry (22%) households than the pre-war (1988), but the numbers of livestock (7%) has increased by 2010 (FAO, 2012).

Technological changes in livestock sub-sector have been very slow or absent compared to the crop sub-sector. Achievement in crop agriculture through scientific manipulation and appropriate policy interventions has been made in the last decade. Livestock sub-sector remained less sensitive and responsive to its development needs. Recently, some technological interventions and limited policy reforms, particularly in small ruminants (goats & sheep), poultry and pigs sector have shown some impact on livestock production. However, the growth of livestock could not be enhanced due to inadequate public expenditure in the sub-sector. About 53% of the national budget is allocated to agriculture, but there is no yearly marked budget allocation for NLB and DoL. A total of $11.0 million USD has been allocated for its development, only $1.1 million USD has been incurred, remaining $9.9 million USD will be expended by 2015 (LASIP, 2010). Allocation for operation costs for both NLB and DoL is not adequate, but the development budget appears stable. However, in real terms, the allocation is not encouraging.

Poultry, pigs, goats and sheep farming has specific advantages over crops, fisheries and forestry. They require less land, are least influenced by climatic change and the supply of food of animal origin is disproportionately low against high demand. The current meat consumption is about 11.0 kg per person and per year on average, which

is covered by 2.6 kg from live animals, 4.0 kg of imported meat/person/year and 4.4 kg of wild meat (FAO/AGAL, 2005). Dairy production is nil, which is covered by imports of 9.7 kg/person/year (KwakuAgyemang, 2013). On the basis of local production and importation, the average consumption is about 11.0 eggs/ person/year (Rhissa, 2007). It has been found that small ruminants (goats & sheep), pigs and chicken generates more regular cash income and its processing and marketing create more employment per unit value added compared to crops. There is no clear intra-sectoral study on comparative advantage and profitability, but profit margin of small scale livestock farming is higher than crop and fish farming, if feeds, veterinary and artificial insemination services, vaccines, medicine, credit and access to market are ensured.

The potential for livestock development, particularly for small-scale pork, mutton, lamb and poultry is high, but there remain many constraints. Livestock development in Liberia is seriously affected by a number of critical constraints. The absence of a comprehensive livestock development policy and a national strategy to enhance livestock production, developed in collaboration with private sector is a primary constraint. Policy and institutional reforms, particularly NLB and DoL and their functional arms are of critical importance to induce the changes necessary to meet the new challenges caused by globalization, trade liberalization and World Trade Organization (WTO) regulation. Livestock development cannot be achieved through public sector intervention alone. Major involvement of private sector is essential. Quality assurance is a critical factor constraining future development of livestock. In the absence of legal and regulatory frameworks, livestock development in the private sector is taking place in an indiscriminate manner, which has the propensity to create serious problems of quality control in livestock products, medicines, vaccines, feeds and breeding materials.

Livestock revolution in Liberia will continue to rely on increasing use of concentrate feeds, medicines, vaccines and animal health/veterinary services, and will be shaped by both private and public sectors policies. Horizontal and vertical integration in livestock industries will become more important, increasing the need for policy to regulate and guide the actions of stakeholders, especially those in a position to improve the lives of poor, vulnerable and landless livestock farmers. The rapid expansion of the livestock sub-sector has tremendous scope for increasing food production, employment, incomes and improving the livelihoods of millions of people in Liberia.

Policy support creating an enabling environment in livestock sub-sector has to target factors of productivity, investment and risks by (i) increasing public investment in infrastructure and public goods services and promoting private investment, (ii) inducing a shift in relative prices of inputs and outputs to correct market distortion, rationalize the incentive structure for investment and mitigate the negative impact on the environment, (iii) putting in place appropriate legal and regulatory frameworks and (iv) effecting institutional reform and good governance making both public and private sector more transparent and accountable.

This report has outlined issues constraining the livestock sub-sector in several key areas and has outlined options for change through policy formulation and presented project options with action plan. The high-priority policy recommendations are as follows:

- Direct development thrust to improving small-scale goats, sheep, pigs and poultry farming, which has the highest potential for reducing rural poverty
- Initiate institutional reform of NLB, DoL and Central Veterinary Laboratory by clearly defining its public goods function and restructuring its organizational setting accordingly
- Enact and enforce laws and regulations for quality control of medicines, vaccines, feeds, breeding materials, hide and skin
- Provide support for establishing faculty of Veterinary, Animal and Biomedical sciences at the public universities
- Provide support for accelerating community based veterinary services (CBVS) of both public and private goods nature
- Encourage and support privatization of veterinary services of private goods nature with slow phasing out of CBVS
- Support development of market infrastructure and information
- Support the establishment of Liberia Veterinary Council
- Develop an animal and poultry breeding policy
- Develop grassland and fodder policy
- Promote production of fodder crops and legumes
- Establish mechanized slaughterhouse with Static Flaying Frame in all 15 county headquarters
- Develop and enforce Animal Slaughter Act
- Train officials of MoA, MoCI, MoHSW, MoHA, NLB, DoL and various livestock related entrepreneurs/industries to enable them to fully understand WTO Agreements and deal with them effectively
- Establish Livestock Insurance Development Fund (LIDF) in Liberia Central Bank
- Establish Livestock Credit Fund (LCF) in Liberia Central Bank for distribution of low interest credit to small scale livestock farmers.

CHAPTER 1

Purpose and Overview of Livestock Sub-Sector in Liberia

1. Many documents produced over the past years have spelled out the current situation and the constraints in great detail. Development of the livestock including poultry sub-sector of the Ministry of Agriculture (MoA) in Liberia has been guided by ad-hoc policy measures like Liberian Agriculture Sector Investment Program (LASIP, 2000), Comprehensive assessment of the agriculture sector in Liberia (Rhissa, 2007), Liberia Food and Agriculture Policy Strategies (FAPS, 2008), Poverty reduction strategy (PRS, 2008) and Liberian agriculture sector investment program (LASIP, 2010) report, Annual report on FAO activities in support of producers; organizations and agricultural cooperatives (Crowlwy *et al.*, 2011), Country programming framework Liberia (CPF Liberia, 2012). Recently, Liberian Livestock policy has been drafted, but not officially approved and implemented (KwakuAgyemang, 2013). The policy document is neither clearly based on a detailed process of analysis of constraints leading to week policy options nor does it has clear basis for policy recommendations.

2. This policy option document is prepared based on the detailed findings of various studies, field survey, and discussion with farmers groups and associations with a series of brainstorming sessions and meetings with key stakeholders and MoA. This document is developed following the policy guidelines for the livestock sub-sector of Liberia as described by the Food and Agriculture Policy Strategy – "From Subsistence to Sufficiency"(FAPS, 2008). Other recommendations were also considered including the follow-up of activities proposed under the livestock sub-program of the Liberian Agriculture Sector Investment Programs (LASIP, 2010). The purpose of the development of this document is to assist the MoA in formulating a national livestock policy and action plan. The study builds heavily on a number of previous studies, including Agriculture Policy and Food Security in Liberia (Tefft, 2005), Comprehensive Assessment of the Agriculture Sector in Liberia (Rhissa, 2007), Poverty Reduction Strategy (PRS, 2008), closely following the Country Programming Framework Liberia 2012-2015 thrust and objectives (MoA & FAO, 2012) and Millennium Development Goals (MDGs) of reducing hunger and poverty by half by 2015.

3. Livestock contributes to household and community economy and employment with sustenance and food security in Liberia. Traditional systems accounted for 100% of the holdings of cattle, goats and sheep; 58% of pigs; 100% of guinea fowl (CPF Liberia, 2010). Livestock perform various functions including provision of food, nutrition, income, savings, draft power, manure, transport and a host of other social and cultural functions of 4.5 million people living 111,300 km^2 of land (40 person/km^2) as estimated by the World Population Review 2014, comprising 48% urban and 52% rural. Livestock allow the poor to exploit common property resources, such as public and communal lands and open pasture areas of about two million hectares.

4. The share of livestock sub-sector has been increasing steadily to crops, fisheries, forestry and others. The contribution of agricultural GDP accounted for 61% in 2008 (CPF Liberia, 2012). Livestock industry has been given importance with a target to expand domestic livestock production to satisfy 50% or more of the domestic demand. The share of livestock sub-sector is expected to increase in the coming years. The changes may be due to expansion of poultry production during recent years and to lesser extent, due to distribution of large (Cattle) and small ruminants (Goats and Sheep), and pigs among the interested smallholders in different areas of the country by some NGOs and development partners along with the delivery of input services. Livestock production, particularly pigs' production, is one of the main alternative means of income diversification of smallhold.

Growth of livestock and poultry:

5. The livestock sub-sector plays a minimal role in the Liberian economy, which is about 14% of the agricultural GDP (Rhissa, 2007; Koikoi, 2011). Animals are reared by traditional farmer's using local, low productive breeds of animal and inappropriate techniques. Household-based chicken, goats, ducks, pigs, sheep and cattle rearing predominates (FAO, 2005, 2011; SFNS, 2010; Koikoi, 2011). Farmers have access to few service delivery inputs, and receive limited or no public support services. No dairy production is undertaken in Liberia for household consumption and/or commercial purposes (Koikoi, 2011, Andrews, 2012). Total livestock population has declined during the civil war from 1990-2003, but the numbers (7%) is increased by 2010 (FAO, 2012).

Demand for livestock products greatly outstrips local supply; as a result imports of livestock products and live animals are high. An estimated 19,580 - 26,000 heads of live cattle, 15,000 -16,000 heads of live sheep and goats are imported from Guinea, Cote d'Ivoire and Mali annually for slaughter (Koikoi, 2011; CPF Liberia, 2012-1215), which were estimated to equate to 3000 and 312 tonnes, respectively (LASIP, 2010). In 2009, some 11 million tonnes of meat valued at about $4.3 million USD were imported, which is expected to be increased 121% by 2020. Meat and meat products were imported in 2005-2006 spending $6 million US (Table 1). In 2008 the cost of imports for food and live animals grew by 56.8% expending $205.3 USD. Approximately $5.5 million USD and $6.8 million USD worth of frozen chicken were imported in 2010 and 2011, respectively. The corresponding figures for eggs were $2.9 million USD expending $3.0 million USD (KwakuAgyemang, 2013). There are slow and steady growth of livestock compared to other sub-sectors. The livestock (including poultry) sector growth rate of GDP at constant price was 4.6 to 8.4 from 2010 to 2013, respectively (MoA Annual Report, 2010-2013). The trend of changes could be due to rapid growth in demand for livestock products due to increases in income, rising population and urban growth that can be termed as the "Livestock Revolution".

Table-1. Import of beef, chickens, turkey, pork and eggs (2005-2006)

	Quantity (Tonnes)	Value (US$)
Frozen buffalo meat	56	47,000
Frozen beef	66	95,960
Frozen Turkey wings	148	221,449
Frozen pig meat	690	524,886
Frozen chickens	1,893	1,464,135
Pigs' feet	8,082	378,339
Fresh eggs	10,834	3,173,883
Total	21,766	5,906,552

Source: Ministry of Commerce and Industry (MoCI)

6. The current contribution of livestock is far below potential, providing about 60% of the labor force, GDP per capita growth is 7.3 (2009-2013). The contribution of agriculture to the Gross National Products (GNP) of African countries remains very high. More than 70% people are engaged in agriculture including livestock. In the absence of reliable data there has been a slow growth in aggregate livestock numbers comprising mainly cattle, goats, sheep, poultry and swine. Its share of employment in agriculture sector is encouraging, and the demobilization of thousands of ex-combatants into appropriate developments agents especially in the rural sector, which has a huge potential that can create employment opportunities to satisfy its basic food requirements. Small-scale poultry farming during 2013-2014 has created opportunities for self employment. Women are major players producing 60% of agricultural products and constituting the majority of smallholder producers and labor, facing challenges in accessing land, productive inputs, credit, training as well as their lack of participation in decision making processes (CPF Liberia, 2012-2015).

7. The importance of livestock production has increased in Liberia as witnessed by the growth of the sub-sector over the last few years (Table 2) and the contribution to employment in the country. Household-based livestock farmers are dominated in this sub-sector. It is indicated that most household rear chickens and very little else. A few modern peri-urban livestock farmers produced rabbits, guinea pigs, poultry and ducks (CAAS-Lib, 2007). According to the MoA (2008) and Liberia Institute of Statistics and Geo-Information Services (2008-2009) 24% and 43% household are involved in ruminants/pigs and poultry production, respectively. Nearly all of the livestock including poultry are produced by households through the free range system. Table 2 shows the current population of livestock comprises 8,275 cattle, 120,114 goats, 48,660 sheep, 70,520 pigs, 1,270,875 chickens and 60,760 ducks (KwakuAgyemang (2013).

Table 2. Number of Domestic Animals and Poultry (2010 - 2013)

Type of animals	Census years							
	2010		2011		2012		2013	
	Total No	Per Capita (No)	Total No	Per Capita (No)	Total No	Per Capita (No)	Total No	Per Capita (No)
Chickens	800,780	0.177	951,260	0.212	1,000,025	0.222	1,270,875	0.282
Ducks	48,580	0.010	53,350	0.011	53,974	0.011	60,760	0.013
Cattle	10,660	0.002	7,000	0.001	7,863	0.001	8,275	0.001
Goats	96,750	0.021	100,000	0.222	127,056	0.028	120,114	0.026
Sheep	48,450	0.012	47,200	0.012	47,376	0.012	48,660	0.012
Pigs	64,990	0.014	65,600	0.014	67,065	0.014	70,520	0.015

Source: MoA Annual Report (2010 -2013)

Technological interventions and policy reform

8. Increased productivity occurs when producers adopt productivity enhancing technologies or remove binding constrains. Public sector's role is to facilitate sustainable livestock production by promoting the introduction of technologies into the livestock sector that are environmentally friendly, cost effective and guarantees consumers right and safety. Technological changes in livestock sub-sector has been very slow or absent compared to crop and fisheries sub-sectors. Achievement in crop agriculture through scientific manipulation and appropriate policy interventions has been made in the last decade. Livestock sub-sector remained less sensitive and responsive to its development needs. Recently, some technological interventions and limited policy reforms, particularly in small ruminants (Goats & Sheep), poultry and pigs sector has shown some impact on livestock production. Intensive poultry farming practices, including hygienically eco-friendly modern housing system, improved feeds, modern equipment, input service delivery by development partners have been introduced together with the use of improved health and production systems. Introduction of hybrid poultry has greatly improved chicken and egg production. Recently, a poultry hybrid called "Isa Brown" from Netherlands has been introduced in BRAC Liberia parent stock poultry farm for distribution of quality chick among the smallholder beneficiaries. A similar organization Obasanjo farms Nig. Ltd also established layer poultry breeder farms using "Nera" breed of birds from Nigeria. The Georges Haddad farm succeeded in producing more than 26,000 eggs per day. Wulki Farms Inc. is an agricultural venture, situated in Careysburg and was established in 1998, which is the largest livestock and vegetable farm in Liberia. Currently, it produces table eggs for commercial purposes, housing capacity are for 30,000 layers. They have in stock 2500 layers and at the end of their laying period,

sole and in addition 7000 layers begun producing eggs on a commercial level. These farms distributed eggs in different markets, superstores and retailers. All the farms produced poultry feed for their own consumption and distribution to the beneficiaries. BRAC Liberia, NGOs and development partners have distributed chickens to their model farmers comprising in a group with various input services delivery and capacity building. Similarly, they also distributed cattle and other small ruminants (goats & sheep) for small scale dairy and meat production to the beneficiaries with inputs delivery supports. *Peste Des Petits Ruminants* (PPR) vaccine has been given routinely to small ruminants to protect them from devastating disease, which has enhanced goats farming by smallholders. Restocking of small ruminants definitely increases the population of animals, but Artificial Insemination (AI) practice can be introduced to have an immediate impact of the productivity of animals. The genetic gain of the animals could be expedited using Multiple Ovulation Embryo Transfer Technique (MOET). There has been increased in number of livestock (41.2%) and poultry (22%) households than the pre-war (1988).

9. Development has taken place in commercial and small scale poultry, pigs and goats farming due to changes in public policy. Poultry, goats and pigs production has increased. Liberian government encourages public-private partnership in which activities from production to marketing can be extended by the private sector while public sector should concentrate on promoting small scale farming and other critical aspects of value chains with the delivery of public goods services such as extension, veterinary public health and food safety, diseases surveillance and prevention, emergency preparedness and planning, information and communication, education and research and coordination. New agro-based industries such as feed mills, pork, beef, mutton, lamb and chicken processing, freezing and storage etc are encouraged to be established by the private sector. Animal Disease Law (drafted), the Plant and Animal Quarantine Act, the National Livestock Artificial Insemination Act is available, although the relevant legislation and regulations are all very ancient. A number of Acts relating to various aspects of livestock is under process. These policy changes have had positive impact of livestock development in the Republic of Liberia.

Public sector expenditure in livestock sub-sector

10. National budget allocation for MoA is shown in Table 3. Between 2003 and 2005 the share of the national budget allocated to agriculture hardly reaches one%. The budgetary share is confirmed by a review of government allocations to the sector since 2005. In 2005-2006 the total national budget was $80 million USD; and allocation to agriculture was $0.74 million USD, slightly less than 1% of the total budget. In 2006-2007, 2007-2008, and 2008-2009 fiscal years, allocation to agriculture were $3.1 million USD, $3.8 million USD and $7.0 million USD, representing budget shares of 2.0%, 1.8% and 2.3%, respectively (LASIP, 2010). In general, public expenditure in agriculture (crop, fisheries, livestock and forestry) has grown at an exceptionally high rate, from $0.74 million USD in 2005 -2006 to over $20 million USD in 2011-2012. In 2012-2013, 53% of the agriculture budget is allocated, 18% to the forestry development authority, and an additional 12% to an "agriculture produce buy-back fund" but there is no allocation or earmarked budget for the livestock sub-sector development and

service delivery, only lump sum grant has been given. Intra-sectoral allocation of development expenditure in agriculture is given in Table 4. In the LASIP (2011-2015) Sub-program 5: a total of $11.0 million USD has been allocated for Livestock Development and Promotion, but only 1.1 million has been incurred in 2011, remaining 9.9 million will be expended by 2015. The internal spending on agriculture as of percentage of total expenditure is stagnant, at around 4%. Actual spending by the MoA is less than budgeted; actual spending is at 81% of the initial appropriation in 2010-2011. External aid represented several multiples of internal spending in 2009-2010 through 2011-2012. Aid to agriculture around $35 million USD per year is provided by donors such as African Development Bank, USAID, EU (LASPER, 2013).

Table 3. Annual public sector allocation to livestock sub-sector (in US$)

Years	Allocation to Livestock sub-sector	Annual Budget for Agriculture	% of Annual Budget
2008-2009	30%	2.9	1.2%
2009-2010	30%	2.0	2.0%
2010-2011	30%	3.8	2.1%
2011-2012	30%	4.0	1.9%
2012-2013	30%	5.8	2.0%
2013-2014	30%	7.0	2.5%

Source: LISGIS STAT, 2012

Table 4. Intra-sectoral Allocation of Development Expenditure in Agriculture (%)

Sub-sectors	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014
Crops	9.2	10.1	17.9	21.3	22.0
Livestock	0.4	1.1	2.3	2.5	2.9
Fisheries	6.4 - 3.5	3.5- 4.3	4.3 – 4.1	4.1 – 4.3	4.3 – 4.5
Forestry	1.4 - 13.3	13.3 – 13.7	13.7 – 4.4	4.4	4.4 – 7.1

Source: MoA Annual Report (2010 -2013)

Advantage, profitability and comparative strength

11. Poultry, pigs and goats farming has certain advantages over crops, fisheries and forestry. They require less land, least influenced by climatic change and the supply of food of animal origin is disproportionately low against high demand. The current meat consumption is about 11.0 kg per person and per year on average, which is covered by 2.6 kg from live animals, 4.0 kg of imported meat/person/year and 4.4 kg of wild meat (FAO/AGAL, 2005). Dairy production is essentially nil and insignificant. Concerning milk, the need is figured at 33,440 tonnes; that are 9.7 kg/person/year, which is entirely covered by imports. The total meat and milk consumption in Sub-Saharan Africa (SSA) in 1993 of 14 and 5 million tonnes, respectively, which are projected to reach 31 and 12 million tonnes for 2020, percentage increases of 121% and 140% for milk and meat, respectively (KwakuAgyemang, 2013). On the basis of local production and importation, the average consumption is about 11 eggs/person/year (Rhissa, 2007). In order to meet

the shortfall, meat, milk, eggs are being imported expending huge amount of foreign currency ($5,906,552 USD: 2005-2006**)** every year. The production of meat, milk and eggs needs to grow to meet the increasing demand. This illustrates the need for increasing the efficiency of meat, milk and egg production in the country to increase the intake of animal protein and reduce dependence on other countries for importation of animal products. It has been found that small ruminants (goats & sheep), pigs and chicken generates more regular cash income and its processing and marketing create more employment per unit value added compared to crops. These experiences are shared with different NGOs and development partners for their demonstration, model and community farmers. There is no clear intra-sectoral study on comparative advantage and profitability, but profit margin of small scale livestock farming is higher than crop and fish farming as reported by many farmers under this study, if feeds, veterinary and artificial insemination services, vaccines, medicines, credit and access to market are ensured. Compared to other developing countries, livestock farming in Liberia is handicapped by low productivity and low product quality. The bovine races consist mainly of native taurine breeds of Trypanotolerant N'Dama (longhorn; 41%) and Mutura (shorthorn; 59%). Recently, some zebu breeds from Mali are introduced. These are less productive and of small size with an average carcass weight of 95 kg. The age of first calving is from 30-35 months. The fertility rate rarely goes beyond 82% that sounds an excellent fertility rate. The mortality rate between zero and one year is estimated at 27%. Dairy production is totally absent. Calves weight at birth is rarely exceed 18 kg. Goats and sheep are of the West Africa Dwarf breeds (Djallonke) and are less productive. Kid and lamb mortality is closed to 50%. Pigs of White landrace (USA), Yorkshire (USA), Hampshire (USA/France), Chester White (Britain/USA) and local breeds are available, which are productive having 6-14 piglets in each furrowing. Farmers including smallholders do not enjoy the benefits of public policy. The benefit of tax holiday and low tariff goes almost entirely to importers and commercial farmers. There is no Act/law in force and regulatory body to ensure quality of livestock product to increase profitability and competitive strength. Profit margin and competitive strength can be enhanced with appropriate policy and institutional reforms.

12. Policy support creating environment in the livestock sub-sector for target factor productivity, investments and risks by (i) increasing public investment in infrastructure and public good services, and promoting private investment, (ii) inducing shift in relative prices of inputs and outputs to correct market distortion, rationalized the incentive structure for investment and mitigate negative impact on environment, (iii) putting in place appropriate legal and regulatory framework, and (iv) effecting institutional reform and good governance making both in public and private sector more transparent and accountable.

Major constraints in the livestock sub-sector

13. Livestock development in Liberia is handicapped by number of critical constraints (Rhissa, 2007; FAPS, 2008; PRS, 2008; Crowley *et al*., 2011; CPF Liberia, 2012; KwakuAgyemang 2013). Absence of a comprehensive livestock development policy and a national strategy for enhancing livestock production in collaboration

with the private sector is a primary constraint. Policy and institutional reforms particularly National Livestock Bureau (NLB) and its functional arms are of critical importance to induce changes necessary to meet the new challenges caused by globalization, trade liberation and World Trade Organization (WTO) regulations. Livestock development cannot be achieved through the public sector intervention alone. Major participation of the private sector is essential. Recent development has been taken place in the poultry and pigs farming, which is due to private sector interventions coupled with certain positive changes in public policy. NLB so long has been rendering both the private and public sector functions. In the context of participation of private sector in livestock development, it is high time for NLB to transfer the private functions gradually to the private sector and must shoulder the responsibilities of delivering the public goods services such as enforcement of laws and regulations, quality assurance, disease investigation and surveillance, veterinary public health and food safety, policy formulation and strategy development, and facilitating greater involvement of the private sector.

14. Quality assurance is a critical factor constraining future development of livestock. In the absence of legal and regulatory framework, livestock development in the private sector is taking place in an indiscriminate manner, which has created problems of quality control in livestock products (meats, milk, eggs & their by products) medicines, biologic, feeds, veterinary services and breeding materials (details are given in the following chapters). These are seriously affecting the livestock productivity especially the smallholders. Establishment of a legal body to conduct quality tests and certify product quality is a critical need.

15. Limited availability and lack of quality feed ingredients and balanced feed is a serious constraint to livestock development especially in poultry and pigs industries. In Liberia, livestock farmers rely on a combination of both local and imported feeds and other inputs (medicine, vaccines), a trend that is expected to intensify. Absence of credit facilities certainly impairs the livestock development program. There are two million hectares of natural and pastoral land available, which is a huge resource for livestock as green fodder in Liberia. Preservation, improvement and exploitation of pastoral resources are essential. Feed and its high cost offer a major challenge for livestock development. Similarly, low coverage of veterinary/animal health care services (disease diagnosis, delivery of veterinary clinical services, medicines and vaccines) and irregular supply of vaccines in the market pose a serious threat to smallholder livestock (including poultry) farms.

