



Food and Agriculture
Organization of the
United Nations



REVIEW OF THE LIVESTOCK/MEAT AND MILK VALUE CHAINS AND POLICY INFLUENCING THEM IN LIBERIA



**REVIEW OF THE LIVESTOCK/MEAT AND MILK VALUE CHAINS AND POLICY
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Published by the Food and Agriculture Organization of the United Nations and
the Economic Community of West African States
2017

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LIST OF ACRONYMS AND ABBREVIATIONS

ABL	Association of Butchers of Liberia
AHD	Animal Health Division
CAADP	Comprehensive Africa Agricultural Development Programme
CAAS-Lib	Comprehensive Assessment of the Agriculture Sector – Liberia
CARI	Central Agricultural Research institute
CBOs	Community Based Organizations
DM	Dry Matter
DPAM	Division of Price Analysis and Marketing
ECOWAP	Economic Community of the West African States Agricultural Programme
ECOWAS	Economic Community of the West African States
FAO	Food and Agriculture Organization
FAPS	Food and Agriculture Policy and Strategy
FBO	Farmer Based Organisation
GDP	Gross Domestic Product
GOL	Government of Liberia
IPD	Import Permit Declaration
LASIP	Liberia Agriculture Sector Investment Programme
LEWS	Livestock Early Warning Systems
LU	Livestock Unit
MDGs	Millennium Development Goals
MOA	Ministry of Agriculture
MOCI	Ministry of Commerce and Industry
MS	Member States
MOSW	Ministry of Health Sanitation and Water
NAIPs	National Agricultural Investments Plans
NGO	Non-Government Organisation
NLB	National Livestock Bureau
NSL	National Standards Laboratory
PRS	Poverty Reduction Strategy
RAIP	Regional Agricultural Investment Plan
SPS	Sanitary and Phyto Sanitary
TAD	Trans border Animal Diseases
TCP	Technical Cooperation Programme
UNDP	United Nations Development Programme
USAID/FED	United States Agencies for International Development/Food and Enterprise Development Programme
USDA	United States Department of Agriculture

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EXECUTIVE SUMMARY

Introduction The Economic Community of West African States (ECOWAS) Agricultural Programme (ECOWAP) is the tool for the implementation of the Comprehensive Africa Agricultural Development Programme (CAADP) in West Africa and its livestock component has, as one of its main objectives, reducing dependency on imports of food of animal origin from outside of the region. The main objective of this consultancy is to review the livestock/meat and milk value chain in Liberia and take stock of policies influencing them.

Findings

The review of the documents related to the livestock/meat and milk value chain reveals that milk production in Liberia is limited and the quantities produced are for home consumption. The livestock industry is dominated by meat production, mainly from indigenous cattle, sheep, goats and pigs produced under the traditional system. There is very little information on the marketing of locally produced animals. The available information is mostly related to marketing of imported cattle, sheep and goats. There is no information on the marketing channels of the pig sub-sector, although FAO Statistics show that pork is the second largest type of meat consumed in the country after chicken and the pig numbers grew over 10% on average annually between 2000 and 2010.

Socio-economic context of the meat and milk value chains: Liberia's GDP in 2013 was estimated at US\$1.73 billion. Agriculture contributed 66 per cent and the share of livestock in agriculture GDP was 19.0 per cent. Thus the contribution of livestock to the national GDP was 9.9 per cent. Gross monetary contribution of livestock to household economy was estimated by Maiga (2012) at US\$575.60 per household. Livestock are capital assets which provide income through the sale of meat and by-products and also act as savings repositories. Human population was estimated at 4.5 million in 2014 and 11 per cent of Liberians are engaged in animal production with equal numbers of males and females

Description and mapping of the meat and milk value chains. Actors in the value chain are: producers and processors including market/toll collectors, negotiators, butchers, wholesale butchers, butcher-apprentices, and sellers of roast meat, retailers, importers and the Association of Butchers of Liberia (ABL). Others are buyers and marketers, support and control service providers and the Non-Governmental Organizations (NGOs).

Marketing channels, both for cattle and small ruminants, comprise regional trade with neighbouring countries (Côte d'Ivoire, Guinea for cattle and Mali for cattle, sheep and goats), and local within country trading by the actors.

The prevailing livestock production systems include the following: i) traditional, village or extensive cattle, small ruminants and pig production systems; ii) improved systems (ranching and rearing of cattle, sheep and goats in and around cities; iii) pig production mainly located in urban areas); and iv) modern mixed

farms. The total livestock population is estimated at 9 148 cattle, 50 277 sheep, 87 203 goats and 70 059 pigs. The average herd/flock size per household is about one for cattle and two for small ruminants.

Cattle, sheep and goat slaughter is carried out mainly in Monrovia at the Central Abattoir and in slaughter slabs outside of Monrovia. Facilities for meat or milk processing for/value addition are currently not available in Liberia. Currently local production of meat and milk is insignificant and as a result live cattle, sheep and goats for slaughter are imported from neighbouring countries. In addition Liberia imports significant quantities of livestock products. Total demand in 2015 is projected at 43 564 and 37 624 tonnes for meat and milk respectively. About 23 per cent and 1 per cent of the total demand for meat and milk, respectively, are expected to be covered by national production. Liberia has a comparative advantage in producing livestock products because it has a strong natural resource base and a climate favourable for commercial and market oriented livestock production. However, inadequate support services to livestock production, processing and marketing need to be tackled.

The critical inputs required for meat and milk production include a large number of animals with high genetic potential, feed, water, extension services and veterinary services and other inputs such as drugs and vaccines. The common breeds of livestock kept by producers are the N'Dama 46.3 per cent, and Muturu (53.7 per cent of the national herd, the Djallonke sheep and West African Dwarf goats, the Landrace, the Large White, and the Duroc which constitute the pig breeds.

Liberia has about 2 million hectares of pastureland which provide about 90 to 95 per cent of the feed required by the ruminant animals. Based on present production of rice and cassava, substantial amounts of the following crop residues can be produced as additional feed resources: 369 910 tonnes of rice straw, 116 260 tonnes of rice hulls, 17 439 tonnes of rice bran and 118 713 tonnes of cassava peels each year (FAO, 2012). The existing low animal density indicates that existing pastureland could sustain a much higher number of livestock.

Infrastructure and other support services. In general there is a lack of appropriate facilities and equipment along the meat and milk value chains. There are two abattoirs in the Montserrado County one of which is functional while the other is still under construction, and four slaughter slabs. Other infrastructures include about 2 million hectares grazing land and livestock multiplication centres. The vast majority of roads are unpaved, and many are impassable during the six-month rainy season severely constraining access to inputs, services, and markets.

Extension and technical support. The Ministry of Agriculture (MOA) is the central policy-making body responsible for promoting agricultural development and regulating the sector. It is in charge of the supervision of livestock policies and activities. The Animal Health Division (AHD) is within the National Livestock Bureau (NLB), under the Technical Department of the Ministry of Agriculture. The National Livestock Bureau of the Ministry of Agriculture, and indeed the sub-sector as a whole, is faced with an acute shortage of qualified and competent human resources.

Quality control and certification. The Ministry of Commerce and Industry (MOCI) is the statutory body mandated by the Government of Liberia to promote and encourage the maintenance of standardization in relation with manufacturing and commodity trading. The National Standards Laboratory (NSL), under the Division of standards of the MOCI, is a major component of national institutions charged with quality related issues.

Marketing, trade and prices. In 2012, 151 tonnes of beef, 198 tonnes of mutton, 343 tonnes of goat meat and 1 763 tonnes of pork were produced. Local beef is more expensive than the imported one. Retailing of meat is conducted by butchers, women traders and other petty traders (mainly boys and men). Raw milk is not marketed in Liberia.

Policies and strategies. A comprehensive Food and Agriculture Policy and Strategy (FAPS) document prepared in 2008 establishes a framework comprising specific policies and strategies at sector and sub sector levels. Its purpose is to revitalize and strengthen the agriculture sector and enable it to maximize its contribution to the national overall development goals, while its goal is a revitalized and modernized food and agriculture sector that is contributing to shared, inclusive and sustainable economic growth and development of Liberia.

The key livestock policy objective is aimed at restocking, focusing on small ruminants, short-cycled animals and reducing production costs. The livestock sector policies and strategies are however mainly focused on animal production, and need to also tackle issues related to animal health, genetic resources conservation, land tenure, and pasture resources and watering points which are critical for farmers to boost production. The National Livestock Bureau of the Ministry of Agriculture, and indeed the sub-sector as a whole, is faced with an acute shortage of human resources. There is therefore a strong need for the formulation of a comprehensive human resources development policy which should include academic as well as on-the-job training.

Incentives or disincentives to producers and consumers. Incentives are available to foreign and domestic investors for approved investment projects in priority areas, such as tourism, manufacturing of finished products; livestock production is not a priority area.

Credit policies. The objective of the rural financial services policy is to ensure that initiatives providing financial services and products, particularly credit and savings, are available and accessible to every category of actors in the sector.

International trade policies. The overall vision of the trade policy is to re-integrate Liberia into the international economy and trading systems while being sensitive to the interests of local producers.

Acts, regulations and laws governing the value chain. The following instruments govern and regulate activities related to the several components of the value chain, but all need to be revised as they are no longer current. The 1966 revised Plant and Animal Quarantine Act; the 1966 revised National Livestock Artificial Insemination Act; the 1978 Act establishing the Agricultural and Cooperative Development Bank;

and the President's Executive Order to remove tariffs on agricultural equipment and supplies to ensure the availability and affordability of these inputs for agricultural production.

Major constraints requiring policy interventions are. A lack of an animal health policy in the FAPS: outdated legislation (regulation and operational rules); lack of human resource development policy; lack of an animal genetic resource conservation policy; lack of appropriate land tenure policies, and legal frameworks for the protection and management of pasture resources and watering points.

Suggested policies for smooth operation of meat and milk value chains. Articulate and adopt an animal health policy within the FAPS policy framework and promulgate the necessary legislation and regulatory frameworks and enforcement mechanisms; formulate a comprehensive human resources development policy which includes academic and on-the-job training of livestock sector operators; articulate and adopt animal genetic resources conservation policies, strategies and programmes to ensure facilitate the restocking programmes; and articulate and adopt land tenure, pasture resources and watering points policies within the FAPS policy framework and promulgate the necessary legislations, regulatory frameworks and enforcement mechanisms.

Constraints affecting meat and milk value chains and proposed solutions. The major constraints affecting the meat value chain include the low genetic potential of local livestock breeds coupled with a low livestock population, have led to poor production and productivity of the livestock industry; inadequate supply of feed, inadequate and poorly maintained infrastructure, lack of appropriate policies/supportive modern regulations, and weak institutions. The proposed solutions include up scaling the current livestock restocking programme; establishing a genetic improvement programme; establishing grazing reserves; constructing / upgrading slaughter facilities, storage, transportation and butcher shops; articulating and adopting land tenure, pasture resources and watering points policies, animal health and animal genetic resources policies; and developing the capacity of public and private institutions.