16. The livestock revolution in developing countries as well as in Liberia relies on human resources development (Graduates in Animal Health & Production/Technicians/Community Animal Health Workers etc.) and a rapidly increasing use of feeds, medicines, vaccines and animal health and production services. Public sector support is essential on need-based research in animal health and production. Promote farmed-based organizations and their role in local-level planning. The livestock sub-sector will be shaped by both private and public policies that address the provision of livestock services, particularly animal health services, and policies addressing feeds and pastoral land utilization, importation of inputs,

marketing of livestock products (meats, eggs, chickens, milk etc.), and credit support for the purchase of animals and other inputs. Horizontal and vertical integration in livestock industries of the country are important, increasing the need for policy to regulate and guide the actions of stakeholders, especially those in a position to improve the lives of poor, poverty, insecurity and unemployment.

Key challenges

17. Livestock sub-sector faces challenges in several fronts. Human resource development, policy and institutional reform are major challenges. Over the last two decades, particularly after economic globalization, trade liberalization, WTO and *Office International des Epizooties* (OIE) regulations, development perspective has changed. The role of public sector has been shifting. Private sector is becoming a major partner in social and economic development. Reflection of this phenomenon is clearly seen in the current trend of development in poultry and pigs farming in Liberia, where growth has been coming from the private sector initiatives. Positive changes so far has taken place in the livestock sub-sector are induced by the ad-hoc policy measures at the initiative of NLB and MoA. But the transformation, which is required for rapid development of the livestock sub-sector contributing to poverty reduction, is not properly guided by adequate public policy. There are few policy documents available and the last draft of livestock policy was formulated in 2013 and it was not finalized, now it is reviewing, finetuning and on the process of finalization. The key challenge would, therefore, be to approve and implement the proposed policy options outlined in this document.

18. Similarly, renewal of the NLB has never been done since its establishment in 1956. NLB is performing some private goods functions defined during its inception. It continues to provide medicines, vaccines and veterinary services to farmers, which are the functions of the private sector. No attempt has ever been taken to redefine the function and clearly divide the responsibility between the public and private sectors, and recognizes NLB accordingly. This is the major challenge facing the livestock sub-sector of the MoA in Liberia.

19. Private sector involvement is crucial, which requires a major drive to privatize veterinary services, but unfortunately there is no graduate veterinarian working in Liberia, one veterinarian from Ethiopia has been doing private practice in Monrovia and another veterinarian from Nigeria has been working in one poultry farm. The other major challenges include establishment of Acts and legal bodies, enforcement of laws and regulations, and ensuring quality control of feeds, medicines, biologic, semen, and day-old-chicks. Veterinary public health, food hygiene, and control of zoonoses as areas that are weakly addressed and require improvement. A close collaboration is very much essential between human public health and veterinary public health in controlling zoonoses and implementing food safety program. Access of small scale livestock including poultry farmers to disease diagnosis and veterinary services is one of the key challenges confronting livestock development. This is a problem that cannot be solved by the public sector alone. In addition, ensuring the quality feeds, vaccine and medicines and rationalizing their price, mitigating the scarcity of those items is also a major challenge.

20. These constraints and challenges associated with each of the seven identified areas (Livestock Sub-Sector in Liberia; Veterinary Services and Animal Health; Institutional Analysis of National Livestock Bureau & Department of Livestock of the Central Agriculture Research Institute; Legal and Regulatory Frameworks for Livestock Development; Livestock Breeds and Breeding; Livestock Feeds and Feeding; Livestock Marketing and its Products) are discussed in the following chapters, and recommendations made along with proposed projects for the next ten years. The recommendations in this report focus on policy options that have impact in the livestock sub-sector of the MoA through better use of resources, leading to more efficient production.

CHAPTER 2

Veterinary Services and Animal Health

1. Background and overview

1.1 Livestock including poultry, an integral part of the mixed farming system, play an important role in the economy of Liberia. Most livestock is reared by subsistence farmers. Small-scale farmers and the landless including women are responsible for rearing most livestock in Africa (McIntire *et al*., 1992; Mlangwa and Kisauzi, 1994; Silkin and Kasirye, 2002). Liberian's animal density is less than 0.1 head of cattle, 2.2 of sheep, and 2.1 goats/Km^2. Meat, milk and egg consumption is 11.0 kg, 9.8 kg and 3.0 kg/person/year, respectively. Only 9.2% of these needs are covered by local production and no milk is produced locally (Rhissa, 2007). Liberia has an estimated two million hectors of pasture, of which government and communal lands are used for farming including livestock. The enclosure of livestock in pastures and barns is a relatively new development in Liberian.

1.2 The livestock sector accounts for 14% of agricultural Gross Domestic Product (GDP). Estimates suggest there is slow growth in aggregates livestock numbers, which include 1,270,875 Chickens, 60,760 ducks, 8,275 cattle, 120,114 goats, 48,660 sheep and 70,520 pigs (Andrews, 2012; KwakuAgyemang 2013). The livestock sub-sector is expected to increase in the coming years. This sector also employs about 60% of the labor force. It offers higher employment opportunity, indicating higher poverty reduction potential.

1.3 The increased demand for livestock products is expected to continue. Growth will help in reducing poverty through increased employment of the landless, unemployed youth and vulnerable people. Livestock should be recognized in the Poverty Reduction Strategy (PRS) as the tool for reducing poverty, particularly rural women and vulnerable farmers.

1.4 The livestock services in Liberia have been working since 1956. Until 1983, the services were delivered by expatriate technicians, particularly Israelis, Egyptians and Sierra Leoneans. The first Liberian Veterinarian Dr. Christian Baker took office in 1983 and this was followed by Dr. John Dargbeh, Dr. Dargbeh Darkina and Dr. Leon Ledlum Quist whom the Central Veterinary Laboratory in Monrovia was named. In 1990 the livestock services in Liberia collapsed due to civil war, which lasted until 2003. At present livestock services are rendered by "the National Livestock Bureau (NLB)" of the Ministry of Agriculture (MoA), which is unable to deliver adequate services to livestock (including poultry) producers. Efficient performance of the livestock sector would contribute toward development of agrarian economics. The availability and quality of animal health services can play a key role in increasing the productivity of livestock (Umali *et al*., 1994). The inadequate supply of veterinary services has commonly been attributed to poor public sector performance (de Haan and Bekure, 1991)

1.5 Comprehensive reports are available on different aspects of animal health, where there is an integrated approach on disease surveillance, epidemiology of infectious diseases, and strong veterinary public health services for controlling zoonoses and for safe food production (Alam, 2005a; Holden *et al*., 1996; McLeod and Leslie, 2000; Hall, 2005; Klooster, 2005). Implementation of legislation for disease control, animal slaughter and meat inspection has been suggested. Private sector involvement in the production of vaccines, medicines, feeds and breeding has been recommended. Institutional reform of NLB of MoA and Department of Livestock (DoL) of the Central Agriculture Research Institute (CARI) is essential to strengthen their capacity for monitoring, control and prevention of disease including trans-boundary disease transmission, veterinary public health, quality assurance of private sector services, and providing information to the smallholders on new technology, management practices and farming systems.

1.6 Public sector allocation to NLB and DoL is insufficient to meet the requirements of inputs needed for the farmers. NLB purchases veterinary medicines, particularly anthelmintics and vaccines, for distribution amongst farmers through county livestock officers free of charge or with minimum charges, but the quantity is grossly insufficient. DoL is not getting support to do any need-based research. Non-Government Organizations (NGOs) and other development partners also invest in vaccines and medicines. Local poultry feeds are sold in market; in addition feeds are imported. There are no pharmaceutical companies for manufacturing veterinary medicines and vaccines. All medicines, vaccines, premix and vitamins are imported from Netherlands.

2. Delivery of animal health services

2.1 At present there is no veterinary graduate working in the NLB and DoL of the Central Agricultural Research Institute (CARI) of MoA in Liberia. One Ethiopian Veterinarian Dr. Etagegnehu D. Belayneh has been working as a small animal private practitioner in Monrovia. Currently what should be private veterinary services are being delivered in different counties on the basis of public goods. Most veterinary treatments and clinical support services (including surgical and obstetrical interventions) are being delivered by NLB. Veterinary clinical services including diagnosis are provided by the public sector free of charge or for a minimum charge by the network of county agriculture offices. One county livestock officer with an animal science background, trained for a few months in primary animal health care, is responsible for huge areas. There is no community or county veterinary hospital. Community livestock officer has been carrying out disease survey, vaccination and treatment of diseases. They also create awareness among farmers on production. The Dr. Leon Ledlum Central Veterinary Laboratory in Monrovia, understaffed with scientists has been rendering diagnostic services to the smallholders. Similarly, only one slaughterhouse exits in Monrovia: it is poorly managed with no veterinarian for meat inspection; a briefly trained technician has been given responsibility to do postmortem examination of the carcasses. The county agriculture offices and the Dr. Leon Ledlum Central Veterinary Laboratory and slaughterhouse are answerable the NLB. There is, however, indication that private provision of services is in demand -

NGOs and development partners are providing clinical veterinary/animal health services with minimum or no charges.

2.2 The NLB purchase veterinary medicines and vaccines that are supposed to be distributed free of charges or subsidized. However, as the quantity is not enough, a limited number of farmers- mostly in the vicinity of the office – are served, while others have to buy medicines, vaccine and feeds from the pharmacy in Monrovia. The cost of medicines and vaccines in the pharmacy includes, besides profits, over 50% in fees and duties charged by the government. Smallholders in remote areas are getting less benefit from medicines and vaccines provided by the public sector. Shop owners have not received formal training in pharmacy and dispensing, but sell a wide range of medicines and vaccines without prescription. Basic necessities such as electricity and refrigerator are required in these pharmacies.

2.3 Private sectors investment money on vaccine, medicine, drugs and feed additives and vitamins. No vaccines, medicines, feed additives or vitamins are made in Liberia; all are imported. There are very few pharmacies in Monrovia importing medicines, vaccines and feeds.

2.4 The limited coverage of the veterinary services has created opportunities for NGOs, development partners and others to develop their own veterinary services. No artificial insemination (AI) services are delivered. Other service providers include community livestock workers who have been trained by BRAC Liberia. NGOs deliver vaccination and other health services to smallholders living in remote areas. USAID's Food & Enterprise Development (FED) Program for Liberia (DAI) provides Peste des Petits Ruminant (PPR) vaccine in goats and sheep. Only Veterinarian/Manager, Price Trading Inc. Veterinary Store, Kamara Building, Paynesville, Monrovia provides clinical services to nearby companion animal owners.

2.5 There is a demand for laboratory diagnosis of diseases in animals. No laboratories are available in Liberia other than Dr. Leon Ledlum Central Veterinary Laboratory in Monrovia, which serves mainly farmers in the area. There is demand for private high quality veterinary service in livestock. On the other hand, the prospects for establishing a private veterinary practice in remote areas are limited. In the absence of a clear policy to provide veterinary services to all livestock owners, veterinarians will be employed by private enterprise. Dr. Jamiu Adeyemo a Nigerian veterinarian has been acting as General Manager, Obasanjo Farm Nig. Ltd (Layer farms), while more traditional livestock owners will be served by whatever public service is available. Government can support community–based veterinary service, which is successful in many countries and may be a good alternative (Silkin and Kasirye, 2002; Alam, 2005b).

2.6 There are no veterinary graduate in Liberia except a veterinarian from Ethiopia has been doing private practice in Monrovia and a veterinarian from Nigeria has been acting as a general manager in Obasanjo poultry farms. The University of Liberia and the Cuttington University have been offering a degree program in animal agriculture. There are no veterinary undergraduate programs in Liberia. Therefore, academic

institutions should introduce degree program in animal health and production immediately. Graduates can then establish a private practice or work in the public sector. Meanwhile the government should hire veterinarians from other countries.

3. Control of animal diseases

3.1 Potential impacts of diseases are reviewed by McLeod and Leslie (2000). The state veterinary services should:

- Develop, coordinate and implement disease control strategies and programs including emergency preparedness planning
- Establish and maintain capacity in disease outbreak investigation and laboratory confirmation
- Establish and maintain a national disease reporting and information system
- Report disease outbreaks to local, regional and global (OIE) authorities

3.2 These functions are either non-existent in Liberia or insufficient. Details are available in the reports cited; a summary of findings and conclusions are presented here.

4. Disease information and control strategies

4.1 There is little information available. Disease reporting is non-existent or inefficient. This is essential for the NLB. The NBL is struggling to maintain these activities without veterinarians and funds. It is suggested that monthly disease reports should be collected from all districts and counties and all data entered in a database. This would be in the line with new international reporting requirements, especially OIE, and would improve links between field services and NBL.

4.2 The service rendered by the NLB is preoccupied with the provision of clinical services; the only central veterinary laboratory in Monrovia is involved in the provision of diagnostic services rather than disease investigation and surveillance for Transboundary Animal Diseases (TADs). There is no disease information exchange between NLB and NGOs or private sector providers, so there is duplication of services.

4.3 There is no national strategy for the control or eradication of TADs. Immunization taking place sporadically in community or at smallholders' level is uncoordinated. Sometimes ring-vaccination is done during an outbreak of diseases. Most vaccination in animals at the community or smallholders levels is done by the county livestock officer and/or by briefly trained livestock workers. NGOs and other development partners provide most of the vaccination programs. NBL vaccination covered only few farm animals and birds, partly due to lack of technicians and funding, but also due to infrastructural barriers such as transport and cold chain technology.

4.4 The spread of PPR in Liberia is an example of what happens in the absence of emergency plans and disease control strategies. PPR was introduced in 2004 and by now almost all districts are affected. Outbreaks are common in goats and sheep and not well controlled. The NLB does not have emergency plans in place for possible emerging and re-emerging diseases. One important effect of disease control is to sustain fragile, and disease control can benefit the poor.

4.5 Boarder areas are not inspected by the NLB staff due to lack of funds and logistic supports. Infrastructures for quarantine are there, but were damaged during civil war: no funding has been given for their reconstruction. Huge numbers of animals mostly N' Dama and Gudahli breeds are coming from neighboring countries, particularly from Mali, Ivory Coast, and Guinea without paying tax. The revenue from this tax alone could pay for services and programs.

5. Veterinary public health, control of zoonotic diseases and regulatory affairs

5.1 In 1999 joint FAO/WHO expert committee agreed on the following definition of veterinary public health: "Veterinary public health is the sum of all contributions to the physical, mental and social well-being of humans through understanding and application of veterinary science". This definition involves attention to the risks at the level of both production and consumption of food of animal origin. It includes the risks stemming from zoonoses, risk related to occupational diseases and to environmental health and these may be affected by the health status of farm and pet animals.

5.2 Veterinary public health (VPH) systems are "public goods", and all stakeholders and medical professionals should be involved in the delivery of these services. A close cooperation has to be established between human public health and veterinary public health in controlling zoonoses and implementing safe production of food of animal origin.

5.3 There is no VPH section/division working under NLB in Liberia. There are weak relations of NLB with human and public health departments, with which these should be implementing surveillance and control programs for zoonoses and food safety. VPH services in Liberia are further constrained by lack of a supporting legal framework addressing food safety. The Animal Slaughter Restriction and Meat Inspection Act needs to be implemented.

5.4 Meat inspection has been doing by a briefly trained technician at the Monrovia slaughterhouse. This slaughterhouse is in a deplorable state. Slaughterhouses outside Monrovia are non-existent. There are four slaughter slabs established by the MoA in counties: (i) Nimba, (ii) Lofa, (iii) Bong and (iv) Margibi that do not meet elementary hygiene requirements, but in other rural areas of 11 counties, people rely on meat originating from informal slaughter. Recently, "Animal Disease Law" has been drafted, but implementation is a problem and subsidiary regulations facilitating local enforcement are not yet ready.

5.5 In the PRS document, VPH, food hygiene and control of zoonoses are not addressed, but require attention by policy makers. Poverty is a major risk factor for zoonoses and food borne illness. VPH services are deficient or absent at almost all administrative levels in the NLB. This situation needs to be addressed immediately to control long-standing and persistent zoonoses including tuberculosis, anthrax, brucellosis, tularemia, salmonella, glanders, melioidosis, psittacosis, q-fever, rabies, viral encephalitis, trichinellosis, hydatidiasis, toxoplasmosis, fish tapeworm etc.

6. Medicine quality control and registration

6.1 Liberia Medical and Humanitarian authority control the registration of veterinary medicines. Upon client request, the pharmacy chief executive officer applies for permit of import medicines and vaccines and the authority issued permit, but there is no representative from NLB to act as the veterinary expert member for registration of veterinary medicines and biologic. Once a product is registered, which may take sometime, the quality of imported products is not controlled on a regular basis, which leaves room for fraud and adulteration. The UN has cited the occurrence of false and adulterated medicines as one of the greatest global threats to health control. The pharmacists and other stakeholders are part of solution, but institutions, regulations, and enforcement are required for registration and quality control.

6.2 Import permit and registration is not required for feed additives such as toxin binders, antibiotics and vitamin-mineral premixes, leaving the country open to the importation of harmful and possibly banned substances. There are no pharmaceutical industries available with quality testing and control mechanism to produce medicines, and vaccines, and there are opportunities for the private sector.

7. International opportunities

7.1 If Liberia is to compete in the international market for livestock and their products, it need to meet standards of the sanitary and phytosanitary (SPS) agreement under World Trade Organization (WTO). Similarly, Liberia is expected to meet the standards for animal disease testing, diagnosis and reporting under *Office International des Epizooties* (OIE) guidelines. In both cases, institutional and technical capacity falls short of what is needed, particularly in the OIE standards for risk analysis and evaluation of veterinary services.

7.2 The OIE especially states in Chapter 1.3.3 of the *Evaluation of Veterinary Services* that **"**..... veterinary services must be able to demonstrate by means of an appropriate legislation and organization that they are in a position to have control of the establishment and application of animal health measures, and of international veterinary certification activities". In this regard, Liberia falls well short of the capacity to address an adequate animal identification, control of animal movement, animal disease control and reporting, epidemiological surveillance, and the communication of epidemiological information.

7.3 After the fulfillment of national requirement of livestock products (meats, eggs, milk etc), if Liberia wants to enter into the international market for processed animal products, the government should addresses the capacity for these elements of public veterinary services.

Main Constraints

8. The main constraints of providing essential veterinary services in Liberia are:

- Lack of veterinary expertise and infrastructure to provide surveillance and control of diseases and to fully exploit the potential of the livestock
- Limited veterinary services, including disease diagnosis provided by Dr. Leon Ledlum Central Veterinary Laboratory of the NLB, which is inadequately staffed and funded
- Lack of strategic disease control program
- Poor disease investigation facilities and weak linkage between Dr. Leon Ledlum Central Veterinary Laboratory and county/district livestock services
- No epidemiology section in NLB for disease surveillance
- Lack of quality control of veterinary medicines, vaccines, feeds and breeding materials
- Inadequate quarantine services at the land borders and airports
- Inadequate support for veterinary research particularly on the prevalent animals diseases
- Absence of veterinary and biomedical science faculty at the universities
- Absence of continuing veterinary education and training for practicing veterinarians, auxiliary staff and farmers

Policy Issues

9. The primary issues are summarized below that need to be addressed in order to make veterinary services more effective in Liberia. This section is divided into three main areas of focus, which roughly coincide with the institutional reorganization that is needed in veterinary services of NLB (private veterinary services - animal health; public veterinary services - animal disease control; and public veterinary services - veterinary public health and regulatory affairs).

Private veterinary service functions – Animal health

- Spatial coverage of veterinary service delivery
- Harmonization and privatization of Artificial Insemination (AI) service delivery
- Veterinary medicine distribution and dispensing

Public veterinary services delivery – Animal disease control

- Institution reform
- Capacity for preparation and response to TADs
- Disease emergency preparedness

- Privatization of vaccine production except anthrax and quality control of veterinary pharmaceuticals, biologic and feeds

Public veterinary service delivery – Veterinary public health and regulatory affairs

- Clear definition of functions, duties and responsibilities of MoA –NLB and Ministry of Health and Social Welfare (MoHSW) – Department of health and collaboration between them
- Expert/advisory inter-ministerial committee (Animal and human health) for periodic monitoring of VPH issues in Liberia and initiating collaborative work between the two ministries
- Capacity to perform surveillance, diagnosis, epidemiological analysis and to conduct studies on specific veterinary public health issues and veterinary public health education
- Participation in the international forums; FAO/Codex, OIE and WTO, as the role of these institutions likely to intensify in the future
- Hygiene and sanitation of the meat industry

Review of current policies and documents

10. ***Comprehensive Assessment of the Agriculture Sector in Liberia (Rhissa, 2007).***

10.1 In 2007, an assessment of livestock–sub-sector was formulated covering: (i) making livestock a pillar in the fight against poverty, food insecurity and unemployment and put in place a micro-project approach whereby each participant works at his/her own rhythm; (ii) improving the institutional environment and infrastructure, strengthen program inspection and healthfulness of animal products, including strengthen of veterinary services and support to veterinary research; (iii) improving the marketing, processing and distribution of food of animal origin and (iv) preservation, improvement and exploitation of pastoral resources through rehabilitation of pastoral areas and natural resources. This document focuses only on veterinary public health with the recommendation as follows:

- Inventory laws relating to existing veterinary sanitary regulations
- Functional and organizational chart for veterinary and zootechnical support services
- Enact laws relating to contagious diseases, and for the running of the national veterinary services

10.2 This assessment initiated in 2007 did not reflect the requirements of the livestock for the current time. The planning process did not reflect the livelihoods of the poor people, particularly landless women. This document did not address the critical issues: (i) diseases surveillance, reporting and development of data-base; (ii) TADs and quarantine measures; (iii) food safety and biosecurity; (iv) medicine, vaccines, sera, chemicals, semen, embryo control; (iv) regulatory framework; (v) certification, registration and licensing and (vi) implementation of legislations relating

to animal health and welfare, production, food quality, veterinary education and research.

11. ***Liberia Food and Agriculture Policy Strategies 2008.***

11.1 This policy was formulated covering: (i) adequate quantities of competitive quality, safe and low price locally produced lamb, chicken, beef and other meats and dairy products, and substituting imports of these commodities through cheaper domestic production; (ii) revitalization of livestock sector and production, processing, marketing and product development; (iii) restocking of livestock sub-sector with sheep, goats, and other commercial small ruminants and pigs; (iv) development of regional trade liberalization, globalization, privatization and enhancement public-private partnership, public information, awareness and participation, science and technology and (v) promotion of value addition in order to access markets by locally produced livestock products at affordable price to substitute imports. This policy focused mainly on production and marketing of livestock products with little emphasis on veterinary services.

11.2 ***In the poverty reduction strategy document in 2008*** expressed views on strengthening institutional frameworks with a restocking program using small ruminants, without considering animal health and welfare. No directions were given on veterinary services for achieving development goals.

12. ***Liberia Agricultural Sector Investment Program (LASIP) Report 2010.***

12.1 This investment program aims to achieve reliable access to food to help people live active and healthy through increasing smallholder crop yields. The LASIP-specific policy agenda comprises: (i) *Food and nutrition security*: Access to quality inputs including seeds, fertilizers and integrated pest management; diversification and promotion of micronutrient-dense food and fortification of food, food pricing, support for smallholder tree crop farms and fisheries and livestock development legislation. (ii) *Competitive value chains and market linkages*: Promotion of private sector-led agricultural value chains development; development of input and output markets and comprehensive market access. (iii) *Institutional development*: Role of public sector in agriculture, technology generation, transfer and adoption, linking educational and training programs to sector needs and promotion of farmer-based organizations and women and youth empowerment. (iv) *Land and water*: Support for land policy with focus on access, security and use; land inventory and assessment including investment priorities, suitability, husbandry, information exchange and sustainable management of wet and degraded land. All activities have been focused on crop, vegetable, land, water and public sectors development without the clear investment strategy for livestock.

12.2 LASIP program indicated the livestock development and promotion through expansion of livestock production fulfilling 50% or more domestic demand and enabling restocking and improved animal health. The recommended activities are: (i) rebuild veterinary services including quarantine areas at border crossings; (ii)

improve the institutional environment and infrastructure for livestock and strengthen zoosanitary standards; (iii) strengthen coordination among MoA, MoHSW and Ministry of Commerce and Industry (MoCI) for better regulation and expansion of trade in livestock products; (iv) updating existing legislation pertaining to veterinary services and sanitation; (v) preserve, improve and exploit common pastoral resources; (vi) expand existing programs to restock herds, with a focus on small ruminants; and (vii) initiation of micro-project to pilot animal production centers in selected villages.

13. ***Review of the Liberian livestock sub-sector by FAO 2011.***

13.1 A review of the Liberian livestock by an FAO consultant listed the following key limitations and constraints: (i) *Institutional*: lack of veterinarians and limited number trained technicians, no clear policy on livestock; only one central veterinary laboratory, which is inadequately staffed and funded, (ii) *Insufficient infra structure and equipment*: the abattoir in Monrovia is in bad shape; slaughterhouses outside Monrovia are non-existent; the slaughter slabs for the general public do not meet basic hygienic requirement; there is no livestock infrastructure in the counties. (iii) A*nimal diseases*: lack of disease surveillance and mortality rate is high; lack of trained livestock officers and no disease diagnostic facilities; lack of research on prevalent diseases; inadequate quarantine facilities. The most common livestock diseases are: PPR, contagious agalactia, sheep pox, goat pox, contagious bovine pleuropneumonia (CBPP), white scour in calves, flukes, ticks, mites and mange, hog cholera, leptospirosis, swine pox and Newcastle disease. (iv) *Breeding stock*: insufficient improved breeding stock and (v) *Feed*: pasture management is purely traditional with inefficient and inadequate efforts to make improvement; concentrate feeds are very limited and expensive.

14. ***Country Programming Framework Liberia 2012.***

14.1 For the viability of the livestock sub-sector Country Programming Framework identified the following problems: (i) undeveloped pastureland to facilitate and enhance the development and growth of the sector; (ii) difficulty in accessing good breeds of small ruminants, poultry, pigs and cattle; (iii) lack of livestock sector development policy; (iv) lack of trained personnel to coordinate and manage existing planed programs and projects; (v) lack of appropriate infrastructure to facilitate the development and growth of the sector; (vi) lack of capacity to fulfill the demand for meat and meat products as well as quality of these products; (vii) lack of trained personnel and infrastructure to provide surveillance and control of animal diseases and to fully exploit the potential of the sub-sector.

14.2 The performance of the food and agriculture sector has been facing several challenges, mainly in capacities, institutions and infrastructure. Among these outlet markets of livestock with the provision and adoption of improved management and technology; taking comparative advantages for processing and marketing meat products.

15. Draft Livestock Policy 2013.

15.1 In the draft livestock policy the following options were advocated: (i) establish credible public veterinary services and provide private veterinary services in remote areas; (ii) provide improved veterinary public health services; (iii) provide disease diagnostic and investigation facilities; (iii) develop research capacities in livestock health and production; (iv) delivery of technology to the livestock producers and organize demonstration of technology to farmers' group; (v) promote data collection and analysis as a basis for effective and timely intervention; (vi) strengthen marketing of animal product to achieve value addition; (vii) regulate import and export of animals and their products in accordance with the WTO requirements; (viii) promote animal welfare; (ix) restore livestock owners' confidence and improve production; (x) promote use of environmentally friendly technologies; (xi) promote sustainable livestock production; (xii) promote equal access to resources and credit for livestock production, processing and marketing; (xii) improve capability of the livestock sub-sector in providing affordable animal products and (xiii) expand livestock production and processing enterprises among vulnerable groups.

16. In order to update the present livestock sub-sector with especial attention to public veterinary services and alleviating poverty in a sustainable manner, a comprehensive review of analytical and data gaps and areas of interest for the government of Liberia that are not addressed in the framework of the Terrestrial Animal Health Code (OIE, 2003) has been carried out. In addition, the following points needs to be considered for updating the livestock sub-sector in Liberia (McLeod and Leslie, 2000):

- Development of a framework to encourage economic development, improve veterinary service capacity and livestock production. These should be evaluated at the farm level considering cost and outcome;
- Improved delivery of vaccination and surveillance, institutional assessment of the effectiveness and cost-efficiency of the existing strategies;
- Identify the most effective means to assist producers and livestock traders to cope with changing markets to deal with disease outbreaks; increase training for assessing export market; develop information regarding trade and disease eradication.
-

Recommendations

17. Protection of livestock health and welfare requires dedicated veterinary services focused on disease prevention and control. These are well beyond the present provision of NLB of MoA in Liberia. The recommendations for veterinary services are summarized below:

Private veterinary services functions- animal health

1. ***Spatial coverage of veterinary service delivery***

- Support private veterinary services

- Give soft loans
- Establish private "community veterinarians"
- Stimulate collaboration between veterinary pharmacies and veterinarians
- Stimulate and assist establishing community based private veterinary practices
- Train Community Animal Health Workers (CAHWs)
- Regulatory changes encouraging fair play

2. ***Veterinary medicine distribution and dispensing***

- Stop provision of free medicines to livestock owners
- Limit distribution of veterinary medicines to veterinarians and licensed pharmacies linked to veterinarians
- Increase supply/distribution of high quality vaccines to district/county agriculture/livestock/veterinary officer

Public veterinary services function – input services delivery for animal health

3. ***Institutional reform***

- Establish dedicated official/state veterinary services (Annex 1) and amend legislation (Annex 4)

4. **Capacity for preparation/response to TADs**

- Prepare for disease emergencies
- Train existing staff
- Establish an epidemiology division
- Increase capacity of Dr. Leon Ledlum Central Veterinary Laboratory as the diagnostic coordinating center
- Improve communication between ministries, the public and media
- Establish and improve disease information system

5. ***Privatization of vaccine production and QC of veterinary pharmaceuticals***

- Establish pharmaceutical companies for quality production of veterinary medicines and vaccines
- Regulate medicines and vaccine
- Establish external laboratory testing of vaccine, medicine, feeds etc.

6. ***Assessment and continuing education***

- Establish Faculty of Veterinary, Animal and Biomedical Sciences at the public and private universities in Liberia
- Establish fellowships to train undergraduate veterinary students (BVSc & AH/DVM etc) at home and abroad
- Privatize or contract with private trainers to establish facilities on NBL to train livestock officers and auxiliary staff in animal health and production
- Set up postgraduate programs in Animal health and production

18. Along with the above recommendations, an assessment of the division between public and private supply of veterinary services is needed. The definition of the roles

of the public and private sectors should be based on an evaluation of the institutional capacities and advantages of the public and private sectors. The MoA has indicated that it wishes to establish a public sector that deals with the core public functions of establishing regulatory body with regulations and laws.

19. Earlier recommendations are consistent with the findings of this document, and are summarized here (Rhissa, 2007; LASIP, 2010; FAO, 2011; CPF Liberia, 2012; KwakuAgyemang, 2013). All advise animal health care delivery among smallholder living in remote corners of the country by both private and public sectors.

20. In principle three types of activities are identified:

- Activities that are the responsibility of the public sector and should be implemented and paid for by the NLB of MoA (e.g. disease surveillance; emergency preparedness planning);
- Activities including necessary regulations that are the responsibility of the public sector and should be paid for, coordinated and monitored by NLB of MoA but may be implemented on contract by the private sector or by public/private sector partnerships (e.g. vaccination campaigns for diseases of national importance); and
- Activities that are the domain of the private sector or in a transitional phase a public/private sector partnership with the full cost recovered from the beneficiary (e.g. veterinary medicine input supply and treatment).

21. The first step needed by NLB in restructuring is to assess the public and private sector roles and responsibilities and reorganize NLB along those lines. This process may require a detailed action plan with continued input from external expertise. The first step must be a commitment by NLB to asses, which goods and services it deems in the public, private and mixed domain. The following suggested categorizes are suggested:

Public sector functions

- Policy formulation and strategy development (including funding for disease control and surveillance, education, training and research)
- Regulation of the private sector (e.g. quality control and assurance, licensing of service providers, certification and animal welfare)
- Control of TADs (e.g. Rinderpest, PPR, FMD etc.)
- Capacity for disease investigation and surveillance
- Emergency preparedness and coordination
- Emerging and reemerging diseases control (e.g. Ebola hemorrhagic syndrome, Lassa fever, Avian influenza etc.)
- Veterinary public health including control of zoonoses, food hygiene and safety (e.g. quality control and quality assurance) and meat inspection
- Quality control and assurance of veterinary medicine, vaccines, sera, semen, embryo, feeds etc
- Quality assurance of private sector services
- Enforcement of regulations and

- Education of graduate in Animal health and production (BVSc & AH/ DVM/BSc VetSc & AH etc.)

Private sector functions

- Provision of clinical services and treatment of individual animals
- Conduct of herd health programs and routine vaccinations
- production and/or importation of veterinary medicine, biologics, pharmaceuticals, semen, embryos etc
- Provision of credit and
- Training farmers, entrepreneurs, veterinary auxiliaries (CAHWs, AI technicians etc).

Joint Public-Private sector functions

- Vaccination and related activities for the control of TADs
- Reference laboratory services for disease investigation and surveillance
- Research and development with follow-up extension (e.g. farmers field school)
- Information - collection and dissemination including marketing and extension services
- Human resource development and in service training
- Meat inspection through contractual agreement supported by regulation
- Promotion of livestock and poultry industries and exports
- Establishment on a contractual basis of national TADs control programs and
- Meat inspection on contract from the public sector.

Action Plan for Veterinary Services & Animal Health

Project Titles	Duration	Estimated costs (US$)	Actions	Responsibilities
1. Poverty alleviation through community base veterinary services	1st 5 years	15 millions	1. Identification of pilot project areas 2. Development of farmers group or community. 3. Recruiting veterinarians 4. Training of veterinarians, staff and community leaders.	NLB/MoA/ MoHSW
2. Strengthen disease surveillance and transboundry animal diseases (TADs) control	5 years	15 millions	1. Assessment of current status of surveillance and TADs control. 2. Development of facilities and provisions for training. 3. Establishment of an epidemiology section in NLB. 4. Initiation of strategic control program for prioritized diseases. 5. Development of electronic based disease warning and forecasting system. 6. Verification of freedom for Riderpest and BSE. 7. Development of laboratories in each district livestock office	NLB/MoA/ MoHSW
3. Establishment of animal quarantine services	5 years	10 million	1. Survey on animal and animal products import. 2. Identification of points for quarantine stations. 3. Setting of rules and standards. 4. Training of quarantine veterinary officers. 5. Renovation/ Establishment of quarantine station	NLB/MoA
4. Strengthen the veterinary public health services	5 years	15 millions	1. Assessment of current status of veterinary public health. 2. Development of facilities and provision of training. Framing regulations and standards. 3. Carrying out zoonotic and food-borne diseases surveillance. 4. Provision for inspection of abattoirs, slab and food establishments.	NLB/MoA/ MoHSW

CHPATER 3

Institutional Analysis of National Livestock Bureau & Department of Livestock of the Central Agricultural Research Institute

Background and overview

1. Review of the livestock sector is not an easy task due to the absence or inaccessibility of documentation and data. Three major public sector institutions are dedicated to livestock development in Liberia. These are (i) National Livestock Bureau (NLB); (ii) Department of Livestock (DoL) at Central Agricultural Research Institute (CARI), Suakoko, Bong County; and (iii) University of Liberia (UL). DoL is dedicated to research in Livestock (including poultry). The Faculty of Agriculture and Forestry of UL provides animal science-based undergraduate agriculture education. A private universitie, Cuttington University (CU) in Suakoko, Bong County, College of Agriculture and Sustainable Development is offering a BSc in Animal Science & Health education program. Private sector involvement in livestock development has increased. Non-Government Organizations (NGOs), foundations, commercial input providers and private veterinarians are increasingly providing services to animal owners.

2. The livestock services in Liberia were established in 1956. Till 1983, the services were rendered by foreign technicians from Israel, Egypt and Sierra Leone. The first Liberian Veterinarian, Dr. Christian Baker joined the NLB in 1983, which was followed by Dr. John Dargbeh, Dr. Dargbeh Darkina and Dr. Leon Ledlum Quist, after whom the Central Veterinary Laboratory in Monrovia was named. From 1990, the structure of the livestock services collapsed with the civil war, which lasted until 2003. At present, the livestock services are placed as a separate entity under the Ministry of Agriculture (MoA). The human and infrastructure capacities are inadequate. There are few officers trained in animal science and/or health. There is inadequate logistic support. Only one slaughter house exists in Monrovia, and there is lack of equipment, veterinary kits and infrastructure. Support services would helped to improve the efficiency of the people working in the livestock sub-sector. For research, DoL was established in 1948 and it becomes CARI in 1980. This is a semi-autonomous body headed by Director General (DG). MoA has responsibility for the overall coordination of CARI. Critical needs for research in veterinary science were reviewed by the National Academy of Sciences USA in 2005.

3. The mandate of NLB includes all activities related to livestock health and production. It has provision for disease diagnosis, development of breeds, feeds, fodder, meat inspection, quarantine, extension, procurement and distribution of vaccines and medicines. Since 1984, the mandate has remained almost unchanged. A major role of NLB is to create enabling environment for the development of livestock sub-sector. DoL has a mandate to perform research particularly need-based research in health and production of livestock (Falconi *et al.*, 2007). An agriculture research committee decides priorities of livestock research considering the importance, urgency and resources. The committee meets twice a year and the comprises (i) the

Minister of Agriculture - Chair, (ii) Principal Deputy Minister of Agriculture – Vice-Chair, (iii) Deputy Minister of Agriculture for Technical Affairs – Secretary, (iv) Deputy Minister of Agriculture for Planning and Development – Member, (v) President of the University of Liberia – Member, (vi) President of the Cuttington University – Member, (vii) Director of Rural Development Institute – Member, (viii) Director of Liberia Institute of Biomedical Research – Member, and (ix) One farmer nominated by the MoA – Member.

4. Increased animal production requires continuous efforts to fight against diseases. More than 20% animal production is lost as a result of disease. The primary responsibility of the livestock sub-sector is protecting the health and welfare of animals and people. About 60% of human pathogens are of animal origin: 75% of emerging animal diseases can be transmitted to humans (e.g. Ebola hemorrhagic syndrome, Lassa fever); and 80% of pathogens that could potentially be used as bioterrorism are of animal origin.

5. The National Livestock Bureau (NLB) in Liberia is headed by a National Coordinator and organized by two services; (A) Livestock Services; (B) Veterinary Services. The services are functionally split into two sections.

The head of (A) Livestock Services coordinates and supervises two divisions (i) Production & Multiplication and (ii) Feed Resources. The officer responsible for Production & Multiplication coordinates and supervises two sections (i) Monogastric animals comprising (a) Swine, (b) Poultry and (c) others. (ii) Ruminants include (a) Cattle and (b) sheep and goats.

Similarly, the head of (B) Veterinary Services coordinate three divisions (i) Dr. Leon Ledlum Central Veterinary Laboratory comprising (a) Microbiology, (b) Parasitology, (c) Pathology and (d) Virology, (ii) Field Services, which comprises 15 County Livestock officers (CLO) and 46 District Livestock officers (DLO). CLOs are responsible for the implementation of livestock development activities/policies with the assistance of 46 DLOs at county level including remote communities and maintained liaison with sections and the district administration. They also perform the following functions: (i) vaccination, (ii) animal treatments, and (iii) Epidemiology. There is serious shortage of professionals and technical personnel in the fields, county and districts offices and Dr. Leon Ledlum Central Veterinary Laboratory. Similarly, DoL has serious shortage of trained scientists and technicians. There is no legal framework governing its operations, the legislative Act that created in 1950 has been destroyed during the civil war.

6. The National Coordinator of NLB and DG, CARI have executive heads followed by the head of sections, county and district of livestock officers, unit heads. NLB is a highly centralized, the National Coordinator directly reporting to the Deputy Minister and Minister of the MOA. Director, DoL, CARI, reports to his/ her controlling authority in the institute for onward transmission to the MoA.

7. Since the creation of NLB and DoL, their organization has not been updated. Recently, Liberia livestock policy was drafted by KwakuAgyemang (2013), who analyzed NLB and DoL. The policy report discussed the areas of weakness and made recommendations. Actions to implement the recommendations have been placed for reviewing. This section of the policy recommendations draws on the findings of the previous reports; it includes analysis of areas that were not adequately addressed.

Main Constraints

8. The major constraints identified in this sector study (2013) and these studies are:

- Inappropriate mandate in NLB and CARI
- No legal framework for CARI
- Shortage of skilled professionals, scientists and technicians
- Slow recruitment system
- Lack of regular short and in-service training
- Structural and organizational deficiency in both NLB and CARI
- Frontline services (counties/districts) very weak in NLB
- Weak linkage among CARI, other organization and Ministries
- Weak management system in NLB and CARI
- Lack of facilities
- Very limited budget for livestock extension and health, nothing for research

Policy Issues

9. The main proposal for improving the effectiveness and efficiency of NLB and CARI are:

- Updating of mandate for both institutes
- Establishing a regulatory body for livestock sub-sector
- Developing legal framework for DoL
- Improve management in NLB and CARI
- Establishing faculty of veterinary, animal and biomedical sciences at the public and private universities (UL, CU etc.)
- Re-training scientist and staff in line with new functions at NLB and DoL
- Increasing and alternative fundings

10. The mandate of NLB and DoL is inappropriate in the context of changes in the national and international economic and trade environments. NLB is basically performing the private functions, but CARI has no research project in the livestock: the only efforts have been for restocking of small ruminants. NLB is not providing public goods services such as disease surveillance and reporting, food hygiene and safety, enforcement of laws and regulations, quality control of feeds, medicines, vaccines, semen and breeding materials. This could be achieved by reorganizing the NLB. There are areas where private sector is well ahead of the public sector. The poultry industry is a good example. Small holder goats and pigs farming have been growing under private ownership. Animal health and production services are expanding through private and NGOs initiatives. Feed mills are already in the hand of private owner and NGOs. NGOs are engaged in animal health delivery, restocking of small ruminants and breed development. Private companies are selling imported

medicines, vaccines and feeds. These are positive developments. But in the absence of regulatory frameworks, livestock development has been indiscriminate, which has created problems of quality control.

11. In the context of increasing participation of private sector in livestock development, there is a need to redefine the functions of NLB to allow it to gradually withdraw from the areas, and engage in enforcement of laws and regulations, quality assurance, disease investigation and surveillance, veterinary public health, policy formulation and strategy development. Rapid development of livestock depends on complementary role of the public and private sectors.

12. The current structure of NLB does not focus on the issues that matter most for a public sector organization. Department of Livestock at CARI is doing no research due to serious shortage of funds. Their structured is not logical. Elements of veterinary services are inadequate or an uncoordinated. There is a shortage of veterinary graduates in NLB. There is no veterinary public health section and it has no funds to deal with emerging and reemerging diseases, animal diseases surveillance and reporting, food safety and control of zoonose and other public health issues. It has poor linkage with the Health Department, Ministry of Health and Social Welfare (MoHSW). It has no supporting legal framework to implement its mandate. Almost nothing is done for trans-boundry animal diseases (TADs). CARI should be doing these sorts of research. There is no collaboration between these organizations; not even information exchange. Dr. Leon Ledlum Central Veterinary Laboratory is a vital organ of NLB for providing public goods services; but they are ineffective due to lack of trained professionals, technicians, funding and logistical supports. NLB is emphazing on production and animal health delivery services that can be efficiently done by the private sectors and NGOs: the private sector is hired by the NLB on contract basis (community animal health services, vaccination, meat inspection etc.).

13. NLB and CARI's Department of Livestock (DoL) have no central policy and planning section. They have no real management information system. There is no information on production, diseases surveillance and research. Linkages among NLB, DoL of CARI and other organizations are very weak. There is no coordinating mechanism where can meet and exchange ideas.

14. The management system of NLB and CARI is highly centralized. The National Coordinator of NLB and the DG, CARI retains the authority to approve almost all business. Lack of trained professional in both institutes impairs delegation of authority. Internal coordination between units is weak. Capacity to undertake planning, priority setting and managing partnership with private sectors and NGOs is limited. Many positions such as section/division head are vacant, mostly due to lack of professionals.

15. The MoA retains the authority to approve the transfer of staff on the recommendation of the Directors/National Coordinator of NLB and DG, CARI. Appointment, promotion and deployment are in many cases done by the MoA considering the qualifications, skill and experiences of staff.

16. NLB and DoL have no human resource development (HRD) policy. Post requiring specialized professionals are field with persons having inadequate qualification and experiences. NLB and CARI have no plan for training and retraining of staff. The National Coordinator (NLB), Directors, DG (Chief Executive of CARI), sections head have no management training. Many staff received no training after their graduation, diploma or certifications. Some are receiving undergraduate training in animal production and health from home and abroad in a sporadic fashion through various donors. Liberian universities have no faculty offering undergraduate veterinary degrees, but there are animal science degrees. There is no staff training institutes under NLB and no separate item is shown in their annual budget.

17. One of the critical issues is inadequate allocation of funds for the livestock sub-sector and department of livestock at CARI of MoA. Between 2003 and 2005, the share of the national budget allocated to the MoA and other agricultural institutions hardly reaches 1%. From 2005-2006 up to 2010, the public spending on agriculture sector has steadily increased less than 1% in 2005-2006 to 2.5% in 2009-2010. There is no allocation specifically for livestock. NLB cannot perform many essential functions due to shortage of funds. Similarly, due to shortage of funds no research works is being conducted by DoL. Most of the funds go to salaries and others, but negligible amount is spent on medicine, vaccines, extension and research. No allocation is given from the national budget for the livestock development program in the counties and district. Nothing is allocated for livestock including poultry research. There is no data available with regards to allocation per livestock family. Virtually no funds are earmarked for veterinary services or livestock researches.

18. If the government is to provide public services to smallholders livestock farmers, it has to increase the budget substantially and introduce subsidies, as other developing countries have done for the small livestock farmers, in order to reduce poverty. The government may explore the possibilities of alternative funding sources to support livestock research at CARI and NLB's. In Monrovia one private veterinary practitioner provides veterinary services. NLB could also provide private veterinary services on a cost recovery basis. Government could hire veterinarians from overseas for rendering veterinary services including clinical treatment, artificial insemination, vaccination, diseases surveillance, meat inspection etc. NLB should generate funds by using the unused or underused facilities (cattle ranches/herds, CARI, Dr. Leon Ledlum Central Veterinary Laboratory, abattoirs etc.) to reduce pressure on the national budget. CARI should explore the possibilities of having research funds from donor agencies such as (i) Third World Academy of Science, (ii) International Foundation for Science, (iii) International Atomic Energy Agency /FAO, WHO, UNDP, World Bank, DFID, USAID, CIDA, SIDA, USDA etc.

19. NLB and CARI are dependent on development budget that comes through time-limited projects. In most cases the important activities cannot be continued due to lack of continued financial support from the national budget. NLB should have to perform the core public functions using funds from development projects. The funding from the national budget for livestock sub-sector and livestock research at CARI has been traditionally too meager compared with crop and other sector

allocations. Financial support from the national budget for livestock development and research has to be increased manifold to revitalize the livestock sub-sector in order to contribute sustainable economic development and, and to provide food security and nutrition, employment and income, and poverty reduction.

Review of current policies and documents

20. The livestock sub-sector of MoA mainly follows the plans and programs defined in the FAPS (2008), PRS (2008), LASIP (2010), CPF Liberia (2012) and KwakuAgyemang (2013) and the ad-hoc policy measure taken by the MoA at the initiative of NLB from time to time.

21. The PRS, prepared in 2008, suggested a restocking program using small ruminants without considering animal health and welfare issues. No directions were given on institutional reform including veterinary services delivery.

22. In the FAPS (2008), the policy was formulated covering the following areas without having any emphasis on the animal health service delivery:

- Self-sufficiency in lamb, chicken, beef and other meats and dairy
- Revitalization of livestock sector
- Production, processing, marketing animals products
- Restocking of sheep, goats, pigs and commercial small ruminants
- Development of national, regional and world trade
- Privatization and enhancement public-private partnership
- Public information, awareness and participation
- Promotion of value addition to access markets of locally produced animal products.

23. The LASIP (2010) policy agenda focused on:

- Food and nutrition security
- Competitive value chains and market linkages
- Institutional development
- Land and water

All activities were focused on crop, vegetable, land, water and institutional development without a clear investment strategy of the livestock sub-sector.

They made further recommendation, which are as follows:

- Rebuild veterinary services including quarantine
- Improve the institutional infrastructure
- Strengthen zoo sanitary standards
- Strengthen coordination among MoA, MoHSW and Ministry of Commerce and Industry (MoCI)
- Updating existing legislation and regulations
- Preserve, improve and exploit common pastoral resources
- Restocking national herds with a focus on small ruminants and

- Initiation pilot animal production centers in selected villages

24. CPF Liberia (2012) has focused only on the following issues:

- Improve capacities building
- Develop institutions and infrastructure
- Develop markets for livestock and its products
- Adoption of improved management and technology

25. Recently drafted livestock policy document (KwakuAgyemang, 2013) addressed the institutional issues of the livestock sub-sector. He focused on:

- Establish public veterinary services with institutional reorganization
- Provide improved veterinary public health services
- Provide disease diagnostic and investigation facilities
- Develop research capacities in livestock including poultry
- Transfer technology to the farmers
- Promote data collection, storage and analysis
- Strengthen marketing of animal products
- Regulate import and export of animals and its products
- Promote animal welfare
- Promote livestock technologies
- Promote livestock production with incentive
- Promote equal access to credit for livestock production, processing and marketing
- Expand livestock production and processing enterprises.

26. Other policy objectives also focused on production increase. None of the plans addressed the institutional problems.

27. NLB of MoA felt the need for reviewing and updating its mandate and structure in the context of national and global changes including the international treaties, to which Liberia is a signatory. No one has done on institutional analysis, but many reports have made good recommendations, which are yet to be implemented. NLB of MoA has taken an initiative of fine-tuning of the drafted Liberia Livestock Policy of 2013 through the current policy study. A Renewed attempt is being made under this study to address the institutional issues; but the changes will take place only if the recommended polices are implemented.

Recommendations

- Redefine the functions of NLB and CARI
- Reorganize NLB (Annex 1) and DoL (Annex 2) at CARI based on new functions
- Train NLB and CARI staff to deal with new functions
- Establish faculty of veterinary, animal and biomedical sciences at the universities
- Recruit professional graduates (BVSc & AH, BVSc, DVM)
- Restocking the ruminant species (goats, sheep, cattle, pigs)

- Start working on farming system research at CARI

28. After careful review and analysis of the current mandate and structure, of NLB and DoL, the following policy recommendations are made. Other important institutional problems are dealt with in the reports published earlier.

- Initiate institutional reform focusing on redefining the mandate of NLB and DoL, adjusting the structure and improving management system including management information system (MIS).
- Retrain existing staff with new knowledge and skills within the framework of a clearly defined human resource development (HRD) policy and plan to effectively perform the new functions.
- Increase national budget and subsidy for small and marginal livestock (including poultry farmers) to support the functions carried out by NLB, until the private sectors are delivered those services.