Prioritized areas of interventions. The prioritized areas of intervention are influenced by the issues raised in the FAPS and on-going efforts / initiatives aimed at revitalizing the livestock sub-sector in the areas of restocking, capacity development, developing agribusiness, integrating crop and livestock production and improving food safety. The areas of intervention, in order of priority, are as follows: livestock productivity improvement, capacity building, livestock processing and marketing, and project management.

Suggested projects and programmes (investment plans). The suggested Livestock Development Programme will have the following objectives: to improve food security, nutrition, incomes and employment from livestock production and small livestock-related enterprises. Components of the investment plan are: livestock productivity improvement; capacity building; livestock processing and marketing; and programme coordination/management. The suggested programme is estimated at US\$17.38 million.

Conclusions. The review of the documents related to the livestock/meat and milk value chain reveals that milk production in Liberia is limited and produced quantities are for home consumption. The contribution

of livestock to the nation's GDP is insignificant. The current livestock population is too low to meet the national demand for meat and livestock products. The provision of small ruminant breeding stocks and the support for ownership of improved cattle breeds to increase productivity and strengthen the meat value chain should be continued. Enabling supportive measures such as supply of breeding stocks, extension and disease control services in order to increase production and productivity and reduce external dependence should be continued.

The issue of food safety in the meat value chain is mainly related to a lack of appropriate slaughter facilities, and this needs to be addressed. The livestock sector policies and strategies are however mainly focused on animal production, and need to be broadened to include those that will improve productivity and target improved animal health and genetic resources conservation and improvement, land tenure, pasture resources and watering points which will enhance productivity. There is also a strong need for the formulation and implementation of a comprehensive human resources development programme which should include academic training.

I. INTRODUCTION

The Economic Community of the West African States (ECOWAS) Agricultural Programme (ECOWAP) is considered as implementation mechanism of the Comprehensive Africa Agricultural Development Programme (CAADP) in West Africa. The livestock component of ECOWAP is the strategic action plan for the development and transformation of the livestock sector in West Africa endorsed by Ministers of Members States (MS) in charge of livestock in March 2011. It has, as one of its main objectives, reducing dependency on imports of food of animal origin outside of the region. It is envisaged to achieve this objective through the development of livestock/meat and dairy value chains.

In the recent past, several studies identified constraints hindering the development of livestock value chains and proposed solutions which need to be tested and turned into policy instruments. These policies are expected to be embedded into the Regional Agricultural Investment Plans of ECOWAS (RAIP) and National Agricultural Investment Plans (NAIPs) of its Member States (MS). Taking into account FAO's comparative advantage in providing technical support for the development of value chains and their policies, the department of agriculture and rural development of the ECOWAS Commission requested assistance through a TCP to facilitate the process. In response, FAO approved the project: *Support to policy initiatives for the development of livestock/meat and dairy value chains in West Africa (TCP/SFW/3402)*. The implementation of the Project has started and one of the initial activities is to review the status of the two value chains in MS.

Objectives: The objective of this consultancy is to review the livestock/meat and milk value chain and take stock of policies influencing them.

The expected outputs of the consultancy are as follows: current status of livestock/meat and milk value chains in the country established; policies on livestock/meat and milk value chains in the country known and gaps identified; projects and programmes for the development/enhancement of livestock/meat and milk value chains proposed, and priority investment plans for each value chain identified; policies facilitating the development or enhancement of livestock/meat and milk value chains identified and mechanism of embedding them in national key policy documents suggested.

The structure of the document is as follows: Introduction; socio-economic context of the meat and milk value chains; description and mapping of the meat and milk value chains; marketing, trade and prices; governance and institutional arrangement; policies and strategies; constraints affecting meat and milk value chains and proposed solutions; and conclusions.

2. SOCIO-ECONOMIC CONTEXT OF THE MEAT AND MILK VALUE CHAINS

2.1. Current GDP of the country and trends in recent years

The GDP in 2013 was estimated at US\$1.73 billion; annual GDP growth declined from 14 per cent in 2010 to 10 per cent in 2013.

Table 1: Gross Domestic Product Trends

Indicator	2010	2011	2012	2013
GDP (current Billion US\$)	1.22	1.30	1.54	1.73
GDP (growth annual %)	14	11	9	10

Source: World Bank. World Development Indicators 2014

According to the Central Bank of Liberia (2013), the contribution of agriculture to the GDP was estimated at 35.4 per cent in 2013 and 34.8 per cent in 2014.

2.2. Contribution to house-hold income, wellbeing, employment,

Cash crops constitute the main source of farmers' income. Maiga (2012) estimated the gross monetary contribution of livestock to household economy at US\$575.60 per household with the greatest contribution coming from pigs (US\$254.4 or 44.2 per cent), followed by cattle (US\$130.00 or 22.6 per cent), goats (US\$ 87.75 or 15.25 per cent), and sheep (US\$68 or 11.81 per cent) the rest is derived from chicken and ducks. Livestock are capital assets which provide income through the sale of meat and by-products and also act as savings repositories to fund major purchases and other capital investments.

2.3. Proportion of population engaged (employment, in meat and milk value chains)

Human population is estimated at 4.5 million. According to (FAO/CARI 2011), 11.5 per cent of Liberians (living in 21.3 per cent and 42.4 per cent of the agricultural households, respectively for livestock and poultry), are engaged in animal production with equal numbers of males and females in the activity. The figures are slightly different and higher in the Nimba County with 35.9 per cent of its population engaged in livestock production, and in 2009, there were 199 176 males and 198 779 females engaged in livestock production (Maiga, 2012).

2.4. The main objectives of producing meat and milk

The main objectives for keeping livestock are for food security, income generation and manure (FAPS, 2008). Milk is mainly produced for home consumption (Maiga, 2012). However, only a small proportion of the national demands for animal products are satisfied from local production (Rhissa, 2007).

3. DESCRIPTION AND MAPPING OF THE MEAT AND MILK VALUE CHAINS

According to Koikoi (2011) there were then no farms producing milk in the country, and demand for milk was provided through importation and sold by small scale traders. Pigs are generally slaughtered on farm but there is no information on the marketing structure. The description and mapping of the meat value chain relates to the domestic market based on beef, mutton and goat meat as they are the dominant ones in terms of value and volume of commodities marketed.

3.1. The structure of the meat and milk value chains

Rhissa (2007, Koikoi (2011) and Maiga (2012) identified the various actors in the meat value chain, for cattle, and small ruminants.

The actors and their functions in meat value chain are:

- Technical service providers: The National Livestock Bureau (NLB) provides regulatory and extension services; some NGOs also provide extension services.
- Input providers: NLB, NGOs and private veterinarians provide veterinary drugs and vaccines, and in the case of NGOs animals for restocking.
- Marketing services providers: Private sector (traders, butchers, retailers). The traders import live animals which they sell to the butchers who in turn slaughter and retail or sell to retailers.
- Importers: Private sector (live animal traders)
- Transporters: Private sector. They facilitate the transportation of cattle from the border to Monrovia.
- Research services: Central Agricultural Research institute (CARI)
- Producers: Small scale farmers involved in small ruminant and cattle production.

The traditional livestock farmers produces mainly cattle, goats, and sheep with a few other farmers producing pigs, In addition, there are also a few modern peri-urban livestock farmers engaged in semi-intensive and intensive production systems.

According to Maiga (2012), there are only two well identified cattle and small ruminant marketing channels:

- i) Regional trade with neighbouring countries (Côte d'Ivoire, Guinea for cattle and Mali for cattle, sheep and goats). Cattle, sheep and goats are brought into Liberia by livestock dealers of these countries, who come directly to Monrovia where the livestock is sold to butchers. There are no middlemen such as is usually seen in the Sahelian countries. Transactions are carried out directly on the abattoir premises as there are no holding grounds. However, two farms in Bong County do keep animals not intended for immediate slaughter.
- ii) Local trade on Liberian livestock is carried out by local butchers at the county level, but these involve mainly swine and poultry.

3.2. Physical flows of meat and milk among the different components

3.2.1. Livestock/meat and milk value chain

Figure 1 shows the physical flows for cattle sheep and goats. For sheep and goats the arrows show the flow from the service providers to the primary producers and then through open markets in rural areas, to the butchers and finally to the consumers. With regards to cattle, the arrows show the flow from the importers of live animals to the Monrovia slaughter house through butchers to traders and finally to consumers.

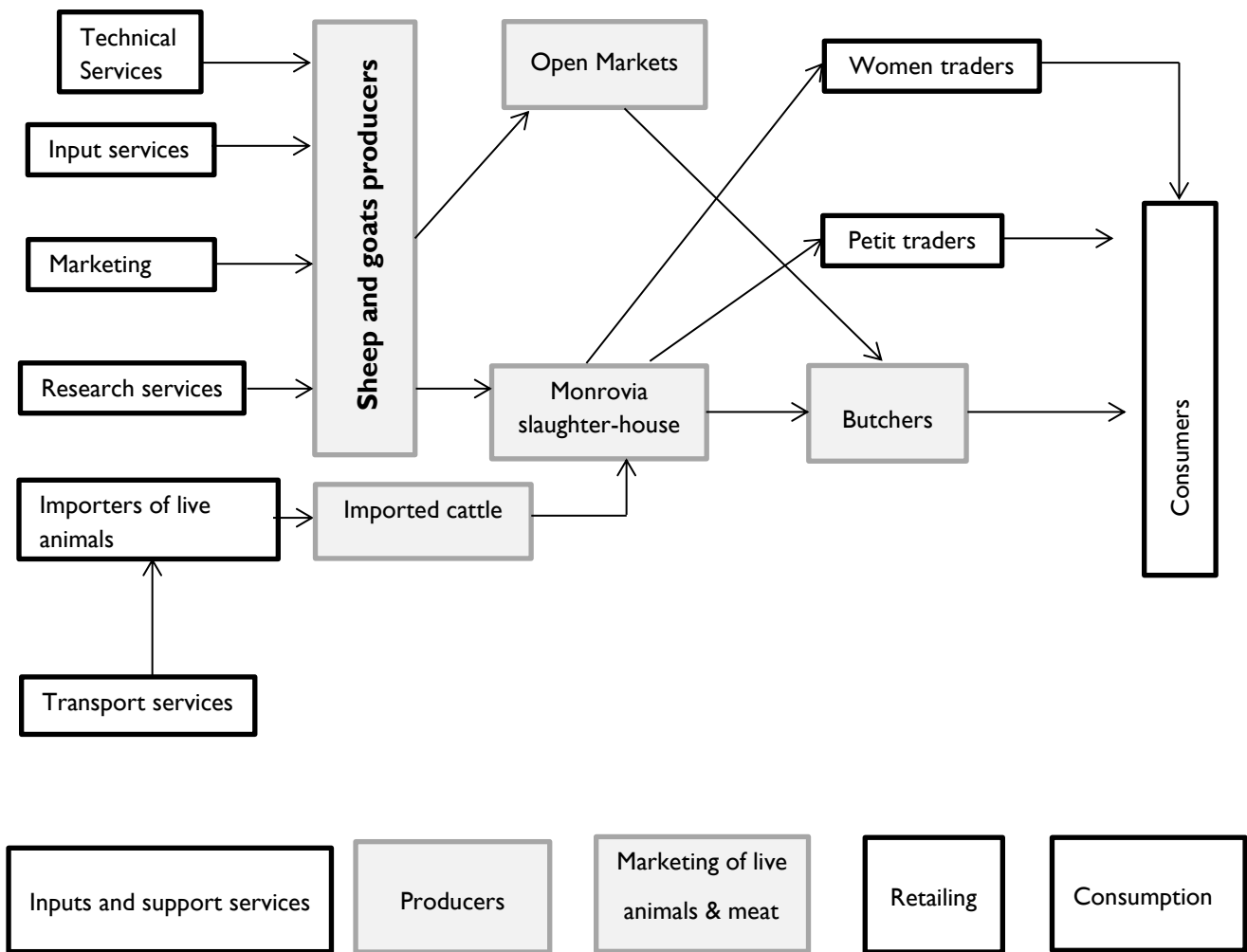


Figure 1: Meat value chain flow chart

3.3. Primary production process

3.3.1. Prevailing livestock farming or other animal production systems

The prevailing production systems described below are derived from the FAO Country Pasture / Forage Resources Profile Liberia, Review of the Livestock Sector with respect to Smallholder Dairy Livestock and Meat Subsectors Development in Liberia (Koikoi, 2011) and Livestock Sector Profile of Liberia (Maiga, 2012).

Traditional, village or extensive system. The traditional system of livestock production is generally free range or extensive low input, with a consequent low output.

Beef production system. Cattle are concentrated in the North of the country and are mostly owned by the minority Fullah, who are migrants from Guinea. The few non-Fullah who own cattle tend to employ Fullah herders to take care of them. Cattle are managed in units of 30 to 50 animals. Owners of the free-roaming animals provide little or no supplementary feed, housing, health care or breeding management. The free roaming animals may or may not be tethered during the cropping season. Forage may also be cut-and-carried to tethered animals in some instances. For example, Muturu cattle are sometimes tethered to avoid damage to crops in Maryland and Sinoe counties. Crop residues (especially in the rice paddies) provide a useful dry season fodder for Fullah herders.

Small ruminant production system. Sheep and goats are kept in free-roaming flocks. Many villages enforce the tethering of small ruminants during the cropping season, but they are allowed to free range after the rice harvest in November. Sheep and goats are normally housed off the ground at night, particularly in the wet season, for security and to reduce the incidence of foot rot.

Mixed crop-livestock farming or agro-pastoral systems. Integrated crop-livestock production is practiced in almost all agro-ecological zones and provinces in Liberia. Under this system, crop and livestock enterprises are integrated components of a single farming system. The level of integration is, however, closer in the savannah than the forest zone. In the Guinea savannah zone for example, settled pastoral families combine growing crops with rearing small herds of cattle or flock of small ruminants.

Pig production systems. There are various levels of management and intensity of production in this systems. At the lowest level, pigs roam free and scavenge for food. They are usually kept in pairs (boar and sow) but where no boar is owned, a neighbour's boar is borrowed. The next level is the smallholder semi-intensive production system, in which 2 or 3 sows are kept in simple housing with concrete floors and thatched roofs, and are fed largely from home grown feeds, notably cassava, and locally available by-products.

Improved systems

Ranching. Recent reports indicate that ranching is gradually emerging, and private establishments are stocking existing ranches with N'Dama and Zebu cattle. The CARI cattle range is currently being used by a private cattle breeding incorporated group (Koikoi, 2011).

Peri-urban and urban. Rearing of cattle, sheep and goats in and around cities is common in Liberia (Rhissa, 2007; Koikoi, 2011). For example in urban areas in Lofa and Gbarpolu counties, livestock farmers practice more or less semi-intensive rearing of cattle, sheep and goats for meat (Koikoi, 2011). The animals are kept on family and/or private land. Feeding is based on cut-and-carry forages, household waste, crop residues and agro-industrial by-products. The animals may also graze freely or are tethered to graze by road side where possible. The peri-urban and urban systems supply fattened rams and bucks for the expanding urban markets, especially during religious festivities.

Pig production systems. Improved pig production systems are mainly located in urban areas where the demand for pork is high. Concentrate feeds are used by most farmers, but many use tubers, such as cassava and potatoes. The main breeds of pigs are Landrace, Large White and Duroc. The extent of inbreeding is high in these farms.

Modern farms. Several big modern farms were in operation in a recent past. They are usually mixed farms, raising cattle, poultry as well as swine. But presently, most of them have folded up, or operate way under capacity (Maiga, 2012).

3.3.2. Average farm size

The majority of livestock keepers in Liberia are smallholders. Agricultural households cultivate land holdings of less than 2.0 ha. The average herd and flock sizes per household is less than one head of cattle or two small ruminants, respectively. Before the civil war which lasted from 1990 to 2004, cattle, sheep, goats populations were estimated at about 36 000, 430 000 and 130 000, respectively (FAO/AGAL, 2005). Maiga (2012) updated the livestock populations and their distribution by species and county from 2009 data and estimated that in 2012 livestock population figures were: 9 148 cattle, 50 277 sheep, 87 203 goats and 70 059 pigs (table 2). Estimates by Agyemang (2013) were lower, except for pigs, and those from the FAO were lower for cattle but higher for small ruminants and pigs.

Table 2: Animal populations of Liberia by species and county in 2012*

County	Cattle	per cent ^a	Sheep	% ^a	Goats	% ^a	Pigs	per cent ^a
Bomi	120	1.31	313	0.62	81	0.09	113	0.16
Bong	3 071	33.57	7 085	14.09	14 609	16.75	14 290	20.40
Gbarpolu	22	0.24	1 389	2.76	1 262	1.45	41	0.06
Grand Bassa	0	0.00	348	0.69	1 632	1.87	1 020	1.46
Grand Cape Mount	44	0.48	139	0.28	370	0.42	41	0.06
Grand Gedeh	743	8.12	2,744	5.46	9 446	10.83	1 072	1.53
Grand Kru	1 049	11.47	2 188	4.35	8,358	9.58	989	1.41
Lofa	350	3.83	4 874	9.69	6 795	7.79	3 740	5.34
Margibi	131	1.43	1 065	2.12	1 065	1.22	2 926	4.18
Maryland	131	1.43	2 419	4.81	3 496	4.01	1 061	1.51
Montserrado	77	0.84	2 188	4.35	1 065	1.22	6 130	8.75
Nimba	2 950	32.25	21 879	43.52	31 962	36.65	35 020	49.99
River Cess	33	0.36	139	0.28	359	0.41	556	0.79
River Gee	219	2.39	1 840	3.66	4 075	4.67	216	0.31
Sinoe	208	2.27	1 667	3.32	2 628	3.01	2 844	4.06
TOTAL Liberia	9 148	100	50 277	100	87 203	100	70 059	100
Agyemang (2013)	7 000 ^c		47 200		100 000		65 600	
FAO estimates ^b	4 000		270 000		342 000		290 000	

Source: * Maiga (2012) Updated from CARI/FAO 2009 crop assessment data; a: Own calculation

Source: ^bFAOSTAT | © FAO Statistics Division 2014 | 21 April 2014

For future livestock reviews to be meaningful, good baseline data in terms of livestock numbers (by type sex and age), number of breeding stock, income, expenditure, number of herdsmen, yields (milk and meat production) is required. The National Livestock Bureau should design a good protocol for a comprehensive livestock census.

Current efforts aimed at increasing livestock numbers include encouraging rapid production of selected short-cycled livestock (sheep, goats, grass cutters, rabbits, and special wild life), distributing initial breeding stocks and promoting ownership of improved cattle breeds to increase productivity and strengthen the meat value chain in the coastal capital, Monrovia.¹ It is easier to increase the number of small ruminants

¹ O'Lakes is promoting commercial goat production by restocking 21,000 goats, and providing about 10 000 producers with training in animal husbandry, fodder production and business management. Beneficiaries will "pass on" their first two female goats to other producers in the programme to ensure this effort will sustainably benefit the maximum number of farmers. Land

than the number of cattle. The capital investment is lower which means that even poor people can afford to buy an animal, and the reproductive rate is higher, making it easier to increase the size of the flock. A few animals can be kept on a small area of land and the amount of feed and water required per animal is limited compared with cattle.

3.3.3 Yield per unit (dressed (carcass) weight per species of animal and milk production per cow/goat/ per day and per lactation)

Meat

Maiga (2012) reported the following average carcass weights from controlled slaughter data at the Monrovia slaughterhouse as follows: cattle, 140 kg; sheep and goats, 23 kg.

Milk

Milk yields from N'Dama or Muturu cows are approximately 1.5 litres a day for a lactating period of 270 days (Maiga, 2012).

3.3.4 Total production of meat and milk from each farming system

Meat

Total meat production from each farming / production system cannot be assessed. According to Maiga (2012), the production of meat in Liberia cannot be assessed correctly due to the lack of slaughtering facilities and functional data collection system. There are no trained and skilled agents in the field to collect data. Data are available only for Monteserrado County with the Monrovia slaughterhouse where cattle and small ruminants are slaughtered. Pigs and poultry are slaughtered on the farm. However, if we take the livestock populations and the accepted off take rates (FAO livestock reviews of 2010), the computed potential meat production of 2 456 tonnes (table 3) is less than the FAO estimates for 2012.

Table 3: Potential meat production

Species	Total population	No available for slaughter	Carcass weight (Kg)	Potential meat (Kg)	Offal weight (Kg)	Total meat (Kg)
Cattle ^a	8 370	1 005	125.0	125 625	25, 25	150 750
Sheep ^a	43 470	12 402	11.0	136 422	62 010	198 432
Goats ^a	75 330	21 492	11.0	236 412	107 460	343 872
Pigs ^a	68 000	44 064	35.0	1 542 240	220 320	1 762 560
TOTAL	-	-	-	2 040 699	414 915	2 455 614
Cattle ^b						925 000
Sheep ^b						825 000
Goats ^b						1 047 000
Pigs ^b						9 800 000

O'Lakes will promote ownership of improved cattle breeds to increase productivity and strengthen the meat value chain in the coastal capital, Monrovia. Website: www.landolakesinc.com

Total						15 052 614
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a: Computed from available data; Source: Maiga, 2012

Source: ^b FAOSTAT | © FAO Statistics Division 2014 | 15 July 2014

Milk

According to Maiga (2012), milk production is not significant in Liberia. Only the Fullah herders milk some cows for home consumption. Milk production data are not available. Nevertheless some effort was made to estimate potential milk production based on available the cattle population data (8 370 heads) in 2009. Using the herd structure in other West African countries, Maiga (2012) estimated that females make up 53.0 per cent of the herd (4 436 cows), of which 60.0 per cent (2 662 cows) would be lactating. These cows are all N'Dama or Muturu breeds, which give approximately 1.5 litres a day for a lactating period of 270 days. The annual milk production of the herd would then be 1 078 110 litres. Milk production figures for 2012 published by FAO are however much lower at 819 592 litres (FAOSTAT 2014) © FAO Statistics Division 2014 | 15 July 2014)

3.3.5 Meat and milk post-harvest losses

There are no data or information on milk post-harvest losses although these are expected to be high owing to a lack of processing and cold storage facilities.