Proposed projects

Phase 1 (Short Term)

1. Reform of NLB and DoL
2. Human Resource Development (HRD)
3. Establish the staff training in both institutes

Phase 2 (Medium & Long Terms)

1. Reform NLB and DoL (5-year project to be designed in phase 1)
2. Train staff (5-year project to be designed in phase 1)
3. Establish Training Institutes (3-year project to be designed in phase 1)

Action Plan for the National Livestock Bureau (NLB)

Project Titles	Duration	Approx. Estimated cost (US$)	Actions	Responsibilities
1. Reform of NLB through institutional reform <u>Phase 1:</u> Determining the nature of reforms to be made <u>Phase 2:</u> Implementation of the reforms	15 Months 5-years	400,000 To be determined in Phase 1	i. Redefining mandate of NLB ii. Re-organization based on the new functions iii. Designing improved management system including MIS iv. Preparing a five-year project proposal for implementing the reform Work plan to be detailed in a 5- year project plan.	NLB, MoA
2. Human Resource Development (HRS) <u>Phase 1:</u> Developing policy and training Master Plan <u>Phase 2:</u> Implementing the training plan	12 Months 5-years	300,000 To be determined during 5-year project preparation	i. Drafting HRD policy ii. Developing a 5-year Training Master Plan iii. Developing annual training program for 5-years based on Master Plan iv. Preparing a 5-year project proposal for implementing the training program Work plan to be developed during 5-year project preparation	NLB, MoA NLB
3. Establish the Training Institutes <u>Phase 1:</u> Developing policy and training Master Plan <u>Phase 2:</u> Implementing the training plan	3-years 3-years	700,000 To be determined at the time of preparing the project	i. Establish physical infrastructure, assessing the requirements in terms of training materials, logistics and manpower ii. Preparing a detail 3-year project proposal for building the training capacity of the institutes Work plan to be developed during project preparation	NLB, MoA NLB

Action Plan for the Department of Livestock (DoL) of the Central Agriculture Research Institute (CARI)

Project Title	Duration	Approx. Estimated Cost (US$)	Actions	Responsibility
Reform of Department of Livestock, CARI				
<u>Phase 1</u> Working out the changes to be made	6 Months	100,000	i. Defining mandate ii. Adjusting structure & organization iii. Designing improve management system iv. Drafting a detail 5-year project proposal for strengthening Department of Livestock, CARI	CARI, MoA
<u>Phase 2</u> Implementation of the changes through a 5-year project	5-years	To be determined in the Phase 1	Work plan to be detailed in a 5-year project proposal	CARI

CHPATER 4

Legal and Regulatory Frameworks for Livestock Development

1. Livestock Sub-sector Overview

1.1 The Government of Liberia has identified four key priorities in the agriculture sector consistent with the Poverty Reduction Strategy (PRS, 2008), the Food and Agriculture Policy and Strategy (FAPS, 2006), and the Liberia Agriculture Sector Investment Program (LASPI, 2010), where priority has been given along with crops and forestry to promote livestock development for food and nutrition security toward achieving Millennium Development Goal (MDG) for reducing hunger and poverty.

1.2 Liberia is facing five challenges to food security and agricultural sector development (Tefft, 2005). These are (i) resettlement and reintegration, (ii) reducing the real cost of food, (iii) macroeconomic management and governance, (iv) generating broad-based growth in rural incomes through smallholder development and (v) developing public sector capacity. In the policy documents several objectives are listed and of these the two important issues relating to livestock including poultry are as follows:

- Attain self-sufficiency in animal products (meats, eggs, milk etc) within short period that support smallholder farmers, improving food security and contributing to poverty reduction
- Motivate landless, smallholder farmers, unemployed youth and women for rearing goats, sheep, pigs, cattle and poultry and thus creating opportunities for self employment and income generation, so that rural poverty is alleviated.

Information on different aspects of importance of livestock production, animal health, and veterinary public health, market channel development for livestock and its products in Liberia is presented in a number of comprehensive documents (LASIP, 2010; CPF Liberia, 2012) prepared within the framework of the present National Livestock Policy, Liberia. The objectives of the following sub-sections: livestock production and marketing, animal health and extension delivery services are in brief to "set the scene" and thereby provide background material on the assessment of the legal and regulatory framework.

2. Livestock Production and Marketing

The animal population present in Liberia for the implementation of the Liberia National Livestock Policy relates in particular to ruminants, pigs and poultry, and information on the population is shown in Chapter 1 (Table 3). It can be noted that during the period 2012 – 2013 the main changes recorded relates to the chicken population with an increase about 27% and a reduction in the small ruminants' population by about 5.5%, due to the outbreak of Peste des Petits Ruminant (PPR) in goats and sheep. The total population of other animals and birds has by and large little bit increased.

2.1 Livestock

- Goats: The goat population represents about 68% of the total ruminants' population and goats are primarily reared by the rural farmers in Liberia. The animals are mainly kept by rural and sub-urban households and mostly reared on a scavenging system including browsing on roadside grasses and forages, small pastures, shrubs and tree leaves. The West Africa Dwarf breeds (Djallonke) is the dominating breed and is well adapted to the climatic conditions and vegetation in Liberia. Sixty-five per cent of does kidded twice a year and multiple births accounted for 59% of all births (Oppong and Yebuah, 1981) and have a normal birth of 1 to 3 per doe (Ekarius, 1999). The average carcass weight of this goat is about 9 kg (Rhissa, 2007).

- Sheep: The sheep population is rather small compared to the goat population. The sheep are of Djallonke breed and are sparsely distributed in the rural areas in Liberia. The sheep population has been developed through natural selection and mainly kept by the smallholder and marginal farmers and reared in scavenging systems. Some community people and beneficiaries are getting support from the NGOs and other development partners to have relative large small ruminant flocks. The mean lambing rate is about 1.2 lambs per ewe lambing. The average carcass weight of sheep is about 11 kg (Rhissa, 2007).

- Cattle: Scenario of cattle population is not encouraging. At present only 8,275 cattle are there. Local race of cattle (N"Dama and Muturu) are less productive and of small format weighing 197 kg with an average carcass weight is about 95 kg. The dressing percent is about 48% of live weight. The weight of calves at birth rarely exceeds 18 kg (Rhissa, 2007). Recently, BRAC Liberia has distributed 47 heifers and three bulls among 50 farmers. These animals were purchased from Guinea.

- Pigs: There are few pig farms and it population is about 70,520. Some pig farms operated on a commercial basis near the large urban centers. The small native hogs, which seldom exceeds 45 kg in weight. White Landrace, Yorkshire, Hampshire, Chester White breeds and native breeds are available and these animals reproduce quickly, and fulfil the demand of much-needed protein. These are providing high quality meat at competitive prices. No research data on production and reproduction traits are available.

2.2 Poultry

- Chicken: The chicken production is characterized by: (a) poultry kept by rural households using the scavenging system, (b) it is kept by a semi-intensive management system and (c) commercial enterprises.

  The rearing of chickens by rural households is carried out by women, who rear the birds for their own consumption of eggs and meat and flow of cash. The scavenging system is applied and the flock size is seldom exceeding 20 birds.

The semi-intensive chicken production is based on different feeding systems including the scavenging system supported by feeding protein concentrates. The number of birds varied from a few birds to hundreds or more.

The production systems referred to under (a) and (b) are promoted and supported by a number of different credit packages operated by NGOs.

The commercial enterprises are applying intensive production systems, and some entrepreneurs have concentrated on rearing commercial layer flocks while others on parent stock. The production is primarily based on hybrid chickens imported from overseas (Netherlands, Nigeria).

- Ducks: The many water bodies, marshy riversides and climatic and environmental conditions are favorable for duck production. The production is by and large based on the scavenging system. It takes place throughout the country, but concentrated in riverine and marshy areas. The local duck breed produces about 50-60 eggs per year and weighs 1.5 - 2.5 kg, while exotic breeds may produce about 150 eggs per year and weigh from 2.0 - 3.2 kg. The size of flocks varied from a few ducks to several hundred. At present there are 60,760 ducks in Liberia. No large commercial scale of duck production has yet been identified.

2.3 Livestock marketing

A number of markets are available for the marketing of livestock and its products. In rural areas the livestock producers usually sells their livestock and poultry products directly at the market or consumers/traders at their farm gate. The open spaces in and around the slaughterhouse in Monrovia is used for keeping animals mainly drawn from a long distance of border areas of Mali and Guinea. They are primarily arrived by animal transport/truck, and several hundred animals are to be traded per sale. At the time of social and or religious festivals the number of animals sold at this place is increased. It is rather seldom that smallholder farmers sell their products direct to the consumers. A number of operators are frequently engaged in the transfer and processing of products from "stable to table" as shown bellow:

(i) Step 1 of the marketing chain.

The producer of livestock and products such as beef, eggs, chicken, pork, mutton, lamb trades with middlemen (women traders, boys and men).

(ii) Step 2 of marketing chain.

The middlemen (women, boys and men) are engaged in producing value added products such as seasoning, roast and sell in the streets, shop and along road side/highways.

(iii) Step 3 of the market chain.

The retailer butchers, processors or general grocery traders.

The commercial livestock producers may also sell products to middlemen but may also sell directly to the consumers and supermarkets.

3. Animal Health Situation

The judgment of a country's animal health situation will usually be based on the elements of efficient diseases surveillance and reporting, the state of health of the livestock, wildlife and birds and the organization and implementation of measures to prevention, control and eradicate infectious and contagious animal diseases.

Diseases Surveillance and Reporting

Animal disease surveillance is not a goal in itself, but a tool used to give national veterinary services the ability to substantiate elements of animal disease status reports. Traditionally surveillance has been described as either "passive" or active". The "passive" surveillance refers to a broad approach to collection of animal disease data. Its aims are to provide information on emerging disease, to detect outbreaks of diseases and to uncover trends as regards endemic diseases. It relies mainly on the disease awareness of farmers, veterinarians, traders, slaughterhouse people and others handling livestock including poultry. The "active" surveillance refers to the use of statically structured survey to measure the level of occurrence of disease.

Information on the animal disease situation in Liberia is very inadequate. There is no disease surveillance system, but only Dr. Leon Ledlum Central Veterinary Laboratory in Monrovia is available for diagnostic work based on specimen received from the field. Disease monitoring system is inadequate within the NLB for collection of animal disease data, therefore, it should immediately start working on it as the present surveillance and reporting system is considered weak.

Within the framework of the Animal Health Code of OIE, concerned veterinary authority of OIE Member States shall make available to other countries through OIE, whatever information is necessary to minimize the spread of important animal and poultry diseases and to assist in achieving better worldwide control of diseases. The guidelines and standards for disease reporting are given in the Animal Health Code. Veterinary Services of NLB is responsible for collection of data to be submitted to OIE.

4. Animal Disease Situation

Animal diseases are by OIE classified as list A, list B diseases and other diseases.

List A diseases are transmissible diseases, which have a potential for a very serious and rapid spread, irrespective of national borders. These are serious socio-economic or public health consequences and are of major importance in the international trade of animals and its products. The list A diseases consists of 15 infectious diseases and the diseases, which in particular are important for livestock and poultry includes: Foot and mouth disease, Swine vesicular disease, Peste des petits ruminants, Lumpy skin disease, Bluetongue, African horse sickness, Classical

swine fever, Newcastle disease, Vesicular stomatitis, Rinderpest, Contagious bovine pleuropneumonia, Rift Valley fever, Sheep pox and goat pox, African swine fever, and Highly pathogenic avian influenza.

List B diseases are transmissible diseases which are considered to be of socio-economic and/or public health importance within countries and which are significant in the international trade of animal and its products. The list B diseases refer to diseases within the different animal species and consist of 68 named diseases. Some List B diseases of importance for ruminants, pigs and poultry are: anthrax, leptospirosis, rabies, brucellosis, tuberculosis, hemorrhagic septicemia, bovine spongiform enchalopathy, contagious caprine pleuropneumonia, scrapi, enzootic abortion of ewes, African swine fever, Classical swine fever, Gamboro disease, Marek's diseases, fowl typhoid, pullorum disease, duck virus hepatitis, duck virus enteritis and fowl cholera.

The animal disease situation of Liberia reflects the geographical location of the country, the climatic conditions, husbandry practices and the application of animal diseases control measures. A number of OIE List A and List B diseases are recorded to be endemic or frequently occurring in Liberia. List A: foot and mouth disease, Peste des petits ruminants, ontagious bovine pleuropneumonia, lumpy skin disease, classical swine fever, newcastle disease, rinderpest, sheep pox and goat pox. List B: anthrax, rabies, brucellosis, tuberculosis, hemorrhagic septicemia, bovine spongiform enchalopathy, contagious caprine pleuropneumonia, scrapi, enzootic abortion of ewes, African swine fever, classical swine fever, duck virus hepatitis, duck virus enteritis and fowl cholera.

In addition to the reported cases or outbreaks of above mentioned diseases, a number of other diseases have been reported to create problems. Some of these are: blackquarter, contagious ecthyma, salmonellosis and parasitic diseases including blood protozoa.

Chances of importing several infectious diseases along with importation of livestock and poultry including chicks, not previously recorded may cause problem in Liberia.

5. Disease Prevention, Control and Eradication Measures

The ability to prevent the introduction of a disease at farm, district, county, or country level and/or to eradicate infectious diseases typically leaves control or "living with the disease" as common alternatives. The main objectives of disease control are to reduce the prevalence of existing diseases and the morbidity and mortality rates from clinical disease. The principles of control include: reducing infection pressure, reducing the effect of risk factors that increase susceptibility and enhancing immunity through vaccination programs. Concerned veterinary office at Monrovia, county and districts levels with the aim to ensure that animal disease control measures and control programs are being implemented in accordance with provisions of the prevailing legislation.

Shortage in Liberia of epidemiological data on livestock and poultry diseases, shortage of professionals and inadequate resources has not yet made it possible to establish and implement comprehensive disease control and eradication programs.

6. Extension Delivery Services

Extension delivery services for livestock including poultry are associated with the services provided by the public sector in Liberia. The demand for services by the livestock sector, however, depends greatly on the developing stage of the sector and the prevailing type of production such as smallholding subsistence farming, semi-intensive farming, and commercial livestock production systems.

In Liberia, NLB is engaged in providing extension services and it has the mandate to ensure production and delivery inputs in important areas of livestock including poultry production such as: feeds, breeding materials, diagnostic services, vaccines, treatment of animals and implementation of legal provisions for diseases prevention and control (Please see Chapter 3).

An initiative has been taken concerning measures to focus on the livestock sub-sector in poverty reduction in Liberia. Within this context it has been highlighted that services for low incomes and resource poor farmers are often required within the areas of:

- Information and technology transfer concerning livestock production and productivity
- Financial services (access to credit and micro-credit)
- Social services

The extension delivery services required to cope with the demands of different livestock production systems that vary greatly. The quality of services delivery is without any doubt depends on who the service provider is responsible and accountable to, and how the income of the service provider is related to achievements made by the user. In Liberia a number of service providers are available for the livestock sector is as follows: (i) public sector (government), (ii) NGOs and development partners, (iii) private services and (iv) producers organization/ association.

7. Legislative Aspect

7.1 Law Making

The Nationality law is given in the Aliens and Nationality Law of 1973, based on its 1847 Constitution of Liberia. Under this constitution, a president heads the government, and the legislature consists of a Senate and a House of Representatives. The voters elect the president to a six-year term. The president appoints the Cabinet to carry out government functions. The voters elect senators to nine-year terms and

House members to six-year terms. All Liberian citizens 18 years of age or older are allowed to vote.

Making and enacting laws is one of the Legislature's most important responsibilities. According to the Constitution, in order to become law, bills must be passed by a majority vote in both Chambers and signed by the President (52nd Legislature of Liberia). The processes are as follows:

(a) Every proposal for making a law shall be made in the form of a Bill by members of the legislature or by the Executive, but the ideas for bills can come from individual citizens, communities, civil society organizations or government institutions.

(b) A Bill is introduced in either the House of Representatives or House of Senate and given a first reading.

(c) The bill is assigned to a committee. The members will debate the issues and possibly make changes. The committee will submit a report to the full body.

(d) The bill is given a second reading by the plenary. The members may decide to send the bill back to the committee or make amendments.

(e) When the legislators are satisfied that there has been sufficient debate, the bill as amended is given a third reading in the plenary and members are called on to vote in favor of or against it.

(f) If members pass the bill, it is sent on to the second chamber of the legislature for consideration.

(g) The bill is received from the first chamber. It is introduced into second chamber and given a first reading.

(h) The bill is assigned to a committee. The members will debate the issues and possibly make changes. The committee will submit a report to the plenary.

(i) The bill is given a second reading by the plenary. The members may decide to send the bill back to the committee or make amendments.

(j) When the legislators are satisfied that there has been sufficient debate, the bill as amended is given a third reading in the plenary and members are called on to vote in favor of or against it.

(k) If the second chamber concurred with the first, the bill is sent to the President for executive approval.

(l) Once a bill has either been signed by the President or vetoed but passed by a 2/3 majority of each chamber, the bill will be published into handbill.

7.2 The Existing Legislation

The current legislation applicable within the areas of livestock production, animal health and animal welfare dates by and large to the time before the civil war in 1983. Plant and Animal Quarantine Act was adopted in 1973. The National Livestock Artificial Insemination Act was adopted long before. The laws were categorized within the two areas: (i) Animal Health and (ii) Livestock Production, respectively. Although, some legislation will have provisions of importance for other areas than the one within it is characterized.

In addition to the legislation discussed above there are provisions of a number of Acts and Ordinances are of importance to the operation of the livestock sub-sector such as (i) Protection and Development of Agricultural Products – Sec 40, (ii) Ch XXV---An Act Authorizing A National Agricultural Development Program, (iii) Miscellaneous ---Secs. 60 & 61 and Repealers – Sec. 100.

Within the context of MoCI, MoHASW some legislation does also specify conditions to be complied with by the livestock sector at the level of different public bodies.

7.3 Legislation in preparation

MoA and NLB have within recent years taken a number of initiatives to update the legislation framework for the development of livestock sub-sector. The initiative covers only two areas of animal health: (i) Animal Diseases Law and (ii) Animal Quarantine Act. In addition, this initiative should include more areas within Livestock Production (The Feed Act), Animal Health (Drug Control Act, Livestock Importation Act), Veterinary Public Health (The Slaughter Restriction and Meat Inspection Act) and Animal Welfare (The Cruelty to Animal Act, The Zoo Act). For implementing such laws needs inspection and supervision by veterinary professionals with background knowledge of Veterinary Jurisprudence, Ethics and Welfare. Veterinarians from overseas have been working in Liberia without the registration and permission of the legal regulatory body like "Liberia Veterinary Council". Under this legal body, a Law may be promulgated and implemented to make provision for the regulation, control and registration of Veterinary Practitioners in Liberia. A proposed "The Liberia Veterinary Practitioner Law" has been drafted (Annex-3). Development and implementation of "The Veterinary Practitioners Law" will be the sole piece to start with, and it will be followed by the drafted Animals' Diseases Law, which has been reviewed for further necessary action (Annex 4). Similarly, The Animal and Animal Products Quarantine Law have been drafted for further consideration (Annex 5).

8. Review of the Current Legislation for the Livestock Sub-sector

The current legislation covers only two areas but not all legislative aspects of importance for the operators of the present and future livestock sector. The effectiveness of legislation will basically always depend on:

(a) The provisions of the different Acts. Has the lawmaker incorporated in the law the power to produce effect? In other words; can the law produce desired results?

(b) The status of enforcement. Do the lawmaker and the public sector institutions show commitment to the enforcement of the legislation? Is the implementation satisfactory?

8.1 Plant and Animal Quarantine Act

The objectives of the Plant and Animal Quarantine Act are to prevent entry into Liberia of injurious plant and animal pests and diseases existing in foreign countries.

The main provisions of the Act relate to: title of Act, purpose of Act, definition; authority of Minister of Agriculture, penalty for violation of Chapter, Penalty for violation of Chapter by officials. The Act from 1949-50 is amended once and adopted in 1973. The Ministry of Agriculture is responsible for implementation of the Act and some by-law of the Revenue and Finance Law and Panel Law of concerned Ministries. The provisions of the Act may have been of importance in the past, but, there is a need to update this Act considering the present livestock production situation.

8.2 The National Livestock Artificial Insemination Act

The objectives of the National Livestock Artificial Insemination Act are to establish the National Livestock Bureau and Artificial Insemination service (AI) in Liberia.

The other provisions of the Act relate to: name of Act, definition of "artificial insemination", policies and objectives, regional centers to be established and penalties. The Act is implemented in 1953-54. The Ministry of Agriculture is responsible for implementation of the Act. At present AI activities are absent that require revitalization for upgrading local stock of cows, goats, ewes and saws. BRAC Liberia has been giving inputs support to their beneficiaries for developing a cattle unit.

9. Future Developments

9.1 General Observations

The current legislation covering the livestock sector has primarily been adopted before the civil war. The average age of the Acts is over 60 years. The Acts should be amended or replaced.

The provisions of the Acts are not well known to stakeholders in or outside the MoA. No unit appears to be responsible for the co-ordination of legislative matters. The legislation in force contains in general power to make a broad spectrum of rules.

A number of proposal covering issues within the areas of livestock production, animal health, veterinary public health and animal welfare are needed to be developed and implemented. There are three proposals at stages of development.

9.2 General Recommendations

Whereas the livestock sub-sector is of importance in Liberia and playing an essential role in food security, rural development and poverty reduction, the development of the livestock sub-sector is not supported by an adequate legal regime.

Whereas the existing legislation can be amended that support the further development of livestock sub-sector.

Whereas the legislation in preparation along with others as discussed when completed, adopted and implemented would be able to provide a comprehensive legal framework for the livestock sub-sector,

it is recommended that:

1. A strong political and institutional commitment is made to ensure continuation of the process initiated concerning the adaptation of new legislation within the areas of;

   (a) livestock production
   (b) animal health
   (c) veterinary public health
   (d) animal welfare

The present drafts should be reviewed before submission to the concerned committee for first reading. This review should take into account local husbandry traditions, cultural factors, the trends in the development of the livestock sub-sector, existing associated legislation adopted by the public sector other than MoA and international standards. The draft proposal concerning three laws is shown in Annexes: 3, 4, 5.

2. During the process of preparation and adaptation of legislation it should be ensured that this process:

   (e) is closely linked to the on-going development and changes in the supporting institutional framework
   (f) incorporates the involvement of stakeholders
   (g) guarantees transparency
   (h) pays attention to the applicability of the proposed legislation in the short, medium and long term.

Whereas the drafting of a legislative Act should be:

- clear, easy to understand and unambiguous
- simple, concise, containing no unnecessary elements
- precise, leaving no uncertainty in the mind of the reader.

It is recommended that a short training course (2-3 days) on drafting legislation regularly is offered to the staff of MoA and NLB as a part of a continuing education program. Preferably such course should be organized by or at least technically supported by concerned ministries.

CHAPATER 5

Livestock Breeds and Breeding

1. Background and overview

1.1 Liberia is not rich in farm animal genetics resources (FAnGR). Livestock (cattle, sheep, goats, pigs, chicken, ducks) populations reduced drastically as a consequence of the Liberian civil war. Existing animals populations, especially cattle are not enough to support the building of the herds/farms at rates fast enough to meet growing demands for livestock products. These animals possess many positive qualities; for example, considerable adaptability to harsh climates, ability to survive on poor nutrition, require minimal management, resist to local diseases especially trypanosome and suitability to the economy of subsistence farmers (Rendel and Hickman, 1978).

1.2 Generally, two types of Muturu cattle have been identified: a larger Savannah-type and a Dwarf-Forest type, which are well adapted to the humid forest environment. The typical coat color of forest Muturu is black and that of the Savannah Muturu is black and white. This breed is commonly kept in the south-east (Grand Gedeh, River Gee, Grand Kru Maryland and Sinoe counties) of the country for slaughter on special occasions (Koikoi, 2011). They are a dwarf type measuring less than one metre at the withers with heavy bodies, plain black or black-and-white coats, and short horns. Quantitative data on performance traits of the Muturu is limited. However, they are known to be early-maturing, fertile and survive with minimum care (Koikoi, 2011). Consequently, the Government of Liberia intends to establish a Muturu Research Centre to conserve and promote its use. The Muturu has an average carcass weight of about 110 kg. Height at withers is 95 cm for males and 88 cm for females (Maule 1990). The Muturu is tolerant to trypanosomosis, ticks and tick-borne diseases although it is susceptible to rinderpest.

1.3 N'Dama is a breed of cattle from West Africa, of the *Bos taurus*-type. It originates from Fouta Djallon in Guinea and was introduced into Liberia centuries ago and later became a Liberian breed (Koikoi, 2011). N'Dama cattle are mostly found in the north (Nimba), centre (Bong), north-west (Lofa) and west (Grand Cape Mount) counties, which are adjacent to the breeding areas in Sierra Leone and Guinea. There is more variation among N"Dama in village herds because breeding is not selective and there is more crossing with the Muturu. Multiplication herds of N'Dama were maintained by the Liberian Agricultural Company in Bong county, David More Farm, Foyah Unity Cooperative, Todee State Farm, Buto Oil Cooperation, the United Methodist Church and Panama Agricultural Training Centre, Liberian Government Farm, Firestone Plantation, President Tubman Farm, and Minister Philip before the war (FAO, 2011b). Animals kept on the Firestone Plantation recorded age at first calving of 25 to 30 months. N'Dama crossbreeding was started in 1961 (FAO, 2005). Cows were inseminated with Jersey, Brown Swiss and Santa Gertrudis semen imported from USA. Birth weight of the N'Dama × Jersey (18 kg), and N'Dama × Brown Swiss and N'Dama × Santa Gertrudis (21-26 kg) were higher than the pure

N'Dama (Anlicker, 1964). Other name for them includes Mandingo in Liberia. They are also trypanotolerant and show superior resistance to ticks and the disease they carry and to *hemonchus controtus*. These two breeds are well adapted, but the productivity and overall performance under the prevailing condition are not known. They weighing 197 kg with an average carcass weight is about 95 kg. The dressing percent is about 48% of live weight. The weight of calves at birth rarely exceeds 18 kg (Rhissa, 2007).