3.3.6 Output storage capacity

Data not available

3.4 Inputs and factors for primary production

3.4.1 Type and quantity of input required

The critical inputs required for meat and milk production are: animals, feed, water, veterinary drugs / vaccines.

Animals The common breeds of livestock kept by producers are the N'Dama and Muturu cattle, Djallonke sheep and West African Dwarf goats. The main breeds of pigs are Landrace, Large White and Duroc. The N'Dama breed constitutes 46.3 per cent and the short horned cattle breed (Muturu) raised in the south-eastern part of the country 53.7 per cent (Koikoi, 2011). The local breeds are adapted to the environment. The local breeds have low genetic potential in terms of meat and milk production.

Feed It has been estimated that 90 to 95 per cent of the ruminant livestock feed comes from about 2 million hectares of pasture land made up primarily of coastal, derived and guinea savannah biomass. (CAAS-Lib, 2007). Unfortunately, there is only limited and outdated data on yield, quality and carrying capacity of this land resource. The most important crop residues for livestock feeding are rice straw and cassava peelings. Based on present production of rice and cassava, the following amounts of residue can be harvested annually for feeding livestock: 369 910 tonnes of rice straw, 116 260 tonnes of rice hulls, 17 439

tonnes of rice bran and 118 713 tonnes of cassava peelings (Maiga, 2012). Given the current livestock populations in table 2, the estimated dry matter requirements of cattle and small ruminants are equivalent to 45 303 kg/year (table 4). The existing low animal density² indicates that existing pastureland could sustain a much higher number of livestock.

Table 4: Dry Matter requirements of cattle, sheep and goats

	Population	Conversion Factor	No. of Livestock Units ^a	Dry Matter (DM) Requirements/day	Dry Matter Requirements/year
Cattle	9 148	0.5	199 236	7.5	34 305
Sheep	50 277	0.1	14 394	0.8	4 022
Goats	87 203	0.1	30 288	0.8	6 976
Total			18 322		45 303

a: Livestock Unit (LU): A 250kg animal, requires a daily DM intake of 2.5% of body weight (2.3 tonnes DM/year)

Veterinary drugs / vaccines The drugs and vaccines required to control major animal diseases reported in the country are outlined in table 5 below.

Table 5: Drugs and vaccines required

Species	Vaccine/Drugs	No. of doses	Frequency
Cattle	CBPP	9,148	Once /year
	Dewormers	9,148	Once/year
Sheep & Goats	Peste des Petit Ruminants	137,480	Once/year
	CCPP	137,480	Once/year
	Dewormers	137,480	Once/year

3.4.2 Purchase prices of input per type

Data not available

3.4.3 Seasonality in prices and quantities of the main inputs

Data not available

3.4.4 Stocking costs of inputs

Data not available

² Cattle: 0.09/km²; goats: 0.78/ km²; sheep: 0.45 km² ; pigs: 0.71 km² (Koikoi, 2012)

3.4.5 Transportation costs of inputs from various locations.

The cost of renting a truck to transport animal from neighbouring countries to Monrovia is about US\$1 000.00 (Rhissa, 2007).

3.5 Processing stages up to the final commodity

The bulk of the slaughtering of cattle, sheep and goats is done in Monrovia at the Central Abattoir and in the slaughter slabs outside Monrovia. Retailers cut the carcass into small pieces, process / roast and sell them on the streets and in shops. No meat or milk processing facilities are reported in Liberia.

3.6 Various by-products and/or joint products

There are no data available on the production of hides and skins, as the slaughters are not recorded, except in Montserrado County. In any case, in Liberia, hides are used for human consumption as a source of protein while skins are discarded or sometimes collected by artists fabricating drums. The hide is sold for US\$30.00 a piece, while skin fetches US\$1.50 (when sold) (Maiga, 2012).

3.7 Geographical location of the different components (agents)

The geographical locations of different components (agents) of the meat value chain are indicated in Table 6. The vast majority of the producers are located in Nimba County but the majority of butchers and retailers are found in Montserrado.

Table 6: Geographical location of different components (agents)

Counties	Number of Agents / Actors			
	^a : Primary producers	^b :Butchers	^c :Retailers	Veterinary drugs/vaccines suppliers
Boni	250			
Bong	7,700			
Gbarpolu	310			
Grand Bassa	4,080	Exist but no. unknown		
Grand Cape Mount	870			
Grand Gedeh	80	Exist but no. unknown		
Grand Kru	1,700			
Lofa	5,840			
Margibi	500			
Maryland	5,780			
Montserrado	950	50	7	1
Nimba	27,820	Exist but no. unknown		
River Cess	450			
River Gee	2,010			

Sinoe	2,220	Exist but no. unknown		
Not specified		20		
Total	60,560	70	7	1

a: Number of households rearing livestock; **b:** About six years ago, the Liberia Butchers Association had more than 50 principal members who all resided in Monrovia. Other active members (about 20) lived outside Montserrado County, particularly in Sinoe, Grand Gedeh, Bassa, and Nimba counties. According to the estimates given then by the President of the Association of butchers of Liberia, each principal member employs 5 to 8 assistant butchers in addition to other small retailers that is about 8 000 persons (Rhissa, 2008). Information on current situation is not available **c:** 7 butchers licensed by the Ministry of Commerce and Industry (MCI) deal in locally produced meat and imported meat. They are retailers (Koikoi, 2012).

3.8 Amount of land and other natural resources allocated to the meat and milk value chains

About 2 million hectares of pasture land comprising the coastal, derived and guinea savannah is allocated to livestock for grazing (FAO, 2012). Major grasses of feeding importance are star grass, *Bracharia*, Guinea grass, Napier grass and *Andropogon gayanus* (this latter is found primarily in the coastal areas of Maryland County). Cultivated legumes include *Desmodium*, tropical Kudzu, *Gliricidium sepium*, *Sesbania spp.*, *Leucenia leucocephala* and *Centrocema*. Pulses and tubers are also of great importance in livestock feeding. Browsing shrubs are represented by *Pterocarpus evanescence* and *Afzelia africana*. In addition, rice straw, rice hulls, rice bran and cassava peelings are potentially available for livestock feeding (Maiga, 2012).

3.9 Competition over the utilization of land or other natural resources

Traditional farming, which is largely subsistence, provides livelihoods to the bulk of the rural dwellers. Forest lands are cleared, burned and upland rice cropped together with other food crops. This method of cultivation causes rapid soil fertility loss and severe environmental degradation. Wide spread shifting cultivation frequently changes livestock grazing areas into crop land. Thus the migration of livestock farmers may become difficult, becoming a limiting factor to sector expansion (FAPS, 2008).

3.10 Impact of the meat and milk value chains on environment

Current livestock production levels have insignificant negative impacts on the environment given the low livestock densities. Increase in livestock numbers could, however, lead to overgrazing leading to decreases in productivity of grasslands, loss of vegetation and changes in floristic composition and soil erosion. The environmental implications are predominantly on the positive side; in integrated crop/livestock systems, the use of animal manure to enhance soil fertility and a reduction in the use of chemical fertilisers and the associated risks of environmental pollution. Inefficient collection and processing of waste (blood, rumen content, hooves and horns) generated from slaughter facilities ultimately cause environment pollution.

3.11 Production and value addition potential

Currently local production of meat and milk is insignificant and as a result live cattle, sheep and goats for slaughter are imported from neighbouring countries. In addition Liberia imports significant quantities of livestock products. Liberia has a comparative advantage in producing livestock products because it has a strong natural resource base and climate favourable to commercial and market oriented livestock production. However, inadequate support services to livestock production, processing and marketing need to be tackled. Because the war decimated the livestock herds and flocks, the sector needs to be revitalized through restocking.

3.12 Number of value chain actors by component (chain)

The type and numbers of value chain actors are indicated in table 6 above. Nimba County has the highest number of livestock producers (27 820) and Grand Gedeh the least. The majority of the butchers and retailers live in Monrovia. The number of input suppliers and service providers is almost nil while processors do not exist.

3.13 Current and potential (future) domestic demand of meat and milk

Current and potential (future) domestic meat and milk production were estimated using FAO data (Table 7). The meat production estimates include beef, mutton, goat meat, pork and chicken. The data show that Liberia is confronted with a deficit in both meat and milk.

Table 7: Current and potential (future) domestic production and demand for meat and milk

Item	2014	2016	2018	2020
Human population (2.7% growth rate)	4 500 000	4 746 281	5 006 040	5 280 015
Domestic meat production (< 1% increase per year)	25 042	25 635	26 241	26 863
Domestic meat demand (11kg/person/year)	49 500	52 209	55 066	58 080
Deficit	-24 458	-26 575	-28 825	-31 217
Domestic milk production (< 1% increase per year)	863	875	888	901
Domestic milk demand (11kg/person/year)	42 750	45 090	47 557	50 160
Deficit	-41 887	-44 214	-46 669	-49 260

Source: FAOSTAT | © FAO Statistics Division 2014 | 15 July 2014 and own calculations

3.14 Current and potential (future) foreign demand of meat and milk

The total demand for animal products in developing countries is expected to at least increase two-fold by 2030. By contrast, demand for animal products in the industrial world has been growing at low rates. Between 1997/99 and 2030, annual meat consumption in developing countries is projected to increase from 25.5 to 37 kg per person, compared with an increase from 88 to 100 kg in industrial countries. With an estimated annual growth of 4 per cent, the demand for animal products is destined to increase in sub-Saharan Africa, especially West Africa, by more than 250 per cent by 2020 (Club du Sahel/OECD, 1998; Delgado *et al.*, 2001). This will result from population growth, accelerated urbanization, growing incomes and consequently increased purchasing power of the populations (Mulumba, *et al.*, 2008).

3.15 Specific features of products, including product differentiation when targeting different types of clients

The high urban population in and around Monrovia, with increasing income and consequently increased purchasing power will drive up the demand for meat and value added meat products. These potential consumers would require high quality and diverse range of products many of which are not produced locally. The hotel industry in and around Monrovia would also require the same range of products.

3.16 The products capacity to fulfill international requirements (sanitary and other standards)

With the current insignificant domestic production of meat and milk and processing into high value products, there is no export of livestock products. Lack of standards, quality assurance framework and modern regulations are potential barriers to export. However, a project entitled Strengthening Sanitary and Phytosanitary (SPS) Measures in Liberia is in the pipeline. The project aims to strengthen the system of food safety, animal and plant health controls (the sanitary and phytosanitary control system) applied to national products, imports and exports in line with the requirements of the WTO Sanitary and Phytosanitary (SPS) Agreement.

3.18 Urban rural relationships

The Liberian population is predominantly rural; five of the fifteen counties are entirely rural (Gbarpolu, Grand Cape Mount, Grand Kru, River Cess and River Gee). In Liberia, a settlement is urban when its population is 2 000 and above. The most urbanized and populated county is Montserrado where the capital city, Monrovia has a population of 1.1 million inhabitants.

3.19 Synergies with other activities

In the mixed crop/livestock production systems, crops and livestock interact to create a synergy. Crop residues (rice straw) are used for animal feed, manure is an important soil fertility amendment in Liberian agriculture. Currently livestock value chains play insignificant roles in the Liberian economy.

3.20 Role in local production systems

Livestock play a minimum role in the agricultural sector and therefore it has not contributed much to the Liberian economy (Koikoi, 2011). Although the livestock industry is not very important today in Liberia, it has a great potential due to its trypanotolerant animals and a favourable environment for agricultural productions (Maiga, 2012). The livestock contributes to the national food security in the form of milk and meat and is a source of income and employment. The sector also contributes to crop farming as a source of manure and fulfils cultural roles in livestock farming communities.

4. INFRASTRUCTURE AND OTHER SUPPORT SERVICES

Liberia is rather poor in livestock infrastructure. At present, there are two abattoirs in Montserrado County (of which one is functional, the other one is still under construction), four slaughter slabs (two in Lofa County and two in Nimba County) (Maiga, 2012).³

Other infrastructure include grazing land (about 2 million ha for only 18 322 livestock units) and livestock multiplication centres created before the war. The ranches are: Foya Cattle Ranch: 1000 ha for 500 heads; Todee Cattle Ranch: 100 ha for 100 heads; Panama Cattle Ranch 25 ha for 25 heads; Cari Cattle Ranch, 300 ha for 100 heads; Kpain Cattle Ranch 50 ha for 50 heads; Parta Cattle Ranch 500 ha for 500 heads; and Sanghai Cattle Ranch 50 ha for 50 heads.

4.1 Transport

In 2007 there were only 700 km of paved roads in Liberia, almost all of which were damaged. The vast majority of roads are unpaved, and many are impassable during the six-month rainy season severely constraining access to inputs, services, and markets. The insufficiency of road infrastructures as well as the absence of animal passage corridors makes the movement of animals and their produce very difficult. Livestock dealers use trucks to transport live animals from neighbouring countries.

4.2 Packaging and stocking costs of output.

Data not available

4.3 Equipment, required investment, facilities and related depreciation.

The related depreciation of the livestock facilities and equipment is detailed in Table 8 below.

³ Land O'Lakes is renovating a privately-owned slaughter facility, and constructing another new abattoir in Monrovia. These facilities are meant for processing and storing high-quality, hygienic beef, goat meat and mutton, which will have on-site cold storage. In rural areas of Lofa, Bong and Nimba counties, the program will introduce 12 simple, safe and washable slaughter slabs that will permit meat to be processed hygienically.

Table 8: Facilities, equipment and related depreciation (10 per cent/year)

Facilities & equipment	Slaughter houses	Live animal markets	Kiosks
Unit cost (US\$)	400 000	200 000	8 000
Year 1	360 000	180 000	7 200
Year 2	324 000	162 000	6 480
Year 3	291 600	145 800	5 832
Year 4	262 440	131 220	5 249
Year 5	236 196	118 098	4 724
Year 6	212 576	106 288	4 252
Year 7	191 319	95 659	3 826
Year 8	172 187	86 093	3 444
Year 9	154, 68	77 484	3 099

4.4 Extension and technical support

The Ministry of Agriculture (MOA) is the central policy-making body responsible for promoting agricultural development and regulating the sector. It is in charge of the supervision of livestock policies and activities. The Animal Health Division (AHD) is within the National Livestock Bureau (NLB), under the Technical Department of the Ministry of Agriculture. The Animal Health Specialist / Acting Director of AHD is based in Monrovia and supervises Livestock officers and coordinate national animal health projects in post war scenario in the 15-counties. However, there is no certified veterinarian and no animal clinics either in government or private sector.

The proposed organization of the NLB comprises two main Services, the Livestock Production Services and the Veterinary Services. The Livestock Production Services are intended to have two divisions: Production and Multiplication Division and the Feed Resources Division. The Veterinary Services are expected to have four main divisions: the Laboratory Diagnostic Services / Central Veterinary Laboratory; the Field Services engaged in extension work; the Veterinary Drugs and Products Division in charge of the control of the production, importation and distribution of veterinary products; and the Epidemiology Division to supervise all activities of diagnosis of diseases and disease control (Maiga, 2012). Limited human resources hamper the work of the bureau.

Non-Government Organizations support the sector through training of farmers and the provision of animals (mainly goats) for restocking. Research is conducted by the Central Agricultural Research Institute (CARI). CARI was established on the 18th of August 1980 as a semi-autonomous organ of MOA to conduct applied and adaptive research in agriculture including animal science and production. However, during the civil war, the physical infrastructure was destroyed through the looting of offices, laboratories, residences and research fields. In bid to enhance livestock production in Liberia, the United States Agencies for International Development (USAID) through the Food and Enterprise Development Programme rehabilitated the CARI's livestock quarantine facility in Suakoko, Bong County and about 500 goats were initially expected to occupy the new facility. The institute needs to be supported to achieve its mission and mandate.

4.5 Quality control and certification

The Ministry of Commerce and Industry (MOCI) is the statutory body mandated by the Government of Liberia to promote and encourage the maintenance of standards with regards to manufacturing and trade in commodities. The National Standards Laboratory (NSL), under the Division of standards of the MOCI, is a major component of Liberia's national quality infrastructure. The NSL mission is to provide quality services in the areas of product testing and calibration for the purpose of improving the sanitary and phytosanitary (SPS) system, meeting food and basic commodities quality and control and facilitating trade. The purpose of this is to curtail, if not prevent the importation of sub-standard products that may threaten consumer, plant and animal health while at the same time assuring food and agricultural exports from Liberia meet international standards. The MoCI is the national entity for the implementation of a project on these standards and recipient of funds, while the MoA, the secretary of the national SPS Committee, will be the implementing agency.

The NSL comprise three laboratories:

- Microbiology Laboratory conducts testing to detect spoilage and disease causing microorganisms in food, water and non-food materials including drugs.
- Chemical Laboratory conducts testing for quality and safety of food, water and non-food material.
- Metrology Laboratory provides testing and calibration of devices used for weights, volume, dimension, temperature according to international standards.

Since its inception in 2011, the National Standards Lab has made significant progress towards establishing a reliable standards framework to facilitate trade and enforce the criteria of the International Organization for Standardization for the quality control of food and basic commodities in Liberia.

5. MARKETING, TRADE AND PRICES

5.1 Produced and traded quantities of the commodity.

The quantities of meat and milk locally produced and traded are presented in Table 9. In 2012, 151 tonnes of beef, 198 tonnes of mutton, 343 tonnes of goat meat and 1 763 tonnes of pork were produced. The quantities of livestock products imported and traded are presented in Table 10 below⁴.

Table 9: Quantities (tonnes) of livestock products imported, traded and values (\$1000)

	2005	2006	2007	2008	2009	2010	2011
Cattle/beef ^a	380	141	119	151	110	175	292
Sheep/ mutton ^a	44	70	31	32	40	35	127
Pork ^a	2 559	1 803	2 278	2 265	1 981	3 296	2 259
Milk	5 341	5 071	4 720	4 269	4 395	4 789	4 985
Beef/Buffalo ^b	NA	NA	NA	NA	693	NA	NA
Pork ^b	NA	NA	NA	NA	6 365	NA	NA
Cattle meat	1 684	NA	NA	NA	NA	NA	NA
Sheep mutton	141	207	101	146	122	162	474
Pork	2 886	1 847	2 570	2 868	2 616	4 266	3 888
Milk	4 914	4 993	6 721	6 721	6 307	4 336	5 196

a: FAOSTAT | © FAO Statistics Division 2014 | 21 April 2014; ^b: Koikoi, 2011

The number of live animals imported and their values are presented in table 10.

Table 10: Number of live animals imported and values (\$1000)

	2005	2006	2007	2008	2009	2010	2011	2012
Cattle ^a	1 700	1 700	1 700	1 700	1 700	1 700	1 700	NA
Sheep ^a	1 100	2 002	2 503	2 500	2 300	2 000	2 500	NA
Goats ^a	700	701	700	700	700	700	700	NA
Cattle ^b	NA	NA	NA	NA	NA	4,968	NA	3 535
Small ruminants ^b	NA	NA	NA	NA	NA	2,009	NA	1 810
Cattle	1 600	1 600	1 600	1 600	1 600	1 600	1 600	NA
Sheep	100	139	227	230	200	200	240	NA
Goats	50	69	70	70	70	70	70	NA

a: FAOSTAT | © FAO Statistics Division 2014 | 21 April 2014; ^b: Maiga, 2012

⁴ According to Maiga (2012), imported meat products are lumped together by the trade division of the MCI. Their CIF value was US\$1 110,896.29 in 2010 and US\$968 884.15 in 2011. Present day statistics of the MCI do not show any imports of milk nor of major veterinary medicines, vaccines, veterinary equipment or animal feed. The feed manufactured locally is processed from imported cereals and dried fish or fish meal from neighboring countries.

5.2 Home consumption and marketed shares of the produced good

Since Liberia does not export any livestock product, it can be assumed that the totality of the potential meat and milk production is available for domestic consumption.

5.3 Producer price of the commodity at various locations

The producer prices for live animals are presented in Table 10 below. The prices obtained from Korso (2011) are for locally produced small ruminants in Lofa County. Live animals traded for slaughter in Monrovia are usually imported from Mali, Guinea and Côte d'Ivoire (Maiga, 2012); the price data is only available for the Monrovia region.

Table 11: Producer prices for live animals (US\$)

Species	Prices (US\$)		Live weight
	Highest price	Lowest price	
Goat ^a	55.21	7.14	NA
Sheep ^a	121.42	10.79	NA
Cattle ^b	900	600	300-350 kg
Djallonke ram ^b	100	NA	NA
Sahel ram ^b	200	125	NA
WAD goat ^b	75	NA	NA
Sahel goat ^b	150	125	NA
Boar ^b	4/kg live weight	NA	NA
Breeding gilt ^b	200	NA	NA

Source: a: Korso, 2011; b: Maiga, 2012

5.4 Consumer price of the commodity at various locations

Meat prices at the Monrovia meat market are presented in Table 11 below. Meat prices, in some cases, are the same as in Monrovia (Koikoi, 2011). Local beef is more expensive than the imported one.

Table 12: Meat prices in Monrovia

Commodity	Price/kg (US\$)
Local Beef	7.23 – 7.5
Imported beef	4.22 – 6.0
Mutton or goat meat	8.4
Pork (farm gate)	3.5
Pork (butcher shop)	4.7

Source: Maiga, 2012

5.5 Location of the main markets in the region and/or at national level.

About 39% of the national population lives in the major cities (Table 12); the major cities constitute the main markets. Monrovia, the administrative and business capital is the main market.

Table 13: Location of main markets

County	City	Population
Montserrado	Monrovia	1 021 762
Bong	Gbarnga	56 986
Grand Basse	Buchanan	50 246
Nimba	Ganta	42 077
Margibi	Kakata	34 608
Grand Gedeh	Zwedru	25 349
Margibi	Harbel	25 309
Maryland	Harper	23 517
		1 279 854

5.6 Numbers of the actual and potential consumers in the relevant destination area

The numbers of actual and potential consumers of livestock products are indicated in Table 12 above. The greatest demand is expected from Monrovia with its higher population concentration (about 1 million inhabitants close to 25 per cent of the total population of the country).