1.4 Mostly, exotic breeds of pigs (White landrace, Yorkshire, Hampshire, Chester White) are available, which requires special management and intensive feeding. In addition local hogs are being kept by smallholders. There is no data on productive and reproductive traits. Recently, pig breeding association has been established for its development.

1.5 The Sheep are of West Africa Dwarf breeds (Djallonke), which are well adapted, but the numbers are higher in Nimba, Bong, Grand Gedeh, Grand Cape Mount and Lofa counties. The indigenous, trypanotolerant West African Dwarf (WAD) or Djallonké is the common sheep breed in all the counties (FAO, 2011b; Kamara, 2011; Koikoi, 2011). It is hardy, prolific and breeds all year round. The large and long-legged Fulani or the Sahelian sheep has recently been introduced under the national re-stocking program. There are small numbers of the Fulani as well as crosses between the WAD and Fulani sheep in Bong, Lofa and Nimba counties. The sheep population has been increasing to pre-war levels.

Data on WAD sheep at the Central Agricultural Experimental Station at Suakoko gave adult female and male weights of 17.1 kg and 25.3 kg respectively. Single lambs weighed 1.5 kg at birth, and twin lambs weighed 1.1 kg. Kamara (2011) reported average age at first lambing of 15 months, 142% lambing, 20% twining, litter size of 1.2, and lamb viability of 75% for WAD sheep under semi-intensive management. Lambs weighed 1.4 kg at birth and 10.4 kg at weaning. Sixty-five per cent of does kidded twice a year and multiple births accounted for 59% of all births (Oppong and Yebuah, 1981) and have a normal birth of 1 to 3 per doe (Ekarius, 1999). The average carcass weight of this goat is about 9 kg (Rhissa, 2007). The sheep population has been developed through natural selection. The mean lambing rate is about 1.2 lambs per ewe.

1.6 Most goats in Liberia are of the trypanotolerant WAD breed (FAO, 2011b). There are considerable numbers of the Red Soot breed and crosses between the WAD and the Red Sokoto goat breeds. Nimba, Bong, Grand Gedeh, Grand Kru and Lofa counties have the highest goat populations. The long-term goat population trend shows that numbers declined during the civil war, started to increase from 2005 and by 2010 exceeded pre-war level.

Live weights of 20.7 kg and 22.3 kg, respectively, for adult female and male WAD goats were reported at the Central Agricultural Experimental Station (CARI) at Suakoko. Kamara (2011) reported average age at first kidding of 16 months, 200% kidding, 80% twining, litter size of 1.6, and kid viability of 65%. Birth weight for single

lambs averaged 1.5 kg and 1.3 kg for twin lambs. Kids weighed 1.2 kg at birth and 9.6 kg at weaning for WAD goats under a semi-intensive production system.

1.7 Chickens are mostly indigenous, but there are some breeds of chicken are found such as Rhode Island Red (India/Guinea/Ivory Coast), Plymouth Rock (USA/Guinea), White Leghorn (Guinea/India/Ivory Coast), but for commercial farming, Isa Brown (Layer) and Nera (parent stock) breeds are imported from Netherlands and Nigeria, respectively. Tremendous growth rate is now observed in poultry sector in Liberia.

1.8 In the last two decades or so exploitation of exotic ruminants, pigs and poultry germplasm, has taken place in Liberia. As a result, some quasi-indigenous animals have been generated as well, but their impact in the total production system is negligible except goats and pigs. The main reasons such failure are due to genotype-environmental interaction, indiscriminate crossbreeding and unscientific operation of breeding programs. Early efforts to develop trypanosome resistance local cattle showed positive results and still form the basis of improvement of small and large ruminants in the country. However, no sustained policy has been pursued to maintain the selection process for continuous improvement. This has put Liberia's breeding improvement potential behind by several decades.

1.9 Livestock development through the application of science-led methods of breeds and breeding in Liberia still at a very primitive stage, without any definite national strategy or concrete vision. It is an intention of the government to apply breeds and breeding interventions for enhancing livestock including poultry productivity, but lack of a breeding policy, use of inappropriate breeds and types, weak infrastructure, limited technical knowledge and weak marketing channel have constrained the development of improved breeds. In the private sector, specialists are coming from abroad particularly in the commercial poultry industries.

2. Main Constraints

2.1 There is a gap in understanding among the entrepreneurs, livestock officers, farmers and policy planners about the value of breeding program for improving the domestic breeds. Animal breeding is time consuming, the annual rate of progress is small (1-2#% population mean) and initial investment is high. On a long term animal breeding is highly cost-effective and remunerative. There are well adopted native livestock breeds/types, which could be developed into good productive breeds through crossbreeding in a scientific manner. Indiscriminate crossing (goats, sheep, pigs, cattle, chicken, ducks) creates a situation, where a number of native stocks of livestock are now under threat of extinction. The available good seed materials are mostly exotic and regularly imported. These imported exotic especially from temperate region do not adapt well under Liberian climatic conditions. A comprehensive report on cattle breeding for increasing meat and dairy production has been reviewed by Rendal and Hickman (1978).

2.2 Shortage of well qualified personnel in animal breeding, mostly engaged in areas other than breeding. It is difficult to design and implement a sound and sustainable impact generating livestock breeding program due to unclear concept, shortage of trained human resources, inadequate demand driven national policy and plan, lack of productive livestock breeds and absence of breeding tools and services.

2.3 No recorded data are available about the animal resources (species, breeds/types), which is important to examine the prospects and promises for formulating an animal breeding plan and strategy. No data is available relating to economic value of local stocks versus exotic or crossbred animals under a production system of Liberia.

2.4 Without a breeding that plan fails to create an impact, as because these are not based on thorough genotype/breed testing results, even considering the existing production systems. This should be based on well-thought out and sound breeding goal, breeding criteria, animal recording system, animal evaluation procedure, animal selection and mating plan. The breeding programs are basically indiscriminate crossbreeding approach without any clear vision and goal to achieve.

2.5 Animal identification, pedigree and milk recording system are almost absent. No procedure has been followed for evaluating breeding animals. Karyotyping breeding bulls, boars, bucks, rams and cocks, status of inbreeding at the individual is unknown. There are no artificial insemination (AI) activities in livestock. No computer facilities for animal information entry, processing and animal genetics evaluation is available at the NLB or DoL at CARI. A progeny testing scheme should start at DoL of CARI to produce proven bucks, rams, boars and bulls, to cater for national cattle breeding program. The community or farmers groups that should be formed for rearing pigs, goats and cattle, where such pedigree studs animals may be used for improving current stock of animals.

2.6 Breeds and breeding program inherently demands heavy initial investment and regular and timely flow of resources. Sustained funding support of the public sector and the development partners for livestock breeding work is not available. As a result, the existing manpower in this area is being utilized in other works.

2.7 There is no regulatory body and national breeding law to regulate breed import and price of breeding materials as well as to regulate the merit and quality of breeds, breeding materials, breeding tools and services. Pigs' breeding association and other farmers' communities have no idea of the merit and quality of breeding studs. Similar is the case with import of livestock breeds or germplasm (animal, semen, embryo etc.). The importation of inappropriate genetics materials is causing local stock to face threat of extinction.

3. Policy Issues

- No livestock breeding policy is in place
  – Breeding programs are non-functional

– Restocking of livestock to sharply increase the number of animals
– Animals are purchased from markets of neighboring countries

- Weak breeding services
  – Breeding males are rarely available
  – No national or private artificial insemination (AI) services

- Poor quality control
  – No quality control of animals imported from abroad
  – Poor genetics and phenotypes impairs building strong and productive herds

- Under-developed human resources
  – Technicians and farmers lack awareness
  –There are few agriculture graduates with animal breeding background working in NLB

4. Review of current policies and documents

4.1 In Comprehensive Assessment of the Agriculture Sector in Liberia (CAAS-lib, 2007b), a position statement on the native Liberian cattle species was made, which read as "N'Dama and Muturu races of cattle are all trypanotolerant, as are the Djallonke type small ruminants, which are adapted to local conditions should be considered as the base on which improvement might be made".

4.2 In 2008 Poverty Reduction Strategy states "interventions will also be undertaken with respect to livestock industries to increase available food through a restocking program focusing on small ruminants". In the same year a restocked livestock-sub-sector, especially with small ruminants (sheep and goats), pigs and other commercial small ruminants were suggested (FAPS, 2008)

4.3 In Country Programming Framework Liberia (CPFL, 2012), it states the challenges of ensuring access by farmers to available germplasm (seeds) for livestock improvement.

4.4 Recently, drafted livestock policy highlighted the objective of enhancing the levels of productivity of livestock and conserving superior genetics material of its in Liberia. Required germplasm should be pooled together to generate quality animal genetic resources for easy and reliable access by farmers to improve genes and services with respect to mating plans, off take strategies and organization of local breeding scheme (KwakuAgyemang, 2013).

4.5 None of the documents showed clear policy option for breeding of livestock including poultry. Most of them referred to developing improved varieties of livestock as an element of development plan and program. These policy papers were not translated into action plan for implementation. The guidelines aim to address policy, operational and technical issues, and how these inter-play to shape the outcomes of breeding strategies. It is suggested that the vast majority of developing

countries have not been successful in sustaining genetic improvement in their livestock populations. Sustained livestock genetic improvement activities that meet national needs without jeopardizing community needs can make a vital contribution to food security and rural development (FAO, 2010).

5. Recommendations

1. Formulation of a national breeding strategy/policy

- Develop livestock breeding policy
- Develop a strategy for breeding programs with available genetics resources
- Identify priority species based on national demand

2. Conservation of local/indigenous livestock

- Local stock/species such as trypanotolerant cattle, goats, sheep, pigs, chicken and ducks are disappearing
- Program needed for conservation of these potential stocks
- Establish Open Nucleus Breeding Scheme (OBBS) for goats, sheep and cows at CARI
- Establish multiplication centers for pigs at CARI

3. Pricing and quality control of breeding material

- Develop community based breeding program (select animals, exchange of sires)
- Form technical committee to advice on pricing of breeding services based on the genetic merit of animals or semen
- Ensure quality control

4. Human resource development

- Support graduate official of NLB for enrolment in postgraduate studies (MS/PhD) in Animal Genetics & Breeding abroad
- Upgrade technical skill of technicians

Action plan for Animal Breeds and Breeding

Project Titles	Duration	Approx. Estimated Cost (US$)	Actions	Responsi-bilities
1. Survey and database development of livestock population	2 years	2,000,000	1. Questionnaire development 2. Training of recorder/ enumerator 3. Breed survey 4. Phenotypic characterization 5. Molecular characterization	CARI, LU, NLB
2. Establishment of Pilot Breeding Program	4 years (Chickens) 6 years (Goats & Sheep) 5 years (Pigs) 10 years (Cattle)	3, 000,000 5,000,000 4,000,000 10,00,000	1. Introduction of concept of Open Nucleus Breeding System (ONBS) & implementation requirements 2. Field screening to determine scope for selective breeding 3. Participatory drawing up of the breeding and management protocols 4. Finalization of community participation rules 5. Establishment of the community-managed nucleus herd/flock 6. Training of enumerators/data recorders, who will train farmers over project period 7. Development of data captures systems (e.g. recording) 8. Mating & subsequent selection from the resulting progeny over generations 9. Data analysis & identification of breeding animals at the nucleus & redistribution 10. Training of farmers-on ONBS process with project management skills 11. Regular field screening to identify candidates for the nucleus	CARI, UL, UC, NLB,
3. Human Resource Development	5 years	5,000,000	1. Short courses & Training on various aspect of animal breeds & breeding 2. MS & PhD in genetics & breeding 3. International seminar/ symposium in the relevant field	MoA, MoE

CHPATER 6

Livestock Feeds and Feeding

1. Background and overview

1.1 In Liberia, feeding and feeding of livestock including poultry is a major constraint. Feed resources for livestock are derived from the two million hectares of natural pasture, which provide the bulk of 95% of feed for the ruminants (CAAS-Lib, 2007). In addition, crop residue and cereal by-products as well as grasses, tree leaves and aquatic plants are also available on non-cultivated areas along waysides. Very little grain or wheat/rice bran is available for feeding animals. No data are available for quantifying the amount of roughage and concentrate required for per head of each species of domestic animals and poultry per day. About 98% of concentrate are imported from neighboring countries and Europe, and this makes feed production costly, more expensive and non-profiteering. No by-pass proteins are used in ruminant feeds. Dried blood meal mixed with wheat bran is used in pigs' farms. No proximate analyses are being done for these feed ingredients to estimate the dry matter and crude protein contents.

1.2 Feed resources for rural poultry comprises of scattered grains from threshing flour mills, left over grains, broken rice, kitchen wastes, green grasses, insects, worms, leftover boil rice, etc. Proximate analysis of these by-products has not yet done to know the dry matter and crude protein contents. Common imported ingredients used for preparation of poultry feed are wheat/wheat bran, rice polish, fishmeal, oyster shell, common salt and vitamin-mineral premix. Locally produced poultry feeds are available in the market, but no grantee is assured for its quality.

1.3 The exploitation of huge areas of pastoral land dominated by *Paricum maximum* or Guinea grasses and forage trees has received the priorities in the framework of optimal utilization all existing pastoral land (Rhissa, 2007). There are no programs in promoting the cultivation of improved varieties of fodder in empty communal or farmlands, in addition, encouraging to create nurseries in homestead gardens. NLB does not have trained manpower to lunch a major field program for fodder cultivation. There are no fodder or green forage production and distribution programs by the public and or private sectors. However, many are yet to be rehabilitated. With the exception of the cattle ranch at CARI, other ranches lie in ruins or are overgrown by bushes (Koikoi, 2011). Several technical and socio-economic factors constrain improvement of the pasture resources in Liberia (FAPS, 2008; Koikoi, 2011; SFNS, 2010).

1.4 The important constraint to livestock development in Liberia is the acute shortage of feeds and fodders as identifies during visits to farmers' houses, pigs' breeding association and commercial poultry farms. This shortage has grown over the past decades due to civil wars. The natural pastoral systems for Liberian livestock are discussed.

1.5 *Coastal savannah*: It includes patches of grasslands in the mangrove swamp and grass/thicket in the coastal plains, especially in Bomi, Grand Bass, River Cess,

Maryland and Sinoe counties. The vegetation and composition of plant communities are dictated by several factors, including hydrological conditions, such as the frequency and duration of flooding, depth of the water level, soil type, and physiography. The mangrove swamps contain grasses such as *Axonopusflexuosus*, *Cenchrusbiflorus*, *Dactylocteniumaegyptium*, *Hyparrheniamutica*, *Leptothriumsenegalense*, *Sporobolusvirginicus*, *Panicumcongoense*, *P. repens*, *Paspalumvaginatum*, *Pennisetum polystachion*, and *Setariaanceps*.

Grasses in the grass-thicket plant communities include: *Andropogoncanaliculatus*, *A. gayanus*, *Brachiariafulvibarbis*, *Hyparrheniasmithiana*, *Schizachyriumsanguineum*, and *Vetiveriafulvibarbis*. Areas with loose soil and moisture derived from run-off and drainage have tall grasses such as *A. gayanus*, *Cymbopogongiganteus*, *Hypertheliadissoluta*, *Panicum maximum*, *Pennisetum purpureum*, and *Rottoboelliaexalta*.

1.6 *Derived savannah*: This is an expanding zone along the forest fringes where grassland or savannah is gradually replacing forest as a result of human interference (Rose-Innes, 1977). The vegetation is a mixture of trees with closed or partially closed canopy and a thick ground cover of tall shade-tolerant grasses and forbs. It contains relic patches of forest trees such as, *Antiaris*, *Borassus*, *Burkea*, *Elaeis*, *Daniellia*, *Lonchocarpus*, *Lophira*, *Parkia*, *Phyllanthus* and *Pterocarpus*. The grass species include *Andropogongayanus*, *A. tectorum*, *Beckeropisuniseta*, *Chasmopodiumcaudatum*, *Hyperthelia* and *Hyparrhenia* spp., *Panicum maximum*, *Pennisetum purpureum*, *Rottboelliaexaltata,Schizachyriumsanguineum*, *Paspalum* and *Melinis* species. Forage legumes, such as *Centrosemapubescens* and *Puerariaphaseoloides* may be seen along the forest-savanna fringes.

1.7 *Guinea savannah***:** A typical fire-controlled tree savannah community of broad-leaved deciduous trees, densely distributed in a continuous ground cover of perennial bunch grasses and forbs. The crowns of the trees reach a height of 12-15m but seldom form a closed canopy except over small areas. The height and density of trees may vary from place to place in response to soil conditions as well as the type and degree of disturbance such as the season and frequency of burning, and intensity of grazing.

The main woody genera include: *Afzelia*, *Briedelia*, *Daniellia*, *Entada*, *Gardenia*, *Isoberlinia*, *Lannea*, *Lophira*, *Monotes*, *Parkia*, *Butyrospermum, Mangifera*, *Pterocarpus* and *Terminalia*. Most of the tall grasses found in the derived savannah are also found in the Guinea savannah. Significant grass species are *Andropogongayanus*, *Beckeropsisuniseta*, *Brachiariajubata*, *Chasomopodium*, *Cteniumnewtonii*, *Cymbopogongiganteus*, *Digitaria diagonalis*, *Hyparrhenia*, *Panicum maximum*, *Pennisetum purpureum*, *Seteria* and *Tristachyasuperba.*

Grasses in the savannah woodlands generally grow fast during the wet season, resulting in the accumulation of biomass deficient in nitrogen and of low digestibility by the end of the growing season. Also, legume composition of the natural pastures is generally low, although some herbaceous (*Centrosemapubescens* and *Puerariaphaseoloides*) and shrubby legumes may occasionally be seen growing in the derived and guinea savannahs.

1.8 *Sown pasture***:** Artificially re-vegetated pasture resources are limited (Rhissa, 2007; Koikoi, 2011). As stated earlier, only 2,025 hectares out of the estimated two million hectares of natural pastures were established and utilized on ranches owned by public and private sectors before the war in 1990 (Table 1). Several technical and socio-economic factors could be responsible for the limited area of sown pastures. They include: vast communally grazed natural pasture resources; the relatively small ruminant population mostly owned by smallholder farmers who do not approach livestock rearing as a business, and problems with land acquisition. Information on artificial pastures in Liberia is limited. Signal grass (*Brachiariabrizantha*) introduced from Colombia in the 1970s was the most common pasture species for ruminant production in Liberia before the war, but its dry matter yield and quality declined during the dry season (Smith, 1995). Others (FAO, 2011b; Kamara, 2011) mention the use of improved pastures for cattle grazing at the Firestone and the Liberian Agricultural Company rubber plantations before the war. Names of grasses and legumes species were, however, not given. Eleven legume accessions (*Centrosemabrazilianum* CIAT 5234, *C. pubescens* CIAT 5189, *C. macrocarpum* CIAT 5062, *C. macrocarpum* CIAT 5065, *Centrosema* sp. CIAT 5112, *Desmodiumincanum* CIAT 13032, *D. ovalifolium* CIAT 3784, *Macroptiliumatropurpureum*, *Stylosanthesguianensis* CIAT 136 and *S. macrocephala* CIAT 1582) introduced from Columbia were evaluated at Central Agricultural Experimental Research Station at Suakoko, Bony County from 1985-1988 to identify adapted legumes for integration into the smallholder crop and livestock production systems (Smith, 1995).

Desmodiumovalifolium CIAT 3784, *D. incanum* CIAT 13032, *M. atropurpureum*, and *S. macrocephala* CIAT 1582 perished after the first year. *Stylosanthesguianensis* CIAT 136 was the best biomass producer and weed suppressor in the first year; but it gave the lowest dry matter in the third year (Table 8). The high dry matter yield and weed suppression potentials of *S. guianensis* CIAT 13032 during the first year suggested that it could be used in short-fallow to produce feed for livestock and to improve soil fertility. *Centrosemapubescens* CIAT 5189, *Centrosema* sp. CIAT 5112 and *C. macrocarpum* CIAT 5062 and 5065 consistently increased in dry matter yield and suppressed weeds best over the 3-year study period, suggesting that *Centrosema* species can be used in pastures under tree crop plantations for feed and for weed management.

Table 1. Yield and weed composition of legumes at 9 weeks of growth, Suakoko, Liberia

Species	CIAT no	Dry matter yield (tonnes/ha)			Weeds (%)		
Years		1985	1986	1987	1985	1986	1987
S. guianensis	136	5.4	1.9	1.2	3.9	12.9	42.2
C. pubescens	5189	2.7	2.9	3.4	11.4	9.6	23.7
C. macrocarpum	5065	2.6	2.3	4.3	19.4	9.9	18.6
C. macrocarpum	5062	2.4	2.6	4.3	13.7	15.1	16.2
Centrosema sp.	5112	2.4	2.4	4.0	16.2	12.1	16.1
C. *brasilianum*	5264	1.2	1.6	2.0	38.7	31.6	45.3

Source: Smith (1995)

1.9 *Fodder shrubs and trees***:** Native (*Pterocarpus erinaceous*, *Bauhinia rufescens*, *Afzeliaafricana*, *Ficusgnaphalocarpa*, *Opiliaceltidifolia* and *Khayasenegalensis*) and exotic (*Leuceanaleucocephala*) shrubs and trees are occasionally used as feed for small ruminants. For example, *L. leucocephala* is fed to sheep and goats in Gbarpolu, in the farming system.

1.10 *Pastoral development***:** A pastoral area development plan, aimed at reducing degradation of pastoral resources by ensuring their rational management to increase animal production and to satisfy the needs of the people, was proposed for implementation during 2007-2009 (CAAS-Lib, 2007; Rhissa, 2007). Priority activities of the plan included: taking inventory of rangeland and pastoral resources; rehabilitating existing ranches; developing pastoral areas; and building human capacity in pastoral management.

Other activities envisaged under the plan were to:

- design and establish schemes for resource development at the communal, local, county and national levels;
- construct animal passage channels or grazing routes;
- map pastures and watering sites;
- rehabilitate and/or construct stock watering facilities (ponds, wells, dams, micro-dams, etc.);
- control tsetse fly and/or establishment of tsetse free zones;
- design and implement pasture and grazing management strategies; and
- monitor pastoral ecosystems.

2. Main Constraints

- Shortage of feeds and fodder
- Low feed quality
- High feed price
- Shortage of land for fodder production
- Limited rural financing
- Indiscriminate bush fire
- Seasonal fluctuation of feeds and fodder
- Limited and outdated data on animal feeds
- Poor access quality forage seed and planting materials
- Inadequate input services on pasture management

3. Policy Issues

- *Few alternatives for producing fodder*
  - production of recommended fodder crops and legumes
  - establish fodder bank and intensive feed gardens
  - promote forage seed production
  - encourage grass production with legume for cut-and –carry feeding system

- *Poor utilization of crop residues, byproducts, alternatives*
  - lack of awareness, training of farmers on feed supplementation and conservation of natural pastures
  - improves forage as well as proper recycling of crop waste products
  - poor storage of straw and other feed resources
  - seasonal fluctuation due to annual bushfires, which reduces biomass for grazing
- *Lack of feed quality assurance*
  - register all livestock feed producers and traders for monitoring
  - no control of quality, process, toxic substances
  - Liberia Feed Act is absent
  - inter-institutional constraints
- *Weak institutional support and services*
  - provide support to forage and feed research and extension
  - provide bank credits for establishing feed mill plants
  - feed price not regulated, highly variable and expensive
  - monitor and control quality feed production, imported feeds and additives
  - no public or private sector is involved for nutrition analyses of feed and/or its ingredients; no laboratory

4. Review of current polices and documents

4.1 The huge pasture lands comprises mainly comprises the coastal, derived and Guinea savannahs (CAAS-Lib, 2007). Only 2,025 hectares were improved and utilized by the public and private sectors before the war in 1989. In spite of the numerous constraints, opportunities exist to increase the contribution of pasture and fodder resources to livestock production and natural resource management.

4.2 The Government of Liberia and some donors are interested in investing in the livestock sub-sector to reduce poverty, food insecurity and unemployment as part of the 'Livestock Development and Promotion' program (LASIP, 2010). A priority activity under the program is to 'preserve, improve, and exploit common pastoral property resources of the country'.

CARI undertakes applied and adaptive research in pasture and fodder resources. International, national, NGOs and farmers' groups that are interested in disseminating of improved pasture at the grass-root level.

There are University of Liberia, Cuttington University, Agricultural Institute and Training Bureau, Gardnersville, Monrovia and Youth Agriculture Training Centre, Johnsonville that can be strengthened to train researchers and extension staff on various aspects of pasture production. In addition, the agricultural extension system is being re-oriented to be operational at the regional, county, district and farm levels to facilitate knowledge dissemination. Also, Farmer Training Centers are being developed in all counties to train farmers on various aspects of farming including livestock production and pasture management and production.

There are proven technologies on pasture resources in the West African sub-region that can be adapted to the Liberian conditions. In addition, the Forage Gene

bank of the International Livestock Research Institute (ILRI) has large collections of grass and legume species, which can be used by the department of livestock at CARI to initiate research on pasture and fodder crops.

4.3 In-spite of good rainfall, year-round quality feed supply remains an important constraint to livestock production. Research on livestock and poultry feeds, availability, production techniques, processing, feeding regimes, feed efficiencies among others is generally lacking. Knowledge of feeds, their storage and handling appears inadequate. Quality basal and supplementary feeds are often not readily available. It is suggested that feed production, processing, distribution and the development of technologies to make quality, affordable feeds more readily accessible to farmers (KwakuAgyemang, 2013).

5. Recommendations

1. *Alternatives for producing fodder*
   - a comprehensive grassland policy is needed
   - a multi-disciplinary and multi-institutional grassland management committee is essential
   - the pasture resources should be mapped at the national, county, district and local level
   - rehabilitation of ranches to bring back to production
   - forage legumes can be integrated to improve biomass production
2. *Utilization of crop residues and agro-industrial byproducts*
   - various methodologies can be adapted as in neighboring countries
   - collection, processing and handling logistics to overcome
   - storage solutions-ensiling, fodder banks
3. *Feed quality assurance*
   - establish animal nutrition and forage production section at CARI
   - establish animal nutrition laboratory at Dr. Leon Ledlum Central Veterinary Laboratory
4. *Institutional support and services*
   - establish information section in NLB
   - establish feed regulatory body
   -monitor feed price, penalize collusion/excess market power

Action plan for Livestock Feeds and Feeding

Project Titles	Duration	Approx. Estimated cost (US$)	Actions	Responsibilities
1. Forage production	10 years	20 Million	1. Screening of potential forage species 2. Establishment of a forage germplasm center and nurseries 3. Development of forage production pocket 4. Training NLB officers and field workers	NLB, MoA
2. Promotion of conventional and alternative feed resources	5 years	5 Million	1. Framers training on the use of conventional and alternative feeds 2. Training of NLB officers 3. Establishment of Nutrition & Forage production section 4. Establishment of Information section 5. Training of trainers on livestock nutrition and feeding 6. Assist private sector to establish feed mills	NLB, MoA
3. Institutional reform	3 years	5 Million	1. Training of NLB officers 2. Establishment of a nutrition & forage production section 3. Nutrition information section 4. Training of trainers on livestock nutrition and forage production 5. Training on new & proven feeding technologies 6. Establish a nutrition laboratory at CARI 7. Establish a reference nutrition laboratory at the central veterinary laboratory	NLB, MoA

CHPATER 7

Marketing of Livestock and its Products

1. Background and overview

1.1 Improvements in the productivity of livestock and greater access to markets for livestock including poultry and livestock commodities are essential for exploiting the livestock sub-sector in Liberia. There are resources and technologies available for increasing the productivity of livestock. Opportunities in domestic and international markets for selling livestock and livestock commodities provided certain technical requirements are met and the appropriate markets are properly targeted. Production per unit input occurs when producers adopt productivity enhancing technologies or remove binding constraints. If Liberian livestock producers, particularly the smallholders, are to be food-secured and less poor, government should provide an appropriate policy environment for removing production and market constraints and facilitating access to lucrative, high-price, high-value markets for livestock and livestock commodities.

1.2 There are a varieties of livestock products of which, milk, meats, eggs, hides and skins are more important. Milk production is almost absent and as such no local processed products such as liquid and powdered milk, butter, yogurts, cream, ice-cream, cheese are available. These products are being imported from abroad. Gathering data in present day Liberia is extremely difficult and is practically non-existence. The existing marketing systems of these products are not similar and their nature of problems varies depending on the type of product, intensity and extensity of productions, markets served both in domestic and international and marketing practices followed. BRAC Liberia has distributed breedable heifers among the interested farmers and as such future market channel for milk and milk products needs to be developed. The firms need assured supply of milk and its value added products, which is not possible without importation. This suggests that to encourage private sector participation at household level, dairying should be raised fast, although public sectors have started restocking of ruminants and pigs for increasing its population, which intern improves productivities. Enormous growths have been shown on poultry sector.

1.3 In Liberia, both the traditional and commercial marketing systems are existence and they operate side by side. Traditional marketing is more prominent in live cattle and small ruminants from the neighboring countries where commercial farms are almost totally absent. Private sector actors are not participating considering its social acceptance, less profitability and risky under the existing market infrastructure and price environment. A detailed Liberia Market Review has been done where the major market chains have been identified (LMR, 2007). Recently, BRAC Liberia has surveyed livestock including poultry markets in Liberia. On average, in a week, the household spends around $5.8 USD (1 US$ = 90.5 LD$) for consuming eggs and meats products (Khan *et al*, 2013).

1.4 The government is not giving any subsidy for purchase of cattle by rural households against its poverty reduction program through fast expansion of beef and milk production. The commercial feed prices for ruminants are expensive and the ranches totaling more than 2025 hectares are destroyed. These ranches still exist, but are in state of neglect, yet if rehabilitated they would constitute a considerable potential. Their exploitation should receive the highest priority in the framework of optimal utilization of all existing pastoral areas (CAAS-Lib, 2007).

1.5 Almost all beef, lamb, mutton, pork and chickens are sold to the general public without any major value addition beyond cutting into small pieces in order to make the products available to the consumers. Imported cuts of the same products are also generally sold in the forms received or in smaller cuts. As marketing of carcasses from the local slaughterhouse is concerned two principal forms of trading are as follows:

(i) women traders buy meat from the slaughterhouse, cut into small pieces, process, and sell around populated areas, and

(ii) the petty traders mainly boys and men buy the meats from the slaughterhouse, seasoned well, roasted and sells in the streets, shops and along highways. For imported meats marketers mainly women and men buy cartons of the meat including chicken products from the importers, and sell them in retailed scale on the local markets, in cities, towns and rural areas (KwakuAgyemang, 2013).

1.6 In case of poultry, local chickens are marketed traditionally by piece rate or cut prices rate depending on sizes. Its production are widely scattered throughout the country. The smallholder poultry farmer's primarily markets them through haggling with traders especially with petty traders. They can not bargain with them successfully and they have little retaining capacity. To give them benefits and alleviate poverty, a special marketing system needs to develop where institutional reform is required. Commercial marketing have been developing with the expansion of layer farms. These farms are being established with good transport facilities with more accessible location, little problems are faced in their marketing. Commercial farms are providing a range of employment opportunities throughout the sector. If development could proceed so that further employment will be generated whilst expanding availability to a wider range of consumers, this could be a positive development. Imported animal products particularly milk and chickens are a threat for the domestic farmers, while affordable and efficient collection, processing and marketing systems could significantly increase the amount of locally produced animal products available to consumers.

1.7 The Liberian trade in livestock and livestock commodities is currently far below what is required to support the level of economic development needed in the country. Based on annual averages for the period 2009 to 2012, Liberia produces an estimated 19,580 heads of cattle (N'Dama and Zebu), 750 Sahel goats and 1500 sheep are imported from Guinea, Cote d'Ivoire and Mali annually for slaughter (Koikoi, 2011). In 2009, some 11 million tonnes of meat valued at about $4.3 million USD were imported. Nearly all of the milk and meat consumed are imported thus accounting for 90% of the budget in the sub-sector. As a net importer of livestock and livestock commodities, Liberia spends $3.6 million USD a year in order to meet the deficit in

consumption of meat and dairy products. This deficit represents 0.5% of the country's GDP and constitutes a valuable foreign exchange loss (CPF Liberia, 2012).

1.8 International trade in high-value livestock commodities has expanded in the last decade, spurred by rising human population; increasing consumer incomes and rising standards of living; changing consumer tastes and preferences; advances in production, transportation, information and communication technologies and growth of integrated international supply-chains. These provide opportunities for Liberian livestock producers to target particular market segments for their commodities. Except for a few, many smallholder farmers have not been able to take advantage of these opportunities (AfDB 2011; OECD, 2008). Liberia has, therefore, remained a net importer of livestock commodities mainly because it is unable to increase exports in volumes large enough to off-set imports. A significant amount of literature exists on the reasons why Liberia remains a net importer of livestock commodities, in spite of the market opportunities and animal resources including aquatic species available on the continent.

2. Main Constraints

2.1 In cattle marketing, problems include transportation of live animals from Mali, Cote d'Ivoire, Guinea and Sierra Leone, where the lack of adequate space in the truck, inadequate shelter for animals, and little or no arrangements for feeding exist. Cattle are generally slaughtered in Monrovia slaughterhouse, and there are few slaughterhouses in different counties, but none of them is in use due to inadequate facilities. NGOs are providing supports to develop few slaughter slabs in various counties. Beef sellers or butcher shops are getting slaughtered beef, pigs, lamb, mutton and chicken with certified seal from the short trained meat inspectors of the slaughterhouse in Monrovia. Competent veterinary services for meat inspection are inadequate. They do not, however, certify the quality of meats as there are no such standard criteria to be followed.

2.2 At present there is not much grading of livestock prior to slaughter and very little grading after slaughter as sales at the slaughterhouses are mainly based on weight of carcasses. No intensive is giving for fatting or to finish animals well before slaughter. In-house chilling of full carcasses received from the Monrovia slaughterhouse daily basis attract good price when sold to consumers in nice packing. Goats, sheep and pigs carcasses also attract good price. Some processing of local beef, mutton, lamb and pork are also taking place at the butchers' shops. Value addition to livestock products is profitable in Liberia, if required infrastructure for meat industries and expertise in meat technologies are available. Among the constraints to value addition and marketing of livestock products are:

- poor market structure for livestock and livestock products
- weak livestock producers organizations
- limited exploitation of economies of scale in marketing of livestock and livestock products
- inadequate information of the markets for livestock and livestock products

- weak linkage or coordination among actors in the livestock value chains
- poor or costly transportation system for livestock and livestock products and
- lacking of cooling plants and storage houses.

2.3 About 26,000 head of cattle in which 14,000 zebu and 12,000 N'dama and 15,000 small ruminants (goats & sheep) are coming every year by truck, averaging 137 trucks per week. The cost of renting each truck is about $1,000 USD. The truck takes about 10 days to arrive in Monrovia from border. Each truck pays between 15 and $ 300 USD in illicit taxes. This constitutes unfair competition with imported meat for which a relatively low tax is paid. Meat importation is about 8,513 ~~tonnes~~tons, in addition to local production of 5,491 ~~tonnes~~tons making 14,000 ~~tonnes~~tons for annual consumption. The price of imported meat is 30% lower than the meat locally produced because of an economically attractive fiscal and institutional environment; the price of the meat is not fixed and there are no quotas for livestock and meat importation. The importance of bush meat available in the market as a substitute to the existence of and with high price of meat produced from livestock (Rhissa, 2007).

2.4 Farm gate price of small ruminants are settled through bargaining and the transactions are done mainly in cash. Prices of small ruminants remain high other than rainy season, when the farmers are compelled to dispose them off. As farmers are little aware of current price information, bargaining is done on the basis of previous prices. Strong price fluctuations occur some time in a year indicating weak marketing information system.

2.5 Availability of locally produced fresh milk is very limited in Liberia. There is no systematic marketing network for locally produced milk and milk products. Liberia usually import a lot of milk products from Europe. Fan Milk International has its development by investing in Liberia in 2009 and today offers unique fresh and frozen milk and its products. NGOs have distributed cattle among their beneficiaries as an asset for improving milk production in future; also public sectors started restocking of cattle, sheep, goats and pigs for increasing the number of animals to develop a solid base in livestock industry without considering future market channel for selling its products.

2.6 Producing eggs and layers on the Liberian Market is one of the objectives for the come few years from now. Eggs and chicken supplies on the Liberian market are in shortage and the demands are high, therefore, investing resources and capital in this sector of agriculture are promising. Local chicken is widely marketed and liked by all Liberian because it is testier compared to the imported frozen chicken. Costs of marketing are high and price fluctuations are prominent, which is caused mainly by transport and communication problems. The main constraints are related to price instability and inadequate access to bank credit. Limited number of day-old broilers chicks is being imported from neighboring countries, reared for 5-6 weeks and sold to rural weekly markets. There is dominance in imported chicken and even beef is also imported from boarder countries. Hence, this market presents a mixed pattern of local and imported goods. There is middle man involved in marketing of local chicken,

beef, mutton and lambs. For imported goods, there exists some sort of oligopoly in the market (Khan *et al*., 2013).

2.7 The most reported place to buy local chicken (46%) is from direct farmer and after that all other products are mostly bought from rural market place. Marketing chains and channels are long for local bird producers as they are procured by the wholesalers (bulking intermediaries) from the rural households and the rural weekly markets. Bulk-breaking intermediaries (Gobachop) who bought chickens from the wholesalers use to sell in other markets to retailers, who carry them to different city and town markets, where they transact through commission agents. Traders use cages of birds for transportation using motor vehicles. The cost of marketing is high and price fluctuations are prominent, which is caused mainly by transport problems, bad road communication and rainy seasons. The main constraints are related to price instability and inadequate access to bank credit.

2.8 Layers and broilers meat are usually transported from farms by pick-ups vans either owned or rented by poultry wholesalers. They buy mainly in cash from poultry farms and sell them to retailers often from the same carrier pick-ups, on credit extended for one or two days. Wholesalers market their produce, either through cash sales or by extending credit to the bulk-breaking intermediaries (Gobachop) through hackers for two to five days at a higher price. Sale prices are largely determined by wholesalers depending on day-to-day supply and demand. Fluctuation in farm gate price is high. The peak month of buying eggs for their households' consumption is December, January and July while beef, lamb and mutton availability in the market is low (Khan *et al*, 2013). Such ups and down are mainly due to peoples' consumption patterns relative to availability of beef and mutton. Wholesalers seem to have a strong influence on pricing based on supply and demand situations. Waste in the marketing of eggs is high as the time from collection to market is long and the transportation is traditional. Thus spoilage and broken eggs constitute a common problem. There is no credit support to the wholesalers.

2.9 The challenges faced by the producers to improve their current business. Majority of the business men does not find the opportunity to expand their current business. For local and imported chickens they often face excess demand from the consumers. Majority don't face competition. Besides, all traders from the local markets don't come to Monrovia to buy goods. They usually buy the products from a business man like them and price is often influenced by them, indicating symbol of oligopoly. Very few traders have their knowledge on processing goods. Apart from all these obstacles, limitation they found their business profitable and they have the indication in their mind that there is a growing trend in their business.

3. Policy Issues

- Scattered production and disorganized number of marketing institutions
- Imperfect markets with poor rural-urban linkages causes depressed rural economy
- Poor bargaining power of farmers

- Price instability and lack of market information
- Inadequate market infrastructure facilities
- Inefficiency in farming system

4. Review of current policies and documents

4.1 Teff (2005) stated that unemployment is widespread (85%), income is quite low and the real cost of food is rising. Markets are generally quite thin with little volume and characterized by high levels of concentration controlled by a small group of traders, particularly in the import sector. This structure leads to significant price variability and upward pressure on prices. An abuse of market power by a very small group of importers with a monopoly position influence prices and market conditions. Traders are very active and well provisioned keeping a regular flow of trade from Guinea. Competition and proper incentives for traders, farmer/community organizations, cooperatives and other private sectors to become involved in marketing are particularly important issues to address to reduce the cost of food.

4.2 Rhissa (2007) suggested improving the marketing, processing and distribution channels of animal-based products. The priority programs to reinforce the capacity of actors include the followings:

- carry out a study of the characteristics of internal demand for animal products and their evolution in time and space
- carry out a study aimed at improving distribution channels and support to consumer organization
- study the possibilities of establishing a fund for livestock development in Liberia
- implementation to improve sanitary inspection and healthiness of products from animals
- put in place measures of support facilitating adequate application of quality norms adopted by Economic Community of West African States (ECOWAS) and
- undertake a census to document livestock and analyze with more emphasis the characteristics of offer in animal products.

4.3 In 2007, Liberia market review was done extensively by MoA, where 224 markets places were identified across the 15 counties. The major market chains are

- Central, Western and Northern counties < - > Monrovia
- Grand Gedeh, River Gee and Maryland < - > Cote d'Ivoire
- Lofa, Bong, Nimba and Monrovia < -> Guinea
- Lofa, Grand Cape Mount, Bomi and Monrovia < - > Sierra Leone

Few markets are not integrated into the wider system due to bad road conditions and lack of the Liberia Market Association. There is no comprehensive report specific for livestock marketing in Liberia. Regarding food and non-food commodities on markets, dried bush meat are sold in 13 of the 21 markets, which is cheaper than the other meats and prices are also lowest during the rainy season. Dried fish is available

in 18 markets and the frozen fish can be purchased in Monrovia from several companies. Eggs and chicken are sold in 10 to 14 markets, respectively, whereas, beef and pork are found primarily in urban markets. Pigs are raised locally, while most cattle are imported from neighboring countries. Higher income households use to prepare stew or soup that includes considerable quantities of fish, poultry or meats. Lower income households prepared the same using relatively more oil, little meat or fish and fewer greens. For those with little money, a meal may consist of rice with palm oil (LMR, 2007).

4.4 In the Poverty Reduction Strategy (PRS, 2008), the government of Liberia has focused on farmer-based and other community organizations in its efforts to build production and marketing capacity amongst smallholders. It has placed high priority on linking smallholders to markets as local, regional and international, increased participation in the supply chains and value chains and establishing new institutional arrangements to ensure smallholders benefit from agricultural production. Government has been supporting critical local marketing infrastructure to reduce production losses.

4.5 Food and Agriculture Policy and Strategy (FAPS, 2008) had the following establishing agricultural market information services

- rehabilitating markets
- constructing storage and processing facilities
- building capacities of marketing bodies and
- meeting requirements to enter external markets
- improving farm-to-market, secondary and tertiary roads to ensure availability of agricultural commodities
- promotion of value addition in order to access competitive markets by providing enough quantities of locally produced livestock products at affordable price to substantially substitute imports.

4.6 Liberia Agriculture Sector Investment Program (LASIP, 2010) has assessed for getting market to work effectively by improving market access with the following objectives:

- to increase investment in rural roads
- to establish marketing infrastructure including physical and market places and
- to improve facilities for storage and processing for livestock, fisheries and crop
- to improve knowledge and skills of producers and other rural dwellers for effective linkage to domestic, regional and international markets through policies and programs
- to increase participation of the private sector in the development of value chains

4.7 CPF Liberia (2012) suggested capacity building for readily fulfilling the existing market demand for quality meat and meat products. But, there is no indication of developing the formal and informal marketing systems, which is very essential to the attainment of food security in Liberia. A policy guideline is required for the monitoring of markets and prices within the context of food security monitoring

system. As many Liberians (86%) depend for livelihood and their food security on purchasing and selling food products via markets, the monitoring of markets and market prices is of vital importance.

4.8 A drafted livestock policy of 2013 suggests an adequate marketing infrastructure and value addition facilities with the following strategies as:

- initiate dialogue with private sector, development partners and other stakeholders to provide investment support for processing, packaging and marketing of livestock products
- establish modern slaughtering facilities
- establish and strengthen livestock producers, traders and processors and their associations and networks to improve market access
- facilitate establishment of business linkages between livestock producers/ processors associations with buyers of livestock and livestock products
- empower livestock farming communities to run markets of livestock with supervision of NLB
- disseminate livestock and livestock products market information
- initiate development of agricultural marketing policy to provide directives for the implementation of livestock marketing and
- review import duty for the livestock products and by-products to promote consumption of local products (KwakuAgyemang, 2013).

4.9 Some ad-hoc policy interventions are made to private sector livestock entrepreneurs for tax holiday and waving tax and tariff on imported inputs, meats, eggs and dairies. Commercial poultry farms and feed mills have been established as agro-based industry through private sectors investment. A number of Laws/Acts are under process for submission to the requisite law making authority. The Liberia Veterinary Practitioners Law 2014; Animal's Diseases Law 2014 and Liberia Animal and Animal Product Quarantine Act 2014 have been drafted for consideration by the concerned ministry and law making authority.

5. Recommendations

- Collective marketing by community organization
- Price incentive and improved cattle farming
- Increasing credit support and enhancing access to credit
- Price monitoring and dissemination
- Infrastructure development and
- Enhancing private participation

Action Plan for Marketing of Livestock and its Products

Projects	Duration	Approx. Estimated Costs (US$)	Actions	Responsibilities
1. Review Trade & Tariff policies Vis-à-vis the WTO rules & regulation	2 years	0.10 Million	1. Preparation of concept paper & review of all relevant livestock policies at home & abroad with especial reference to import & export regulations 2. Studying price policies of exporting countries 3. Studying the WTO rules, which are in use and those being debated under preparation 4. Preparation of comprehensive report	MoA
2. Study the current livestock situation	3 years	0.15 Million	1. Designing of survey methodology, recruitment of field officers/Veterinarians & their training 2. Collection of data and editing, 3. Analyses & report writing	NLB, MoA
3. Construction of wholesale markets in selected counties & districts	4 years	2.0 Million	1. Selection of top ten wholesales markets near the border areas 2. Undertaking of feasibility study relating to availability of suitable land, estimate costs of land, & constructions & expected amount of revenues 3. Designing & implementation of cattle sheds; 4. Evaluation of the impact of farm gate prices & market efficiency	NLB
4. Establishment of mechanized slaughterhouse in Monrovia & other counties	5 years	4 Million	1. Preparation of a project proposal initially for Monrovia & one other county; 2. Searching of suitable private land and/or acquiring of Government land if available; 3. Construction & procurement of equipment and leasing out to the private sector	NLB, MoA, MoPW

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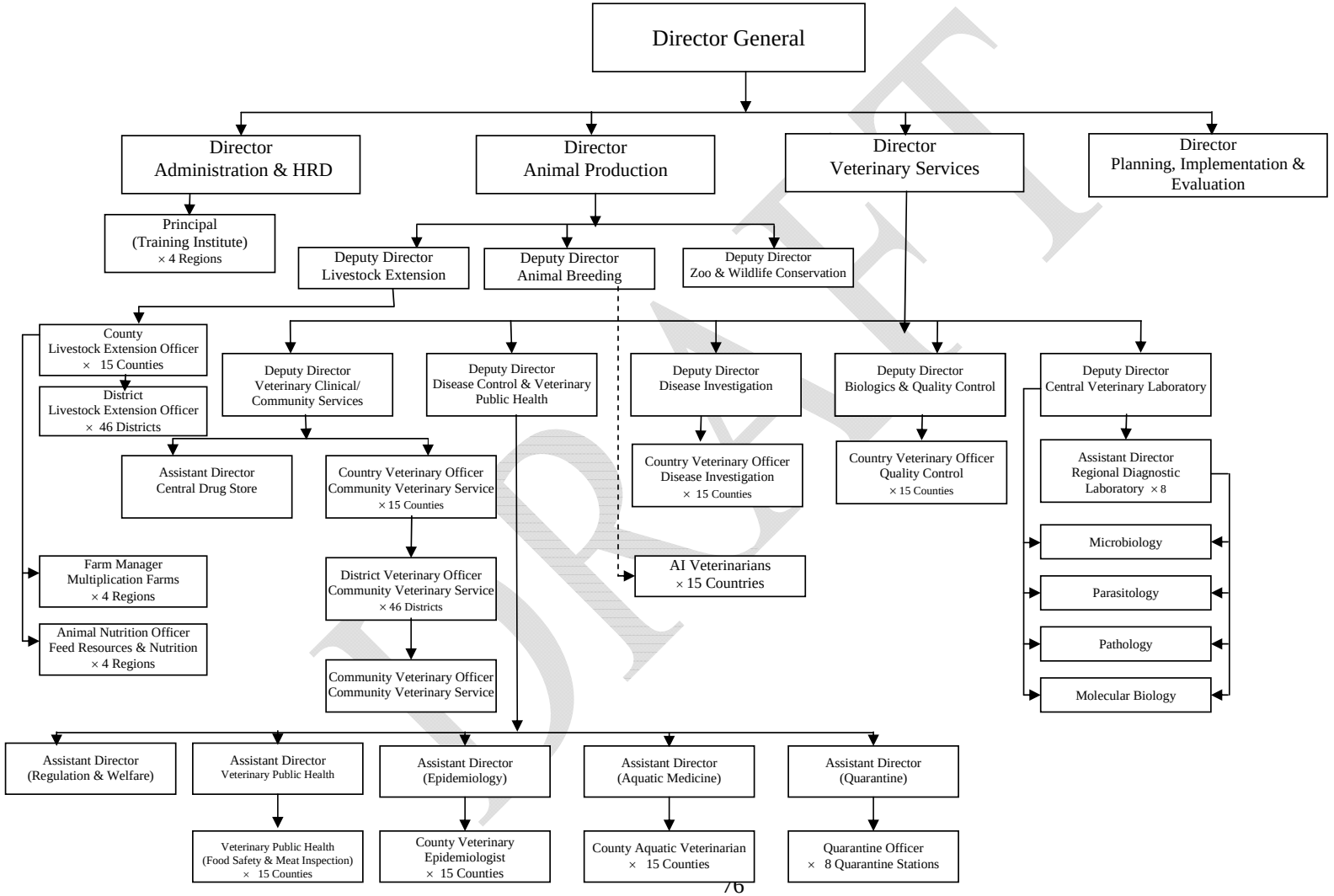
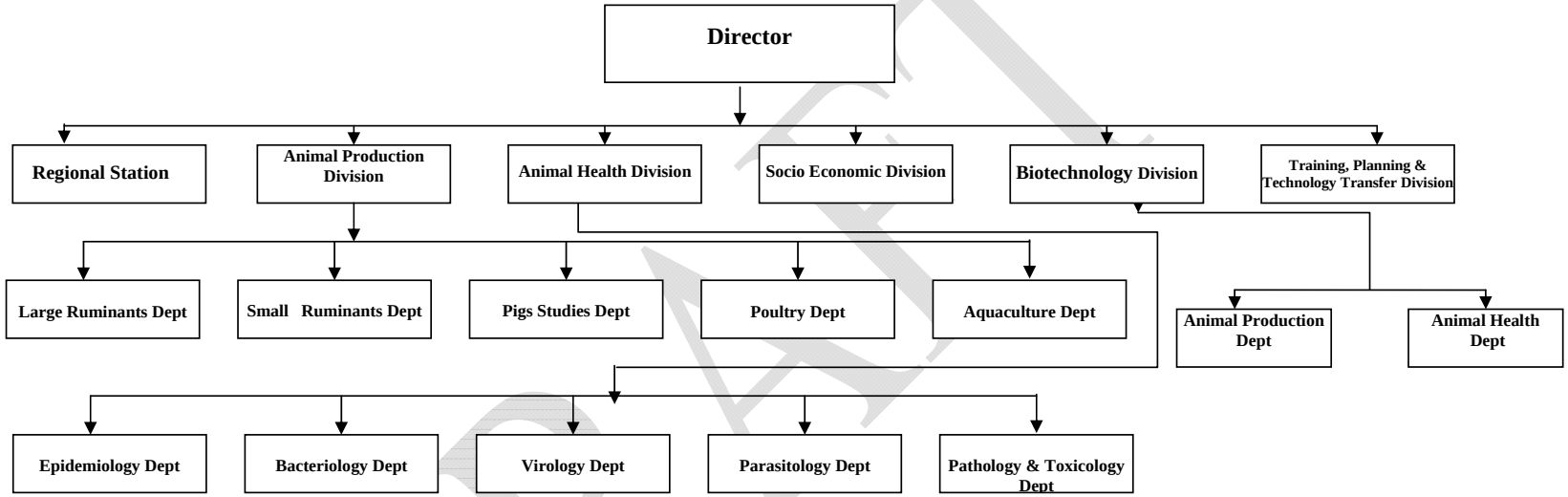
PROPOSED ORGANOGRAM FOR THE NATIONAL LIVESTOCK BUREAU