5.7 Seasonality in prices and quantities of the output

The price and number of animals in the markets are expected to be high during the religious feast like *Tabaski*, Christmas and Easter. Information on seasonal variations in the prices of beef, mutton and goat meat is not available.

5.8 Socio-economic features of current and potential customers, including spending capacities

Liberia continues to be one of the world's poorest countries. The country ranked 169th out of 182 countries in the 2009 - 2010 in United Nations Development Program (UNDP) Human Development Index. The level of poverty in rural area (67.7 per cent) is higher than that in urban areas (55per cent). The main current and potential customers of livestock products reside in Monrovia and its environs. Being the administrative and business capital with more employment opportunities, there is difference in income and standard of living between Monrovia and the rest of the country. As consumption of livestock

products correlates with income; wealthier inhabitants of Monrovia will tend to consume more livestock products than their less wealthy counterparts in the rural areas. As the post-war economy improves, the wealthier middle class will increase their consumption of meat and dairy products because of increased purchasing power.

5.9 The degree of competitiveness (existence of monopolies or otherwise)

In principle, trade is liberalized and there is a competitive market. Although a free market system operates, the government is compelled to fix prices and to control imports of certain basic commodities, especially rice, crude oil, and oil products. The formation of monopolies is regulated only occasionally.

As indicated earlier, domestic production of livestock and livestock products are limited both in quantity and quality due to limited livestock numbers and lack of standards in the supply chain. Importers of livestock products, especially importers of live animals from neighbouring countries, face numerous administrative bottlenecks and harassments including illicit taxes (US\$15 and US\$300 in illicit taxes). This constitutes unfair competition with imported meat, for which relatively low taxes are paid.

5.10 Control over prices (how different prices are set and controlled)

The Division of Price Analysis and Marketing (DPAM) was established under the Ministry of Commerce and Industry for the purpose of limiting the prices of basic consumable items on the Liberian market occasioned by the global oil price increases in 1973. In order to enforce the price control legislation the Government of Liberia promulgated, as inscribed on the Import Permit Declaration (IPD) form currently in use that all commodity prices are subject to approval by DPAM before placing them on the market. In 2010, the ministry shifted paradigms from “Price Control” to “Price Regulation and Monitoring” of politically sensitive commodities (rice, petroleum products, pharmaceutical products and cement). The prices of livestock and livestock products are not regulated.

5.11 Wholesale and retail distribution

Retailing of meat is conducted by butchers, women traders and other petty traders (mainly boys and men) who buy the meat from butchers in the slaughter house, marketers (mainly women and men) who buy cartons of imported meat and poultry products from the importers, and sell retail on the local markets, in cities, towns and villages (see section 4). Raw milk is not marketed in Liberia.

5.12 International price and trends

Changes in the FAO Meat and Dairy Price Indexes are shown in Table 13. For meat, the index rose from 96.5 points in 2000 to 184.1 in 2013; it averaged 194.2 in June 2014. The dairy price index also increased from 95.3 in 2000 to 242.7 in 2013; it averaged 236.5 points in June 2014. The data indicate that international prices for the two commodities have been increasing from 2000 to date.

Table 14: FAO Meat and Dairy Price Index

Year	Meat	Dairy
2000	96.5	95.3
2005	123.7	135.2
2010	158.3	206.6
2013	184.1	242.7
June 2014	194.2	236.5

5.13 Balance of trade

USA and China are Liberia’s greatest import trading partners by a substantial margin. The Ivory Coast is Liberia’s largest regional trading partner. Liberia is deficit in meat and milk; it depends on imports of live animals from the sub-region and imported meat and dairy products from outside of the continent. The balance of external trade of Liberia is negative, as far as livestock and animal products are concerned.

5.14 Current and potential foreign competitors

For the foreseeable future, the primary demand of livestock and livestock products for the Liberian market will be met from imports. The current and potential foreign competitors of Liberia include livestock farmers in Mali, Guinea and Côte d’Ivoire and suppliers of milk and other dairy products from Europe.

6. GOVERNANCE AND INSTITUTIONAL ARRANGEMENT

6.1 The organization and interactions among the different value chain actors in vertical integration processes (synergies, actual or potential conflicts etc.)

Currently, the role of the small-scale producer in the chain is limited as almost all the ruminant livestock slaughtered is imported. The meat value chain is dominated by live animal traders, butchers and meat retailers. The traders sell their animals directly to the butchers; the butchers sell to the consumers and petty traders who in turn sell to consumers. Slaughter services are provided by public abattoirs. The government of Liberia has developed the FAPS to revitalize the agricultural sector. The NLB oversees and regulates the value chain.

6.2 Existence of association/cooperatives and their strength

In Liberia, there are farmer groups / Community Based Organizations (CBOs) in each village. The associations act as contact points for input and service delivery. Some of the groups are well organized, have bank accounts and are engaged in farm and non-farm activities.

The Association of Butchers of Liberia (ABL) is the most organized structure that intervenes in the livestock sub-sector. The association whose president is also the Consul of Mali in Liberia was officially recognized in 1971 and has its headquarters in Monrovia. The Association has more than 50 principal members who all reside in Monrovia. Other active members (about twenty) live outside Montserrado County particularly in Sinoe, Grand Gedeh, Bassa, and Nimba counties.

6.3 NGOs acting in support to the value chain

The NGOs acting in support of the value chains are BRAC Liberia, Land O' lakes, FED (USAID Feed the future), Concern Worldwide, Action Aid Liberia, CARE International – Liberia Samaritan's Purse and Mercy Corps.

7. NATIONAL OR REGIONAL PROJECT FROM WHICH THE VC BENEFITS

7.1 National projects/programmes

The two national livestock related projects are described below.

Agriculture Sector Rehabilitation Project (ASRP) funded by IFAD. The goal of the project is to reduce post-conflict poverty and food insecurity, and improve livelihoods and living conditions of rural communities. The project is being implemented in 30 districts selected from 8 counties (Grand Gedeh, River Gee, Grand Kru and Maryland in the south east, and Grand Cape Mount, Bomi, Montserrado and Grand Bassa in the North West). Poverty level is very high in many of the participating counties, and key project activities in these counties is herd restocking with a focus on chickens and goats, capacity building and training. Total cost: US\$26.9 million. Duration: 2009 to 2015.

Land O'Lakes Food for Progress Project. Through a three-year programme funded by the United States Department of Agriculture (USDA), Land O'Lakes is leading a Food for Progress initiative to revitalize the meat processing industry, and restore food safety and quality standards. The programme is promoting commercial goat production, meat processing and marketing. Land O'Lakes aims to improve food safety by renovating a privately-owned slaughter facility, and constructing another new abattoir in Monrovia for processing and storing high-quality, hygienic beef, goat and sheep meat, which will have on-site cold storage. In the counties of Lofa, Bong and Nimba in the rural area, the programme will introduce 12 simple, safe and washable slaughter slabs that will permit meat to be processed hygienically. The programme will develop a meat quality assurance system and a seal of quality that will guarantee consumers that they are purchasing top-grade meat, prevent and treat animal diseases by rebuilding local capacity for veterinary, animal health and livestock husbandry extension services. Duration: 2011 to 2014.

7.2 Regional projects / programmes

Information not available

8. POLICIES AND STRATEGIES

The Poverty Reduction Strategy (PRS) sets out a framework for rapid, equitable, and inclusive growth, poverty reduction and progress towards achieving the Millennium Development Goals (MDGs). The PRS recognizes the role and contributions to be made by the agriculture sector towards poverty reduction. In 2006, the Government of Liberia (GOL) issued the Statement of Policy Intent for the agricultural sector and a short-term action plan for agricultural recovery. This was followed by the Comprehensive Assessment of the Agriculture Sector – Liberia (CAAS-Lib) project that reviewed the role and contribution of the sector to recovery and development. Results of the CAAS-Lib and other relevant information were subsequently used to develop the Food and Agriculture Policy and Strategy (FAPS).

Liberia has also prepared a Comprehensive Africa Agriculture Development Programme (CAADP) post-Compact investment plan. The Liberia Agriculture Sector Investment Programme (LASIP) seeks to transform Liberian agriculture and, in so doing, maximize the sector contributions to economic growth, employment, income generation, food/nutrition security, and poverty reduction. The key performance indicator is an increase in agricultural growth of 6 per cent per annum by 2015.

The LASIP has four major programmes: land and water development, food/nutrition security, competitive value chains and market linkages, and institutional development. Livestock development and promotion is a sub-component of the food and nutrition programme, and its goal is to expand domestic livestock production to satisfy 50 per cent or more of domestic demand by 2015. Programme activities include: reviewing and upgrading existing legislation and regulations pertaining to veterinary services and sanitation; improving the institutional environment and infrastructure for livestock and strengthening zoo sanitary standards; preserving, improving and exploiting the common pastoral property resources of the country; expanding existing programmes to re-stock the national herd, with a focus on small ruminants; initiate micro-projects to pilot animal production centers in selected villages; and strengthening inter-ministerial coordination between MOA and other agencies.

Components under the Competitive Value Chains and Market Linkages programme include rehabilitation and expansion of rural roads; rural agricultural infrastructure (including market infrastructure for food crops, livestock, smallholder tree crops, agro-forestry and fisheries) and energy; rural financial services; labor-saving intermediate devices and technologies; and market and enterprise development. Components under the institutional development programme are: rebuilding the Ministry of Agriculture and Agricultural Parastatals; revitalizing agricultural research; technology dissemination and adoption; renewing agricultural education and training; promoting and strengthening farm-based organizations; and improved coordination and management.

8.1 Natural resource policies

A comprehensive Food and Agriculture Policy and Strategy (FAPS) was developed within the context of the framework for economic recovery and growth, the PRS and the MDGs, especially the halving of hunger by 2015. The document establishes a framework comprising specific policies and strategies at sector and sub sector levels that aim to revitalize and strengthen the agriculture sector and enable it to maximize its

contribution to the government's overall development goals. Specifically, the document accentuates pro-poor policies and strategies that will harness and utilize the potentials of the large numbers of smallholders in the sector.

The goal of FAPS is to revitalize and modernize food and agriculture sector in order to contribute to a shared, inclusive and sustainable economic growth and development of Liberia

To achieve the above, the following sector objectives will be tackled:

- Safe and nutritious foods available in sufficient quantity and quality at all times to satisfy the nutritional needs of all Liberians.
- Enhanced, inclusive and pro-poor growth in agricultural production, productivity, competitiveness, value addition, diversification, and linkages to markets; and
- Effective and efficient human and institutional capacities in the public and private sectors, civil society, and communities to plan, deliver services, invest and monitor performance in, among other things, natural resource sustainability, producer risk mitigation and gender and youth mainstreaming.

The proposed interventions in FAPS include the following: encouraging rapid production of selected short-cycle livestock (sheep, goats, grass cutters, rabbits, and special wild life); distributing basic input packages, including initial breeding stocks; intensifying promotion of diversified and integrated farming, including crops and livestock; constructing essential market oriented infrastructures, including local markets, farm to market roads and abattoirs); and establishing processing facilities.

The objectives of the Livestock Policy are:

- Adequate quantities of competitive (quality, safe and low price), locally produced livestock products (lamb, poultry, beef, other meats and dairy) available and adequate to substitute imports of these commodities by lowering domestic resource costs;
- A revitalized livestock subsector and value chains (production, processing, marketing and product development) that contribute significantly to productive employment, especially of women and youth, and improvement of the nutritional status of Liberians;
- A livestock that is restocked, especially with small ruminants (sheep and goats, pigs and other commercial small ruminants); and
- Promotion of value addition to enhance access to competitive national and international markets.
- The strategies are as follows:
- Promoting the production of high quality livestock of selected breeds, in intensive and extensive systems (ranching, pastoral and agro-pastoral) with consideration given to the improvement of genetic potential
- Strengthening technical support services (including the use of appropriate technologies), sensitizing and promoting, the formation of producer and trader associations and developing public-private partnership to improve the management and marketing systems
- Producing safe and quality livestock products (meat, milk, eggs and other by-products) through adoption of best practices (including the production of quality animal feeds, utilization of locally

available raw materials and the establishment of livestock identification, recording and traceability system)

- Creating an enabling environment to support the processing, marketing and consumption of safe and quality livestock products through the collection and dissemination of market information and the establishment of standardized facilities (marketing infrastructures, slaughterhouses, etc.)
- Developing and implementing a medium term Master Plan to improve livestock value chains and using the private sector to increase productivity and competitiveness of selected livestock products
- Developing and enforcing comprehensive livestock regulations, operational rules and enforcement mechanisms of, including technical standards for safety and quality control of animals and livestock products
- Strengthening inter-ministerial coordination among the MOA, MOHSW and MoCI on their respective roles and responsibilities
- Designating entry points for livestock entering Liberia that are manned by technically competent personnel
- Supporting private sector involvement in the development of appropriate infrastructure (feed mills, hatcheries, abattoirs, processing and products development plants) that are functioning and producing competitive products by ensuring appreciable access to credit and other financial and input services
- Implementing the ECOWAS transhumance protocols and establishing the Livestock Early Warning System (LEWS) for disaster management and impending forage shortage;
- Protecting water catchments areas while constructing and maintaining water sources for livestock
- Promoting livestock stocking according to land carrying capacity to avoid soils erosion and degradation
- Providing technical support services on manure and bio-gas production and utilization;
- Promoting private veterinary services delivery and private-public partnership in service delivery
- Strengthening technical support services on Trans-border Animal Diseases (TAD) control and eradication through the development and strengthening of veterinary laboratory system, infrastructure and facilities for livestock research and linking research, extension, and farmers in a way that values Indigenous Technical Knowledge.
- Implementing and strengthening zoo-sanitary infrastructures and inspectorate services in harmony with the national and regional policies
- Creating awareness and promoting research and development on biotechnology and bio-safety and bio-gas production; and
- Promoting and strengthening participatory livestock extension services to harmonize service provision and coordinate livestock data collection as part of a comprehensive management information system for the livestock sector

8.2 Incentives or disincentives to producers and consumers

Incentives are available to foreign and domestic investors for approved investment projects in priority areas, such as tourism, manufacturing of finished products having at least 60 per cent local raw material content, energy, hospitals and medical clinics, low- and medium-income housing, transport infrastructure, information and communications technology, and banking in the non-bank areas in the south-eastern region. Livestock production is not a priority area. Investments in excess of US\$ 10 million are eligible for incentive packages through the investment commission. Economically viable and strategically located investments up to US\$ 20 million are exempted from trade taxes and are legible for tax deductions.

8.3 Credit policies

Most credit available to farmers, if any, originates from informal intermediaries whose pre-financing is characterized by prohibitive interest rates. The rural financial services policy objective is aimed at ensuring that initiatives providing financial services and products, particularly credit and savings, are available and accessible to every category of actors in the sector. The strategies to achieve the objectives are:

- Supporting the review of banking regulations, conditions for providing loans to the agriculture sector, and related legislations in order to inject some level of liberalization, incentives and guarantees that will encourage commercial banking institutions to play greater roles in enhancing agricultural development, supporting agribusiness sectors, using instruments such as reduction in secondary reserve requirements and tax rebates
- Supporting and strengthening the expansion of membership-based financial organizations, rural banks and grassroots micro-finance institutions, and promoting linkages between formal and informal financial services
- Supporting and promoting a credit guarantee scheme for rural credit (public or public private partnership) and exploring and determining the appropriateness and practicalities of financial institutions providing insurance service; and
- Advocating for and supporting the review and reassignment of roles to existing financial institutions to enable them complement efforts of targeted commercial banks in micro-finance programmes to small and subsistence producers in the sector.

8.4 International trade policies

A trade policy was drafted following comprehensive research and consultative processes with relevant stakeholders. The overall vision of the trade policy is to re-integrate Liberia into the international economy and trading systems while being sensitive to the interests of local producers. The intent is to use trade as an engine of economic growth to reduce poverty in Liberia. The trade policy seeks to promote a balanced relationship between trade liberalization and sustainable development that protects women, youth and the poor, especially those in the rural areas. As part of efforts to mainstream trade into Liberia's medium and long-term development strategies, government has initiated key policy efforts aimed at strengthening existing trade ties with sub-regional and international counterparts. This would promote trade within the

sub-region, increase cross-border trade with neighboring African countries, support the establishment of a full West Africa Customs Union, and support the establishment of a West African Monetary Union, among others. The policy would improve access to global markets by integrating into global system, multilateral trading agreement, especially those that promote the long term interests of Liberia as a country in transition from war to peace and economic stability.

The external trade strategies (FAPS, 2008) are as follows:

- Undertaking an initial study of the export sub-sector; carrying out periodic reviews including the various trade protocols and agreements that Liberia is signatory to and holding consultations with private sector interests in the agriculture export sub-sector to inform the Government on appropriate incentives and policy measures necessary to increase the performance of the sub-sector;
- Undertaking a study to assess the comparative advantage and the potential of an export market for agricultural products from Liberia;
- Promoting greater use of indigenous agricultural products and foods produced by local producers with a view to increasing their competitiveness against cheap imported counterpart products;
- Initiating trade negotiations to ensure Liberia's membership in various regional and international trade arrangements;
- Taking steps to formalize and regulate cross-border trade in accordance with existing sub-regional inter-governmental protocols; and
- Harmonizing pricing policy within the Mano River Union (MRU) and establishing a MRU Food Security Hub in Monrovia to coordinate sub region-wide interventions.

8.5 Acts, regulations and laws governing the value chain

- The 1966 revised Plant and Animal Quarantine Act
- The 1966 revised National Livestock Artificial Insemination Act
- The 1978 Act establishing the Agricultural and Cooperative Development Bank
- The President's Executive Order to remove tariffs on agricultural equipment and supplies to ensure the availability and affordability of these inputs to the development of agricultural production

8.6 Major constraints requiring policy interventions

The major constraints requiring policy interventions and suggested solutions are outlined in Table 14 below.

Table 15: Major constraints requiring policy interventions and suggested solutions

Major constraints	Suggested solutions
Lack of an animal health policy in the FAPS. Out-dated legislation (regulation and operational rules)	Articulate and adopt an animal health policy within the FAPS policy framework and promulgate the necessary legislation and regulatory framework and enforcement mechanism.
Lack of human resource development policy	Formulate a comprehensive human resources development policy which includes academic training of Liberians (based on reasonable curricula) and on-the-job training of livestock sub sector operators.
Lack of an animal genetic resource conservation policy.	Articulate and adopt an animal genetic resource conservation policy, strategies and programmes to ensure success of the re-stocking programmes.
Lack of appropriate policy, legal framework and land tenure for the protection and management of pasture resources and watering points.	Articulate and adopt land tenure, pasture resources and watering points policies within the FAPS policy framework and promulgate the necessary legislation and regulatory framework and enforcement mechanism.

8.7 Suggested policies for smooth operation of meat and milk value chains

The FAPS recognizes the role and contributions to be made by the agriculture sector towards poverty reduction. The livestock value chains offer a potential source for pro-poor growth and import substitution. The consumption of animal products in the country is increasing with rising incomes, providing new income-earning opportunities for large numbers of the rural poor. However, the livestock sub sector has been decimated as a result of the civil conflict, and current livestock population is below 10 per cent of national consumption requirements. The key policy objective is aimed at restocking, focusing on small ruminants short-cycle animals; reduced production costs. The livestock sector policies and strategies are, however, mainly focused on animal production. Policies aimed at enhancing productivity should also include animal health, genetic resources conservation, land tenure, pasture resources and watering points which are critical for farmers to boost production. The NLB of the Ministry of Agriculture, and in deed the sub-sector as a whole, is faced with an acute shortage of human resources. There is therefore a strong need for the formulation of comprehensive human resources development policy which includes academic and on-the-job training of livestock sub sector actors.

9. CONSTRAINTS AFFECTING MEAT AND MILK VALUE CHAINS AND PROPOSED SOLUTIONS

The development of the ruminant sub-sector is constrained by several policy, technical and socio-economic factors (FAPS, 2008). Several studies and publications reviewed and identified the major limitations and constraints to livestock/meat value chain development including the following: A comprehensive assessment of the agricultural sector in 2007; a review of the livestock sub-sector by Rhissa, (2007); the Liberian Agriculture Sector Investment Programme report (LASIP, 2010); a review of the livestock sector with respect to smallholder dairy and livestock and meat sub-sector development by a Koikoi, (2011) and the 2012 livestock sector profile of Liberia (Maiga, 2012).

The constraints (bottlenecks in areas of inputs availability, logistical issues, infrastructure, policies, etc.) affecting the meat and milk value chains and the proposed solutions are summarized in table 16 below.