Annex-1



PROPOSED ORGANOGRAM FOR DEPARTMENT OF LIVESTOCK AT CARI

Annex- 2



~~Annex 3~~

~~PROPOSED LIBERIA VETERINARY LAW 2014~~

~~*to make provision for the regulation, control and registration of veterinary practitioners in Liberia and for the constitution of a veterinary council and for matters connected therewith.*~~

~~Whereas it is expedient to make provision for the regulation, control and registration of veterinary practitioners in Liberia and for the constitution of a veterinary council and for matters connected therewith.~~

~~**1. Short title** - This Law shall be called the "Liberia Veterinary Law, 2014".~~

~~**2. Definitions**- In this Law unless there is anything repugnant in the subject or context~~

~~(a) Council means the Liberia Veterinary Council constituted under this Law;~~

~~(b) Member means a member of the Council~~

~~(c) Prescribed means prescribed by regulations made under this Law;~~

~~(d) President means the President of the Council;~~

~~(e) Recognize Veterinary Qualification means any of the veterinary qualification included in the schedule~~

~~(f) Register means the register of veterinary practitioners maintained under this Law;~~

~~(g) Registered veterinary Practitioners mean a person whose name is for the time being entered in the register;~~

~~(h) Registrar means the person appointed as registrar by the Council and~~

~~(i) Veterinary Institution means any institution which trains for, or grants, or both trains for and grants, degrees, diploma or license in Veterinary Medicine/Science.~~

~~3. **Constitution of the Council** 1 -~~

~~(1) There shall be constituted a council which shall consist of the following members, namely:~~

~~(a) the Head of Veterinary Services, ex officio~~

~~(b) one registered Veterinary Practitioner from each county and district of Liberia, to be elected in the manner prescribed; provided that the president shall have power to nominate a registered veterinary practitioner if no such practitioner is elected from any county and district under this clause;~~

~~(c) one registered veterinary practitioners, to be nominated by the University of Liberia;~~

~~(d) the Dean of the Faculty of Veterinary, Animal and Biomedical Sciences of the University of Liberia, ex officio;~~

~~(e) the President of the Liberia Veterinary Association, ex officio;~~

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(f) one member, belonging to the legal profession, to be nominated by the Chief Justice of Liberia; and

(g) one member of the armed forces possessing recognized veterinary qualification, to be nominated by the Defense Minister; provided that for the constitution of the council for the first time, all the members, other than the ex-officio members, shall be appointed by the Government of Republic of Liberia.

(2) The members shall elect a President from amongst themselves in such manner as may be prescribed:

Provided that for the constitution of the Council for the first time, the President shall be appointed by the Government of Republic of Liberia.

4. **Incorporation of the Council**- The Council shall be a body corporate by the name of the Liberia Veterinary Council having perpetual existence and common seal with power to acquire and hold property, both movable and immovable and to contract and shall, be the said name, sue and be sued.

5. **Term of office**-

(1) The President shall hold office for a term not exceeding four years and not extending beyond the expiration of his/her term as member, and shall be eligible for reelection.

(2) The president shall be deemed to have vacated office on the day the Council holds its meeting after its reconstitution.

(3) The President may resign his/her office by notice in writing addressed to the Government of the Republic of Liberia through the Ministry of Agriculture and shall be deemed to have vacated office on such resignation being accepted by the Government of the Republic of Liberia.

(4) A member, other than an ex-officio member, shall hold office for a term of four years from the date of his/her nomination or, as the case may be, or until his/her successor has been nominated or elected.

(5) A member shall be eligible for reelection or, as the case may be, re-nomination.

(6) A member, other than an ex-officio member shall vacate office if be-

(a) resigns his office by notice in writing addressed to the President and the resignation is accepted by the President;
(b) fails to attend three consecutive meetings of the Council without leave of absence granted by the Council
(c) remains out of Liberia for a continuous period exceeding one and a half year;

(d) Fails to represent the particular interest for which he/she was elected or, as the case may be, nominated.

(7) Any casual vacancy in the office of member, including the President caused by death, resignation, removal or otherwise shall be filled by election or, as the case may be, nomination and the person so elected or nominated shall hold office for the unexpired period of the term of office of his predecessor.

6. **Meeting of the Council**

(1) The Council shall meet at least twice in a year at such time and place, and shall be summoned in such manner, as may be prescribed: Provided that unless requisitions are made, the President may call a meeting of the Council by sending notice to each member.

(2) To constitute a quorum at a meeting of the Council not less than five members shall be present.

(3) All meetings of the Council shall be presided by the President and in his/her absence, by a member who is a Registered Veterinary Practitioner elected by the members present at the meeting.

(4) All questions at a meeting of the Council shall be decided by a majority of the members present and voting, and in the case of an equality of votes, the person presiding shall cast the deciding vote.

(5) No act done by the council shall be invalid merely on the ground of the existence of any vacancy in, or any defect in the constitution of, the Council.

7. Appointment of officers, etc

(1) The Council shall appoint a Registrar and such other officers and employees as it may consider necessary on such terms and conditions as may be prescribed.

(2) The Registrar shall act as Secretary to the Council and shall until another person is appointed as also treasurer.

(3) All persons appointed under this section shall be deemed to be public servants within the meaning of the Civil law of Liberia.

8. **Fund of the Council**

(1) The Council shall be funded from annual budgetary allocation from the Government of Liberia.

a. The Council shall seek for Donor funding to carry out special Project of the Council.

b. The Council shall also collect registration fees from its members.

c. Income from investments and properties;

d. Aids and grants, if any, received form foreign countries in connection with the works of the Council.

(2) The fund of the Council shall be utilized by the Council through annual budgetary appropriation to meet the charges in connection with the functions of the Council and payment of salaries and allowances to its officers and employees.

(3) The fund of the Council shall be kept in such bank or banks as may be approved by the Council.

(4) The Council may invest its funds in such securities as may be approved by the Government.

9. **Accounts and audit**

(1) The Council shall maintain regular accounts of all moneys received and expended by it.

(2) The accounts shall be audited regularly as in keeping with the Audit requirement of the Government of the Republic of Liberia.

(3) For the purpose of an audit under sub-section (2),the Auditor General or any person authorized by him/her in this behalf shall have access to all records, books, documents, cash, securities and other properties of the Council and may examine the President or any member officer or employee of the Council.

(4) The Auditor General shall, as soon as possible after the completion of the audit, send to the Council his/her audit report and the Council shall forward it, with its comments thereon, to the Government of The Republic of Liberia.

(5) The Council shall take steps forthwith to remedy any defects or irregularities pointed out in the audit report.

10. **Register of Veterinary Practitioner**

(1) The Council shall, as soon as may be after its constitution, arrange for the registration of veterinary practitioners and, for that purpose, shall, by notification in the official hand-bill and publish notice in at least two daily newspapers of wide circulation, appoint a date on or before which applications for registration of names shall be made by veterinary practitioners possessing recognized veterinary qualification.

(2) The names and addresses, the recognized veterinary qualification together with the degrees on which such qualifications were acquired and the dates of registration of all veterinary practitioners registered under this Law shall be entered in a register to be maintained by the Council for the purpose.

11. **Custody and maintenance of register**

(1) The Registrar shall maintain the registry in such form and in such manner as may be prescribed and shall make from time to time such entries, corrections, alterations and modifications in the entries therein as may be directed by the Council.

(2) The Registrar may, for the purpose of carrying out his duties imposed under sub-section (1), call for any information he may require from any registered veterinary practitioner or a veterinary practitioner applying for registration.

12. **Persons entitled to be registered**

(1) Every person possessing a recognized veterinary qualification may be subject to the provisions of this Law and on payment of such fees as may be prescribed, apply to the Council to have his name entered in the register.

(2) Every person making an application under sub section (1) shall]

(a) satisfy the Council that he is in possession of a recognized veterinary qualification;
(b) specify in his application the date on which he/she acquired the qualification which entitles him/her to claim registration ; and
(c) furnish such other information as the Council may require for the purpose of registration.

13. **Registration**

(1) The Council may on being satisfied that a person applying for registration possesses a recognized veterinary qualification and has paid the prescribed fee, allow the application and direct the Registrar to enter his/her name in the register.

(2) The Registrar shall, on the registration of the person's name, give him a certificate of registration signed by him and counter-signed by the president.

(3) The Council may after giving the person concerned an opportunity of being heard, deny the registration, or cancel the registration of the name of any person-

(a) who has been convicted by a court for any offence involving moral turpitude;

(b) whom the council, after due enquiry, finds quality of infamous conduct in his/her professional capacity.

(4) The Council may, on its own motion or upon an application made to it by any person, direct, after giving the person concerned an opportunity of being heard

(a) for the purpose of rectification of any error, amendment or any entry in the register ;

(b) cancellation of any registration which has been fraudulently made or effected.

(5) Where the name of a registered veterinary practitioner is removed for any reason under this Law, the Council may, on its own motion or upon an application made to it by the concerned veterinary practitioner, allow the name of the veterinary practitioner to be registered again in the register.

(6) The Registrar shall by letter sent by registered post, inform the veterinary practitioner of his/her registration any amendment of cancellation of his/her registration or restoration of his/her name in the register.

(7) If any person whose name is entered in the register obtains any recognized veterinary qualification other than the qualification in respect of which his/her name has been registered, he shall, on payment of such fee as may be prescribed, be entitled to have such additional qualification entered against his/her name in the register either in substitution of or in addition to, any entry previously make.

14. Appeal: - If any person is dissatisfied with the decision of the Council denying or canceling the registration of his/her name or direction the correction or cancellation of any entry in the register he/she may, at any time within thirty days from the date of such decision and on payment of such fees as may be prescribed, prefer an appeal to the Circuit Court pursuant The decision from such court may be appealable to the supreme as final orbital of cases.

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15. Amendment of the Schedule: - The Government of The Republic of Liberia, after consultation with the Council, may, if it thinks fits, by notification in the hand-bill amend the schedule so as to include therein, or omit there from, any veterinary qualification granted by any veterinary institution.

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16. Power to call for information, etc. - The Council shall have power to call on the authorities of any veterinary institution in Liberia to furnish such particulars as the Council may require of any area of study and examinations the applicant has completed in order to obtain the degree, diploma or license granted by that veterinary institution and as to the minimum age at which such area of study can be undertaken, examinations required to be undergone prior to such degree, diploma or license being granted, and generally as to the requisites for obtaining such degree, diploma or license.

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17. Notice of deaths and removal of names from register - On receipt of any reliable information regarding the death of any registered veterinary practitioner, the Registrar shall, after making such inquiry as the deems fit, remove the name of the deceased from the register.

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18. Publication of and presumption as the entries in the list of registered veterinary practitioners

(1) The Registrar shall once in every four years, on or before such date as may be determined by the Council, cause to be published in the hand-bill a list in

alphabetical order the names of all persons who are registered in the registry together with their addresses and recognized veterinary qualification and the date on which such qualifications were obtained.

(2) The Registrar shall also cause to be published in the month of January every year, an annual supplement to the list published under sub section (1) showing therein the additions, alternations or corrections made in entries in the registry during the preceding year.

(3) The Register shall be deemed to be a public document consistent with the Republic of Liberia.

19. Responsibility of Registered Veterinary Practitioner

(1) Every registered veterinary practitioner shall inform the Council any change of his/her address within sixty days of such change and, on receipt of the information; the Registrar shall make the necessary corrections in the register.

(2) No registered veterinary practitioner shall use or publish in any way whatsoever any name, title description or symbol indicating or circulated to lead persons to inform that he/she possesses any recognized veterinary qualification bigger than that he/she or other professional qualification unless the same has been conferred upon him/her by a legally constituted authority within or outside Liberia.

20. Privileges of registered veterinary practitioner

(1) Notwithstanding anything to the contrary contained in any other law for the time being in force, no one, other than a registered veterinary practitioner, shall be competent to hold any veterinary appointment in a veterinary institution, hospital, dispensary or abattoir maintained or aided by the Government of The Republic of Liberia or any local authority.

(2) Notwithstanding provision contained in any other law for the time being in force, no certificate required by any such law to be signed by a veterinary practitioner shall be valid unless it is signed by a registered veterinary practitioner.

(3) No person shall be entitled to recover any fee or charge in any court for any veterinary advice or attendance, or for the performance of any operation, or for any medicine supplied, unless he shall prove upon the trial he/she is a duly registered veterinary practitioner.

21. Persons not registered under the Law not to practice

(1) Notwithstanding anything to the contrary contained in any other law for the time being in force, no one, other than a registered veterinary practitioner, shall practice, or hold himself/herself out as practicing, the Veterinary Medicine or Surgery or Theriogenology.

(2) Whoever, after the coming into force of this law, contravenes the provision of sub-section (1) shall be punished with fine not to exceed LD $ five hundred.

(a) Rendering to any animal first aid for the purpose of saving life or relieving pain;

(b) destruction of any animal by painless method;

(c) castration of any animal or caponizing of any poultry or bird;

(d) docking of the cattle or dogs before its eyes are open;

(e) amputation of the claws of a dog before its eyes are open;

(f) inoculation or vaccination of any animal, poultry or bird.

22. Proceedings in inquiries- For the purpose of any enquiry under this Law, the Council shall take evidence in an administrative hearing. The decision of the Council shall be appealable to the Circuit court where the hearing will be conducted. The ruling from the Circuit court is also appealable to the Supreme Court.

23. Indemnity- No suit, prosecution or other legal proceedings shall be brought against the Council or any officer or employee thereof for anything which is in good faith done or intended to be done under this Law.

24. Power to make regulations- The Council may, consistent with this law notwithstanding, make regulations that will enhance the work of the Council.

The Schedule
(See section 2(e) and 15)
Part A Degree in Veterinary Science

1. Bachelor of Veterinary Science & Animal Husbandry (BVSc & AH), Bachelor of Veterinary Science (BVSc) and Doctor of Veterinary Medicine (DVM) from the University of Liberia or any recognized university of the world.

2. Member of the Royal College of Veterinary Surgeon, United Kingdom

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Annex 4

PROPOSED ANIMAL'S DISEASES LAW 2014

STATUTES - relating to diseases of animals

1. Short Title and Commencement:-

(1). This Law (shall) be cited as the **"animal's Diseases Law of (and shall apply to) the Republic of Liberia"**

(2). It shall come into force from the date it is enacted into law and published into hand Bill.

2. Definition:- In this Law unless anything repugnant in the subject or context otherwise requires –

a. **"Specified"** means anything specified by the rule.

b. **"Registration"** means any registration given under section 18

c. **"Animals"** means all forms of animal life including insects, all aquatic animals and birds, reptiles, as well as the larger species except human.

d. **"Animal Products"** means anything originating or made where in whole or in part from an animal or from a carcass includes meat, blood, bones, marrow, dairy and dairy products, eggs, fat, foodstuffs of animal origin, semen, embryo, veins, veinules, hair, skin and hides, offal or any other part of animal and fish or animal and fish products for human or animal consumption, for pharmaceutical use or for industrial use specified by the government notification in the official hand bill will also be included.

e **"Animals for breeding or rearing"** means an animal which is not destined for immediate slaughter.

f. **"Animal for slaughter"** means an animal destined to be transported or taken to an officially approved abattoir for immediate slaughter.

g. **"Biological Products"** means

(a) Biological reagents for use in diagnosis of certain diseases

(b) Sera for use in the prevention and treatment of certain animal diseases and possible sero – vaccination against certain diseases

(c) Inactivated or modified vaccines for use in the preventive vaccination against certain animal diseases.

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h. **"Case"** means an animal affected with one of the infectious or parasitic diseases recognized by the Minister of Agriculture.

i. **"Carcass"** dead body of any animal or any portion thereof and its flesh, bones (whole, part or smashed), hide, fur, hair, feather, horn, hooves, blood or any other part of it may be included.

j. **"Code of criminal procedure"** means Code of Criminal Procedure law .....

k. **"Director"** means the Director, National Livestock Bureau.

l. **"Veterinary officer"** means any officer working under the National Livestock Bureau who is registered veterinary practitioner defined under section ..... of Liberia Veterinary Law.....

m. **"Infected area"** means the infected area declared under section

n. **"District"** means of Liberia with clearly defined boundaries and having an appropriate animal veterinary health organization.

o. **"Exporting Country"** means a country from which there is sent to a destination in another country, animals, animal products, pathological material or biological products.

p. **"Fodder"** means any substance commonly used for food of animals.

q. **"Carcass"** means the carcass of an animal and includes part of a carcass and the meat, bones, skin, hooves, horn offal, or any part of an animal separately or otherwise or any portion thereof and butter.

r. **"Local Authority"**

s. **"Litter"** means any substance commonly used for bedding or otherwise for or about animals.

t. **"Stock"** means cattle, sheep, goats, horses, mules, donkeys, swine and poultry.

u. **"Cattle"** means bulls, cows, oxen, heifers and calves

v. **"Meat"** means any edible part of a carcass of an animal

w. **"Fresh Meat"** means meat which has not been subject to any treatment modifying irreversibly its organoleptic and physic – chemical characters; it includes frozen and chilled meat.

x. **"Prepared Meat"** means products of meat which have been subjected to treatment such as cooking, drying, salting, brining/and/or smoking.

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y. "**Products of animal originally, destined for human consumption**" means egg products, milk, milk products, honey.

z. "**Semen**" means the sperm of reproducing animals for artificial insemination.

z1. "**Ovum**" means the female reproductive cell or gamete of animals; egg.

z2 "**Fish**" means a limbless cold-blooded vertebrate animal with gills and fins living wholly. in water.

z3 "**Official Veterinarian**" means a civil service veterinarian or a specially appointed veterinary Administration of a country.

z4 "**Vehicle**" means of transport by land, air or water.

z5 "**Veterinary Administration**" means the central veterinary services in the Ministry of Agriculture, Government of Liberia.

z6 "**Infected Areas**" means an extended territory in which any disease is confirmed.

z7 "**Disease**" means Africa swine fever, avian leucosis complex, classical swine fever, anthrax, blue tongue, brucellosis, contagious bovine pleuro pneumonia, Dourine, enzootic porcine, encephalomyelitis, epidemic tremors, fowl pest, food and mouth disease, glanders, Johnne's Disease, pasteurellosis rabies, rinderpest psittacosis, Newcastle, pullorum disease, ulcerative lymphangitis, epizootic lymphangitis, swine erysipelas, trypanosomiasis, leptospirosis, ornithosis, trichinosis, tularemia or any other disease declared by the relevant Minister of the Government of Liberia, to be included in the term "disease" for the purpose of the law.

z8 "**Focus of Disease**" means the occurrence of outbreak (s) of disease within a sixteen square degree

z9 "**Outbreak**" means occurrence of disease

z10 "**Poultry**" means birds of the following species

(a) Domestic fowls, turkeys, geese, ducks, guinea fowls, pigeons, pheasants and partridges

z11 "**Minister**" means the Minister of Agriculture

z12 "**Stock Inspector**" includes an official veterinarian and any person authorized by the Minister to perform the duties of a stock inspector under the law.

z13 "**Suspected**" means of suspected of being diseased.

z14 "**Permit**" means a written authorization to carry on specified activities.

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z15 "**Permitee**" means a person who holds a valid permit.

z16 "**Quarantine**" means the detention of animals and its products (meat, meat products. milk, milk products, eggs, eggs products), carcasses litter, fodder, dung or vehicle in such place and for such period of time as may be specified by the Ministry of Agriculture (MoA).

3. Providing Information Regarding Animal Diseases:

(1) Every owner or any person having in charge or manager, supervisor, caretaker or person having in control or veterinarian while attending an animal in course of his/her practice or any other veterinarian through any other means or any Animal Health Assistant of National Livestock Bureau (NLB) have the reason to believe that any animal is infected, the owner, person having in charge, manager, supervisor or person having in control, veterinarian or Veterinary Assistant or Community Animal Health Workers will inform in writing to the Director, NLB or the Veterinary Officer /District Superintendent empowered by him/her without any delay.

(2) The Director or empowered veterinary officer by the Minister on receiving information regarding any disease of any animal under subsection (1) and if he is confirmed through necessary test and investigation about the infected animal and infected premise and he/she feels that immediate action is necessary for the disease and infected area then he/she will take necessary actions against the disease and infected place.

4. Segregation of diseased animals:

Every owner or any person having in charge or manager, supervisor, or person having in control is confirmed that the animal is infected, then he/she will make arrangement to segregate the infected animal from other animals and he/she will do his/her best, for the purpose to make necessary arrangement for preventing the non infected animals ones to come in contact with infected ones.

5. Declaration of infected area:

(1) The Director, NLB, if he/she has the reasons to believe that disease has broken out or there is a danger for the spread of any such disease in a specific area, he/she may declare such place as an infected area by official pronouncement or notification.

(2) The notification under sub section (1) shall include description of matters stated below and other information specified by the Director, NLB, namely:

a) Boundaries of the infected area;

b) Time limit for infected area declared;
c) Description of the spreading diseases in the infected area;

d) Name of animals which may be infected; and

e) Measures to be under taken by the owner, person in charge, caretaker, and person having in control, Veterinary officer or any other authority.

(3) If any area is declared infected under sub-section officially, (1) , it shall remain generally in effect for not more than 3 (three) months of notification.

Provided that, if outbreak and spread of the disease can not be prevented for any reasons within the time mentioned , the Director, NLB with prior permission of Ministry of Agriculture (MoA) may extend the time not exceeding another three months by official pronouncement.

(4.) If any area is declared to be an infected under sub-section (1) the declaration shall be widely published for information of the public of the area.

6. Prohibition of movement of animal & animal origin product from the infected area:

(1) From infected declared under section 5

(a) No person shall move any animal, alive or dead, or animal origin products, part of any animal or animal related any other products or shall not be allowed to transfer any animal from the affected area nor he shall be allowed to move animals which he/she owns, mange or transfer or move any animal from infection free area to infected area.

Provided that prohibitions of this section shall not be enforced in the following matters namely;

i) To bring animals for religions custom and festivals;

ii) To bring in animals into any livestock farms and;

iii) To bring in animals for other purpose specified by the Director, NLB for any other instances authorized by the Director, NLB or any veterinary officer empowered by the Director NLB;

(b) Nobody shall buy or sell any meat, milk, egg, or other product originated from animal, which is considered as diseased or from animal which has come in contact with diseased animal.

(c) Ban may be imposed on movement of animal waste, animal feed or any material used for housing of animals from infected area.

(2) Notwithstanding any cases in subsection (1), animals, animal origin products, animal feed, animal waste or any materials used for housing of as mentioned in subsection may be transported by any means approved by the MoA may be transported following the conditions specified by the Director, NLB.

Provided that, if any such animal or any other goods, while transportation by means of transport through the infected area are unloaded due to any reasons, in that case it can not be transferred again from the mentioned area to the fulfill the objectives of the sub-section (1).

7) Preventive vaccination in the infected area:

(1) If it is possible and practicable to control the disease by preventive vaccination against which an area is declared infected under section 5, the Director, NLB shall arrange vaccination of all or any kind or class of animal in a specified method.

(2) If any initiative for preventive vaccination is made under subsection (1), owner of the animal, person in charge, supervisor or person having control shall be bound to render every facilities and assistance in carrying out such vaccination activities.

8. Disinfection, etc

(1) The Director, NLB may by issuing orders in writings to the owner of the animal, person in charge, supervisor or person having control of any shed, establishment, transport, animal farm, animal breeding farm, stable, cage or any other premises or yard where infected animals are kept or conserved or animal feed container or bucket for disinfection and owner of the animal, person in charge, supervisor or person having control shall be bound to take necessary action as specified in the order.

(2) The veterinary officer may issue appropriate order not to reuse any shed, establishment, transport, animal farm, animal breeding farm, stable, cage or any other premises or yard where infected animals are kept or conserved or animal feed container for which an order has been issued for disinfection until they are properly disinfected in accordance with the order.

9. Examination of animals:

(1) If veterinary officer has sufficient reason to believe that any animal has become infected, in that case, he may make arrangement for any test in a specific manner which he/she deems suitable.

(2) Blood, milk, feces, urine or any other material may be collected for the purpose of tests under subsection (1).

(3) The Veterinary Officer may pass such orders for the purpose of carrying out tests under sub section (1)

a. To produce any such animal in a specified place and time directed by him; and

b. Not to transfer such animal from the said place without his prior permission.

(4) Under this section, concern owner, possessor, caretaker or controller of the animal is bound to provide necessary help and all kinds of facilities to perform any examination or investigation.

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10. Postmortem examination:

(1) Any veterinary officer may conduct postmortem examination under established procedure, of any animal which is suspected infective at the time of death and where necessary may collect carcass whole or in part for purposes of examination in the laboratory in a specified manner.

(2) For purposes of postmortem examination any veterinary officer may order to exhume any dead animal and may take any other necessary actions as found necessary by him/her.

11. Disposal of any such animal that died due to disease:

(1) The carcass of any animal which at the time of death was suspected died of any disease, shall be buried at least under six (6) feet of soil with skin or destroyed by incineration or any other specific manner for removal of such carcass.

(2) Except in the case of exhumation or disposal of a carcass by any other means under section 10, no person shall disinter or otherwise remove the carcass of an animal or other wise remove the carcass of an animal buried in compliance with the provisions of subsection (1).

(3) No person shall dispose or order to dispose any carcass infective at the time of death or throw any such straw, grass, excreta, or any other material which has come in contact with such diseased animal which may cause potential threat to public and animal health.

12. Prohibition of marketing animal or animal origin product:

Any animal or animal origin product of infected area declared under section (5) can not be marketed in the said area without permission of veterinary officer empowered for the purpose.

13. Inspection of Hatcheries:

(1) The veterinary officer specially empowered by the Director, NLB for the purpose may inspect any hatchery prior to hatching any eggs of ducks or chickens for commercial use, to ascertain whether the eggs carry pullorum or any egg transmitted diseases.

(2) The veterinary officer may examine the eggs or ducks or chickens for the fulfillment of the purpose of Section (1)

(3) If pullorum or any other egg transmitted diseases are found in the eggs, ducks or chickens during the course of examination under subsection (2) in that case, such eggs, ducks and chicks may be destroyed following the rules or in absence of such rules as may be directed by the Director, NLB.

14. Compulsory segregation and treatment of animals in infected area:

(1) If veterinary officer is confirmed through investigation that any animal has been affected by any infectious or contagious disease, he may, by orders in writings, direct the owner of the animal, person in charge, supervisor, caretaker or person having control in matters mentioned below-

a. To keep that in a specified place, to remove it or to take necessary actions for segregation in manner directed by the said officer.

b. To administer treatment.

(2) If any order issued by any veterinary officer under subsection (1), owner of the animal, person in charge, supervisor, caretaker or person having control will carry out the said order:

Provided that where there is no owner of the animal, person in charge, supervisor or person having control or its owner is unknown or can not be ascertained without undue delay, or the order passed by the Veterinary Officer can not be communicated to him without undue delay or an owner of the animal, person in charge, supervisor or person having control of the animal fails to comply with the order of the Veterinary officer within such time as in the opinion of Veterinary Officer is reasonable, the Veterinary Officer shall seize the animal or remove it to a place of isolation and segregation and may subject it to treatment as may be necessary.

(3) If an owner of the animal, person in charge, supervisor or person having control of the seized animal or under subsection (2) his/her authorized agent applies for the return of such animal to his possession, the animal shall be so returned if such owner of the animal, person in charge, supervisor or person having control or his authorized agent pays any expenses, incurred for upkeep during seizure.

Provided that on the release of the animal to the owner, person in charge, supervisor or person having control or to authorized agent shall comply with which the Veterinary Officer may deem fit to issue to his/her opinion for the animal.

(4) If an owner of the animal, person in charge, supervisor or person having control or his authorized agent does not apply for release of the animal under subsection (2) and the animal is, in the opinion of the veterinary officer, no longer likely to infect any other animal with the contagious disease in respect of which it is seized, in that case, the veterinary officer shall make arrangements to send the animal to any place authorized by him and if within 30 days an owner of the animal, person in charge, supervisor or person having control or his authorized agent does not apply for release of the animal, in that case the veterinary officer shall take necessary action which to his/her opinion is appropriate.

(5) Notwithstanding anything in any other section, if the Veterinary Officer, after due examination of any animal, certifies in writing such animal affected with any disease and the said animal shall not be cured by the treatment, in that case, he/she may destroy, dispose or settle by any other means in specified manner.

15. Restriction on market, fair etc, in infected area:

No person, institute or organization shall organize, concentrate or assemble animal market, fair or animal exhibition for the purpose of sports or trade or promotion any body for the same purpose in the infected area without prior permission in writings by the Veterinary Officer.

16. **Registration for animal farm, animal origin product, processing plants, etc.**

(1) Subject to provisions of subsection (2) no person for commercial purpose without registration shall

(a) Establish and operate animal hospital or provide clinical service at any place or premises for the purposes of treating animals;

(b) Establish and operate animal farm, ducks or chicken farms ;

(c) Establish and operate any animal origin product;

(d) Collect or process semen for breeding purposes and;

(e) Rear any bull of cattle or buffalo, buck or any other animal for purposes of breeding and donor cows, she goats or any other animal for the purposes of embryo production and transplantation.

2. No registration shall be required for the following cases:

(a) Operation and establishment of any veterinary hospital, livestock farm, chicken or duck farm, embryo transplant or animal origin product processing factory established and managed by the public sectors.

(b) For raising and of any farm run by the academic/research institutes for purposes of collection and processing of semen for breeding purpose, rearing any bucks and bulls or any other animal for breeding purpose, rearing cows or she goats or ewe or saws any other animal for the purposes of producing and transplantation of embryo; and

(c) Duck and chicken farms or livestock farm established and managed for the purpose of family use and for keeping a specified number of bulls, bucks, rams, boars or any other animal for breeding purposes or in the said farm.

17. **Pre-inspection for registration, etc:-**

Prior to issue a registration under section 18 the Director, NLB or Veterinary officer/District Superintendent empowered by him/her may inspect the premise of livestock farm, ducks or chicken farm and animal origin product processing plant or may collect any information from the applicant.

18. **Registration, etc:-**

(1) Director, NLB or Veterinary officer/District Superintendent empowered by him for the purposes shall issue specified registration certificate for fulfillment of the activities mentioned under section 16.

(2) Each application for registration certificate shall be submitted to the Director General or Veterinary officer/District Superintendent empowered by him under subsection 1 in a specified manner, condition and with payment of fees.

(3) Any application submitted under subsection-2, may be accepted or rejected in accordance to this Act or rules framed under it, Director, NLB or Veterinary officer/District Superintendent empowered by him/her shall consider the following matters among others for taking decision about such application, namely :

a. Whether he/she is financially sound to operate the activities mentioned in the application.

b. Whether the activities mentioned in the application are consistent with the main objectives for undertaking activities as mentioned in section-16 and

c. Whether it will be consistent for public health and environment protection, if registration certificate is given.

4. Duration and time of renewal will be specifically mentioned under this.

5. Every registration certificate issue under this section shall be renewable and applicant shall pay specified fees for renewal.

6. The Director, NLB or the Veterinary officer/District Superintendent empowered by him/she shall

(a) Take decision of accepting or rejecting the application within 60 days of submission under subsection 2; and

(i) Shall issue the registration certificate within 15 days of acceptance;

(ii) Shall inform the applicant in writings stating the reasons within Seven (7) days in case of rejection.

(b) If it is not possible to take decision within 60 days, the applicant shall be informed immediately mentioning the reason for delay and shall take decision regarding the matter within next 30 days.

19. Preservation of copies of registration certificate:

Each copy of registration certificate issued under seciton 18 shall be preserved.

20. Cancellation of registration, etc:

(1) Notwithstanding anything in any other sections of this act, the Director, NLB or Veterinary officer/District Superintendent empowered by him/her may cancel any registration, if he/she has reasons to believe that the recipient of registration

(a) The law or any section of the rules framed under it has been violated; and

(b) Has been convicted for committing any crime under this Act.

(2) No cancellation of registration issued under subsection 1 can be made without giving the recipient of registration minimum 15 days time for showing causes.

(3) Any person aggrieved by any order passed under subsection 1 of this Law, He/she within 30 days of issuing order can appeal for Judicial review to the Circuit where the Office that took the action is located if such decision is endorsed by the Ministry of Agriculture after an administrative review.

(a) To the MoA; in case of the order given by the Director, NLB and
(b) To the Director, NLB in case of the order given by the Quarantine Officer/District Superintendent

(4) If any appeal is submitted under subsection (3), the appeal should be disposed of within 60 days.

(5) The decision of the Director, NlB, the Circuit Court shall be appealable except he decision of the Supreme Court which shall be final.

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(6) If any registration is cancelled under this section, a recipient shall not be eligible for claiming compensation from any authority or any court for loss incurred owing to cancellation.

21. Registration in respect of existing livestock farm, duck and poultry farm etc:

The veterinary hospitals, livestock farms, duck and poultry farms or animal origin processing factory, bull or ram, buck or any other animal rearing farms and for purposes of production and transplantation of embryo, donor cow, she goat/ewe/saw or rearing of any other animal, at the time of enforcement of this law shall have to procure registration within 6 months of enforcement of this law.

22. Crime committed by company, etc:

If any crime is committed under this law by any company then all such directors, managers, secretaries, share holders, official and employees of the companies who are directly related with that crime shall be deemed to have committed the crime, unless it be satisfactorily shown that the crime was committed beyond the control of the Officers of the Corporation and that efforts were made to stop same.

Explanation – In this Section

(a) "Company" shall mean any commercial establishment, share business, society, committee and also organization shall be included: and

(b) In case of commercial establishment "Director" shall mean any of its share holder or member of the board of directors

23. Acceptance of charge and trial:

(1) No court shall accept any complain for trial under this law, without a written complains of veterinary officer.

(2) All crimes committed under this law shall be tried as in keeping with the appropriate Liberian statute in force at the time the crime was committed.

24. Cognizable or bail of the crime:

All crimes under this law shall be governed by the criminal law of Liberia.

25. Punishment:

If any person violates this law or any rules or regulation under this law or fails to perform responsibility or fails to abide by orders and directions under this law, then for such violation and failure, he shall be tried and if found guilty, he shall be

sentenced as in keeping the appropriate criminal or penal law in force as at the time of the commission of the crime.

26. Appeal:

Whatever a crime is committed under this act, there shall be a hearing as in keeping with the due process requirement under the constitution and any judgment therefrom, may be appealable to the appropriate circuit after all the administrative procedures have been exhausted and in keeping with the Executive law.

27. Application of criminal Procedure:

Crime investigation, judgment, appeal and other related matter under this law, shall be carried out as in keeping with the appropriate Liberian law that will be in force as at the time of the commission of the crime.

28. **Indemnity:**

The Director, NLB or any officer or any employee or any other person working under him/her performing any action on good faith under this law, and for this performance if any individual suffers loss or if there be any possibility of loss, for that reason civil or criminal or any other lawful procedures cannot be drawn against them.

29. Right of entrance, etc.

The Director, NLB or any veterinary officer empowered by him/her in respect to the law and its rules and regulations, at any logical time, along with other helps to his/her requirements and consideration, shall hold right of entrance to any farm, places of animal residence, land, buildings or animal derivative processing factory, any other places or transportations for the following purposes; e.g.

(a) To perform any duties delegated under this law.

(b) Inspection of any sick animal,

(c) Inspection of animals which has been infected by that sick animal.

(d) Inspection of products derived from animal

(e) Inspection of straw, grass, and other items used by animal attacked by infectious diseases and

(f) To perform any other duty as indicated by the government from time to time.

30. **Delegation of Power:**

The Director, NLB with a general or specific order, if necessary, may delegate his/her power or responsibility to any veterinary officer under him/her or to any officer of the NLB.

31. Power to formulate rules:

For purposes of fulfilling the aims of this law, the MoA, may formulate rules and regulations from time to time to ensure the effective implementation of this law.

32. Revocation & Protection:

1. Despite such revocation, if any work or work schedule in respect to the revoked laws remain under settlement just prior to promulgation of this law, such work or work schedule must be settled in accordance to such revoked laws in a manner as if this law has not been promulgated.

Schedule

[Section 2 (e) annexure]

Description of animal diseases

Anthrax, Haemorrhagic Septiceamia, Black Quarter, Brucellosis, Tuberculosis, Johne;s Disease, Contagious Bovine Pleuropneumonia, Melioiodosis, Bovine Genital, Campylobactoriosis, Vibriosis, Leptospirosis, Foot and mouth disease, Rinderpest, Bovine Viral Diarrhoea, Malignant Catarrhal Fever, Vesicular Stomatitis, Lumphy skin disease, Infectious Bovine Rhinotracheitis, IBM/IPM, Proliferative Stomatitis, Bovine Viral Leucosis, Trypanosomiasis, Trichomoniasis, Babesisis, Anaplasmosis, Theileriasis, Warble Fly, Hypoderma Bovis and Blineatum, Dermatomycosis, Glanders, African Horse Sickness, Infectious Equine Encephalomyelities, Epizootic Lymphangitis, Equine Infectious Anaemia, Japaness B. Encephalitis, Pateurollorsis, Contegious Caprine Pleuropneumonia, Fool rot, Vibriofoetus, Q. Fever, Contagioius Pustular Dermatitis, Blue Tongue, Maeda, Visna, Adenomatosis, Scrapie, Peste des petits Ruminants, PPR, Sheep Pox, Goat Pox, Swine Erysipelas, Intestinal salmonella infection, Vesicular Exanthea, Classical Swine Fever, African Swine Fever, Aujesky's Disease, Atrophic Gastroenteritis, Canine Parvovirus Infection, Canine Parvovirus Infection, Canine Herpesviral Infection, Feline Infectious Anemia, Felime Leukemia Virus and Related Disease, Feline Panleukopenia, Infectious Canine Hepatitis, Canine Influenza Virus, Canine Parainfluenza Virus, Feline Enteritis, Canine Distemper, Pullorum Disease, Fowl Typhoid, Fowl Cholera, Avian

Tuberculosis, Fowl Plague, Newcastle Disease, (RaniKhet), Marek's Disease, Avian Eucosis, Gumboro Disease, Infectious Laryngotra Cheitis, Avian Infectious Bronchitis, Duck Virus Enteritis, Dug Plauge Fowl Pox, Mycoplasmosis, Chicken Anemia Virus Infection, Inclusion Body Hepatitis, Duck Viral Hepatitis, Necrotic Enteritis, Rotaviral Infections in Chiken Thrush Candidiasis, Goose Viral Hepatitis, Lymphoid Leukosis, Myeloid Leukosis, Omphalitis, paratyphoid Infection, Staphylococcosis, Streptococcosis, Viral Arthritise, Encephalomyelities, Egg Drop Syndrom, Aspergellosis, Infectious Coryza, Avian Influenza, Quail Bronchitis, Swollen Head Syndrome and Psittacosis.

Annex 5

Introduced Law in the need of restraining of animal disease outbreak and its spread, and to protect public health, quarantine of animal and animal product, control of import and export and pertinent matters.

Whereas the making of legislation, to restrain outbreak and spread of animal disease and to protect public health, quarantine of animal and animal product, control of import and export and about the related matters, is judicious and necessary;

Therefore hereby Laws have been made as bellow:

Section 1… Brief title and inducement

(1) **This Act shall be called "Liberia animal and animal product quarantine Act, 2014".**

(2) **This Act will be effective instantly**.

Section 2… Definition --- Anything if not antagonistic to the subject and related matters, in this Act

(A) "Import" means importation of any animal or animal product into Liberia by land, sea and air port;

(B) "Fitness Certificate" means fitness certificate issued by quarantine officer about the competency of any animal product as human or animal feed or of use;

(C) "Fixed" means fixed by rule;

(D) "Animal" means including all types of animal stated below:

a) All mammals other then human;

b) Birds;

c) Reptiles types of animals;

d) Other aquatic animals including fish;

e) Any other animal declared by the Ministry of Agriculture (MoA) by Hand Bill;

(E) "Animal Product" means animal or wholly or partially collected/prepared any stuff, flesh, blood, bone, bone marrow, milk or milk product, egg, fat/lard, feed stuff made of animal, semen, embryo, veins sub veins, hair, skin/hides, offal; and any other part of animal body or animal product declared by the Government in Hand Bill notification will also be included.

(F) "Criminal procedure" means The Code of Criminal Procedure, ...;

(G) "Director" means Director of National Livestock Bureau (NLB);

(H) "Carcass" means dead body of any animal and its any part would also be included;

(I) "Health Certificate" means Certificate about the health of the animal issued by Quarantine Officer;

(J) "Export" means sending of any animal or animal product from Liberia to abroad by land, water and air ways;

(K) "Diseased" means affected by any infectious or contagious disease or affected by any other disease declared by the MoA by Notification time to time;

(L) "Regulation" means regulation framed under this Act;

(M) "Quarantine Officer" means Quarantine Officer seconded under this Act; and

(N) "Quarantine" means isolation of animal or animal product in to a place or a yard, designated by the MoA, and kept enclosed up to a definite period for examination.

Section 3... Quarantine, Ban on import and export of animal and animal product, etc. ---- Any animal or animal product which might cause animal or human disease, could be controlled partially or otherwise, by quarantine, ban on import/export through conditions stated in import/ export policy, promulgated time to time by the Ministry of Commerce and Industries (MoCI) under "The Import and Exports (Control) Law ....."

Section 4... Effectiveness of orders promulgated under Section 3. ---- The orders promulgated under Section 3 will be effective in such a way that, as if it is The Custom Law, ..., after that in this Act this section has promulgated under the section ..... of The Custom Law. Under this Law, the power of custom officers in applying bar restriction on importing/exporting goods from time to time would remain the same in case of import/export of animal and animal products.

Section 5... Selection of entry and exit points--- The MoA shall determine the incoming and outgoing points and its boundary for import/export of animal and animal product by Hand-Bill.

Section 6... Control of animal and animal product for Quarantine --- All the seized animals and animal products will be kept under the control of Quarantine Officer who will take measures of quarantine of these animals and animal products.

Section 7...Authority and Job description of Quarantine Officer--- Considering the other rules of this Act, authority and job description of the Quarantine officer will be as follows:

(A) Detention of animal and animal product for Quarantine;
(B) Inspection of animal and animal product detained for quarantine;
(C) Fixation of Quarantine time span;
(D) Release of animal and animal product from Quarantine measures;
(E) Passing appropriate order to carryout determinate examination;
(F) Issuance of health certificate for animals detained for Quarantine;

(G) Passing of settlement order, to destroy the animals identified as diseased and contaminated animal products in a prescribed process or otherwise, after completion of determinate examination;
(H) Passing of order of removal of all animal body cover, excreta, equipment, grass, straw, and cages came in contact of diseased animal or animal product;
(I) Taking measures to disinfect vehicles used for carrying animal and animal product and contaminated yard;
(J) Imposing ban on exportation of animal not eligible to travel;
(K) Issuance of certificate on inspection of animal and animal product at stop over during transportation for import/export;
(L) Passing of order to return, the imported animal and animal product on which ban is declared by the MoA, bearing the cost by the importer or order to settle down in a determined procedure; and
(M) Taking any other measure to perform above mentioned responsibilities and activities properly.

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Section 8... Appointment of Officers and staff etc. ---

(1) The MoA will recruit required number of Quarantine Officers and Staff under the NLB to perform the activities properly under this Law.

(2) Service terms and conditions of Quarantine Officers and staff recruited under the sub-section (1) shall be fixed by the MoA.

(3) Until Quarantine officers and staff are recruited under the sub-section (1), officers and Staff from the NLB will be selected by the MoA to bear responsibilities and perform activities as Quarantine officer and staff.

Section 9… Information about importation by the Importer— Every importer must inform a Quarantine Officer, at least 15 days prior about the importation of animal and animal products, in a prescribed procedure.

Section 10… Sizeable animal and animal products, etc. — If after the completion of scheduled examination of imported animal or animal product, in the quarantine period, is found —

(A) examined animal is identified as diseased, and the disease is not curable by treatment; or

(B) the animal product identified as contaminated and it is not eligible as human or animal feed; then the identified diseased animal or diseased animal's in contact animal body cover, excreta, equipment, grass, straw, cage or other stuff or this animal product will be sizeable.

Section 11…Settlement or arrangement of seized animal etc. — Sizeable animal and animal product or animal body cover, excreta, equipment, grass, straw and cage, under section 10, shall be handed over to the concern District Superintendent (DS) immediately after seizing order, and he/she (DS) will take measure, of its use, handover, destruction or removal or in any other procedure to settle or arrange according to determined procedure.

Section 12… Rules for exportation of animal or animal product — In case of exportation of any animal or animal product, conditions of quarantine to be followed will be fixed by regulation.

Section 13… Rules regarding Importation of animal or animal product without legal import license — If any animal or animal product is imported without legal import license, and if this animal is not affected by infectious or contagious disease, or the animal product is not contaminated, then the MoA could settle all required processes by determined procedure.

Section 14… Appeal against Administrative Order, etc. —

(1) To fulfill the purpose of the law, any order or instruction given by Director, NLB or Quarantine Officer (QO) that makes any person affected or aggrieved, then to get retribution, that affected or aggrieved person may appeal within 30 days of the order given, —

(A) to the MoA, if the order is given by the Director, NLB; and

(B) to the Director, NLB, if the order is given by the Quarantine Officer.

(2) Any appeal filed under the sub section(1), that has to be settled less then 90 days of filing.

Section 15… Non-encumbrance (Indemnity). — Civil or Criminal case could not be filed or any other legal action can not be taken against the MoA, Director NLB, QO or his/her subordinate staff or any person, if any person is affected or aggrieved due to any action taken by them innocently under this Law.

Section 16… Exemption. — The MoA can exempt any class of animal or animal or animal product, through Hand Bill notification subjected to conditions listed in that Notice.

Section 17… Offence committed by Company etc. ---- Under this Act, if any offence is committed by any company, it will be considered that such every director, manager, secretary, partner, officer and staff of that company, which is directly involved in the offence, has committed the offence unless he/she can prove that the offence was beyond his/her knowledge or he/she tried his/her best to restrain.

Explanation – In this section –

(A) "Company" includes commercial organization, shared business, committee, association and organization; and

(B) In case of commercial organization "Director" means its any partner or member of board of directorate.

Section 18… Offence undertaken for trial ---- Any court shall not undertake any case under this Act for trial without the written complain of Quarantine Officer.

Section 19…Trial of offence by Magistrate, etc. – Offences under this Act will be trialed by a Civil Court Magistrate or Judicial Court Magistrate where applicable.

Section 20… Sentence/punishment. – If any person violates any of this Act or any Rule of Regulation or fails to accomplish responsibility or fails to carry out order, then the person shall be imprisoned for maximum two years, or maximum LD$. 10,000 (LD$ ten thousand) penalty or shall be sentenced by both because of such violation or failure.

Section 21… Appeal. --- Appeal could be lodged in an authoritative session court against any judgment or order given by a Civil Court Magistrate or Judicial Court Magistrate under this Act.

Section 22… Application of Criminal procedure. --- Depending on the non inconsistency with the Rules of this Act, criminal procedure will be applicable in case of inquiry of the offence, judgment, appeal and other pertinent maters.

Section 23… Cognizability and bailability of offences --- Offences will be Non-cognizable and bailable under this Act.

Section 24… Authority of making regulation –

(1) To fulfill the objectives of this law, MoA shall make regulations by Hand-Bill Notification.

(2) Rules shall be made on all or any of the subjects stated below in this regulation, without hampering the totality of the power given under the sub-section (1), viz. –

(A) Determination of conditions to be followed before, during or after importation of animal and animal product;

(B) Determination of disembarkation, inspection, quarantine, seizure, detention and treatment system of animal and animal product;

(C) Determination of proper examination system to identify disease;

(D) Assessment of fees for health certificate, if necessary treatment or vaccination in case of animal import or export;

(E) Assessment of fees for eligibility certificate and form in case of animal product import or export;

~~(F) Determination of boundary of embarkation and disembarkation place for import and export;~~

~~(G) Fixation of rate of quarantine expenditure of animal and animal product and arrangement of its collection;~~

~~(H) Determination of cleaning and disinfection system of premises, vehicle and other places related with quarantine; and~~

~~(I) Determination of identification procedure of imported animal.~~

~~Section 25... Annulment and Protection ----~~

~~(1) The Plant and Animal Quarantine Act, 1949-50 (XXXIX, sec.2;L. 1948-49, ch. IX;L.1937, ch.II, L. 1949-50, ch. XXIXX, sec.3) has hereby been annulated.~~

~~(2) Despite this annulment, immediate before activation of this Law, if there is any case under trial, then that will be settled by the annulated Act as if this Act has not been activated.~~

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