Table 16: Constraints affecting meat and milk value chains in Liberia and proposed solutions

Constraints	Proposed Solutions
Inputs	
Absence of credit facilities to acquire breeding stocks and other necessary inputs.	Establish legal and regulatory framework for Micro Finance Institutions to operate in rural areas to offer tailored and flexible loans to small scale livestock producers.
A low genetic potential of livestock coupled with limited supply of livestock has led to poor production in the livestock industry.	Upscale the current livestock restocking programme. Establish a genetic improve programme to increase animal output per head among trypanotolerant N'Dama and Mutura cattle, Djallonke sheep and West African Dwarf goats while retaining their resistance to diseases.
Lack of feed	Promote local production to improve availability and accessibility
Lack of quantitative data on pasture and forage resources	Collect biological and socio-economic data in the different agro-ecological zones. Conduct research to increase knowledge on the role of the adapted grass (e.g., <i>P. maximum</i> , <i>A. gayanus</i>) and legumes (<i>S. guainensis</i>) species; their distribution, variability, reaction to grazing intensity, tolerance to fire, seed production potential and nutritive value in relation to stage of growth.
Lack of grazing reserves	Designate and develop areas in the northern savannah region for cattle production and group ranching. Grazing reserves should be established in the context of total land use systems. Regulatory control of herd size and

Constraints	Proposed Solutions
	distribution to achieve ecological balance and avoid overgrazing will need policy attention.
Logistics	
Weak trucking services / inadequate transportation	Provide appropriate transport for live animals and processed meat (refrigerated vans)
Infrastructure	
Lack of adequate infrastructure (abattoirs, cold chains for product development, slaughtering, storage, and distribution of livestock products) useful for processing and marketing of livestock products.	Construct / upgrade slaughter facilities, storage, transportation and butcher shops to comply with the national food safety and quality regulations.
Inadequacy and / or seasonality of road networks	Upgrade secondary and tertiary road network
Policies	
Lack of appropriate policy, legal framework and land tenure for the protection and management of pasture resources and watering points. Wide spread shifting cultivation frequently changes livestock grazing areas into crop land.	Articulate and adopt land tenure, pasture resources and watering points policies within the FAPS policy framework. Promulgate the necessary legislation and regulatory framework and enforcement mechanism.
Lack of an animal health policy in the FAPS.	Articulate and adopt an animal health policy within the FAPS policy framework.
Lack of an animal genetic resource conservation policy.	Articulate and adopt an animal genetic resource conservation policy, strategies and programmes to ensure success of the re-stocking programmes.
Regulations	
Livestock regulation is characterized largely by out-dated legislations (regulation and operational rules)	Promulgate the necessary legislation and regulatory framework and enforcement mechanism.
Institutions	
Weak institutional capacities for planning and extension make it difficult to disseminate information and provide adequate service delivery	Develop the capacity of National Livestock Bureau Develop capacity of veterinary doctors, livestock technicians, and farmers Seek short – to medium- term technical assistance in animal health and production
Weak animal health services delivery systems	Enhance the capacity of the NLB to conduct surveillance and control animal diseases

Constraints	Proposed Solutions
	<p>Ensure that vaccines are available for major epizootic diseases</p> <p>Put in place mandatory annual vaccination programmes for diseases of economic importance and those affecting human health</p> <p>Promote private sector participation in the delivery of veterinary services</p> <p>Support the private sector to establish veterinary drug stores</p> <p>Seek short – to medium- term technical assistance in animal health and production</p>
<p>Weak FBOs and other professional organizations and lack the appropriate funding.</p>	<p>Undertake a comprehensive assessment of livestock farm-based organizations (FBOs) in order to rebuild selected viable organizations and strengthen their capacities.</p> <p>Establish Innovation Platforms - smallholder livestock farmers and other actors should be assisted to form associations and interest groups.</p> <p>Establish and conduct farmer field schools for livestock activities.</p>
<p>Lack of data collection and dissemination</p>	<p>Initiate adequate livestock data collection, analysis and diffusion.</p> <p>Undertake, at regular intervals, a comprehensive census of Liberian livestock</p>
<p>Poor linkages between actors</p>	<p>Develop agribusiness along livestock/meat and dairy value chains to facilitate value addition and link livestock farmers to input and output market.</p>

10. SUGGESTED PROJECTS AND PROGRAMMES

The overall thrust of FAPS is to improve food and agricultural value chains. Strategic objectives that will be pursued to realize this goal are improved food security and nutrition, increased competitiveness and linkages to markets, and enhanced human and institutional capacity. The livestock value chains offer some potential for pro-poor growth and import substitution. The consumption of animal products in the country is increasing with income, providing new income-earning opportunities for large numbers of the rural poor. Integrated livestock and crop production is also a more sustainable farming practice, and one of the best options for diversifying agricultural production.

The prioritized areas of intervention are influenced by the issues raised in the FAPS and on-going efforts aimed at revitalizing the livestock sub-sector in the areas of restocking, capacity development, developing agribusiness, integrating crop and livestock production and improving food safety.

The areas of interventions, in order of priority, are as follows: livestock productivity improvement, capacity building and livestock processing and marketing. Suggested projects and programmes (investment plan) are described below.

10.1 Livestock Development Programme

The objective is to enhance livestock production and productivity, improve food security, nutrition, incomes, and employment from livestock production and small livestock-related enterprises. Implementation of the various programmes described below will address this objective.

Component 1: Livestock productivity improvement

The proposed activities / interventions will complement the current efforts aimed at increasing livestock numbers, promoting ownership of improved sheep, goats and cattle breeds, increase productivity and strengthen the meat value chain. The activities / interventions: are as follows: importation and distribution of sheep and goats for breeding and fattening on smallholder farms; feed production and management; support for the construction of animal sheds; establishment of a sheep and goats multiplication centre to breed animals for distribution to smallholders ; support to CARI; and promotion of cattle production.

Component 2: capacity building

National institutions and other actors in the meat value chain are weak thus the need to improve the institutional environment by training more staff for the NLB and building capacities of players in the chain. The envisaged activities / interventions are as follows: develop the capacity of the NLB by training veterinary doctors, animal scientists, livestock technicians; undertake a comprehensive assessment of livestock farm-based organizations (FBOs) and butchers' association in order to rebuild selected viable organizations and strengthen their capacities; support training of FBOs on organization and management skills; and establish and conduct farmer field schools for livestock activities / support training of producers in animal husbandry, including disease control and feed production and management.

Component 3: Livestock processing and marketing

Liberia lacks adequate infrastructure (abattoirs, cold chains for product development, slaughtering, storage, and distribution of livestock products) useful for processing and marketing of livestock products.

The activities/interventions under this component are: construct and equip live animal markets; construct and equip kiosks for meat distribution; and facilitate linkages between producers and buyers. They are aimed at further improving food safety along the meat value chain. The capacities of the butchers will be developed (Component 2).

Component 4: Programme coordination / management

The implementation and coordination of the interventions will be mainstreamed in existing Government framework. Cost items include programme coordination / management; monitoring and evaluation; consulting services; procurement of vehicles; training of key personnel; and operating costs.

International consultants will be recruited to carry out the following:

- Developing a Medium Term Master Plan to improve livestock value chains and using the private sector to increase productivity and competitiveness of selected livestock products;
- Review existing livestock acts, regulations, operational rules and enforcement mechanisms, including technical standards for safety and quality control of animals and livestock products;
- Review the livestock policy in FAPS, and articulate animal health, animal genetic resources, land tenure, pasture resources and watering points policies.

A national consultant will be recruited to assess the capacities of existing livestock based organizations, including the Butchers' Association of Liberia; sensitize stakeholders and promote the establishment of producer and trader associations. The programme is estimated at US\$17.38 million (see Annex 3).

Table 16: Summary of costs table

Livestock Development Programme	Costs (US\$)
Component 1: Livestock productivity improvement	7 600 000
Component 2: Capacity building	4 650 000
Component 3: Livestock processing and marketing	3 900 000
Component 4: Programme coordination / management	1 230 000
Total	17 380 000

II. CONCLUSIONS

A review of documents related to livestock/meat and milk value chains reveals that milk production in Liberia is limited and produced quantities are mainly for home consumption. The livestock industry is dominated by meat production, mainly from indigenous cattle, sheep, goats and pigs produced under the traditional system. There is very little information on the marketing of locally produced animals. The available information is mostly related to marketing of imported cattle, sheep and goats. There is no information on the marketing channels of the pig sub-sector.

The contribution of livestock to the nation's GDP is currently insignificant because the sector is neglected. Livestock production is dominated by small-scale traditional producers, however, improved systems, i.e. semi intensive small ruminant and pig production systems are practiced in urban centres. The current livestock population is insignificant and cannot supply the required quantity of meat and animal products to the country. The distribution of initial small ruminant breeding stocks and promoting ownership of improved cattle breeds to increase productivity and strengthen the meat value chain should be continued.

The study reveals that there are many actors in the meat value chain who need capacity strengthening. The smallholder producers are not organised, have limited access to extension services and markets. The meat trade is dominated by petty traders. Support measures are needed to improve production and productivity in order to increase domestic production and reduce external dependence. Access to breeding stocks, extension and disease control services are some of the measures identified.

The issue of food safety in meat sub-sector is related to the lack of appropriate slaughter facilities. The issue is being addressed by renovating and constructing new abattoirs. The butchers and retailers also play crucial roles in improving the meat hygienic standards for attaining food safety. There is therefore a need for capacity building of individual butchers and their professional associations. Improvements of retail outlets to improve hygiene are also needed.

The FAPS recognizes the role and contributions to be made by the agriculture sector towards poverty reduction. The livestock value chains offer a good potential for stimulating pro-poor growth and import substitution. The key policy objective is aimed at restocking, focusing on small ruminants, short-cycle animals; and reducing production costs. The livestock sector policies and strategies are however limited to animal production, and policies aimed at enhancing productivity should also include animal health, genetic resources conservation, land tenure, pasture resources and watering points which are critical for farmers to boost production. The National Livestock Bureau of the Ministry of Agriculture, and in deed the sub-sector as a whole, is faced with an acute shortage of qualified human resources. There is therefore a strong need for the formulation of comprehensive human resources development policy which includes academic training and on-the-job training of livestock sub sector actors.

The constraints / bottlenecks in areas of inputs availability include absence of credit facilities, low genetic potential of livestock coupled with limited supply of breeding stock and lack of feed. Weak trucking services and lack of adequate infrastructure (abattoirs, cold chains for product development, slaughtering,

storage, and distribution of livestock products) constitute the logistical and infrastructure constraints. The policy constraints include the absence of animal health services, genetic resources conservation, land tenure, and pasture resources. Other constraints include weak institutional capacities for extension and animal health deliver services.

The prioritized areas of intervention are influenced by the issues raised in the FAPS and on-going efforts/ initiatives aimed at revitalizing the livestock sub-sector in the areas of restocking, capacity development, developing agribusiness, integrating crop and livestock production and improving food safety. The prioritized areas of interventions are as follows: livestock productivity, livestock processing and marketing, capacity building and project management.

The suggested Livestock Development Programme aims to improve food security, nutrition, incomes, and employment from livestock production and small livestock-related enterprises.

To achieve the objective, the programme will have the following components: livestock productivity improvement; capacity building; livestock processing and marketing; and programme coordination/management. The suggested programme is estimated at US\$17.4 million.

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13. ANNEX

Annex I. SWOT analysis of livestock/meat value chain

Strengths	Weakness
The production systems utilize indigenous breeds that are adapted to the environment.	Low livestock productivity; depleted animal stocks.
The production system is extensive with low production cost.	Limited human resources in the public and private sectors in support of the value chains
Extensive grazing areas that provide a good basis for undertaking cost effective pastoral production system.	Inadequate veterinary services, extension and advisory services
Existence of government institutions (but need strengthening)	Outdated legislation that need revision.
Relevant policies and legislation in place (but need to be updated)	The absence of strong farmers' organizations.
Stakeholders/producers receive assistance through various NGOs	Predominance of small scale subsistence producers
Construction of new slaughter facilities to enhance food safety and meat hygiene	
Opportunities	Threats
High market demand for meat and milk?	High incidence of diseases leading to high mortalities primarily due to inadequate and high cost of veterinary services.
Productivity levels can be enhanced through input provisions – veterinary care and provision of quality feed.	Scarcity of feed resources due to climatic factors (drought).
Upcoming project on SPS	Sector not given due attention and budgetary allocation risk further marginalisation

Annex 2. Programme cost

Livestock Development Programme									
Component 1: Livestock productivity improvement									
Activity / Intervention	Number	Unit Costs (US\$)	Total Cost (US\$)	Y1	Y2	Y3	Y4	Y 5	Total
Importation and distribution of sheep	10 000	200	2 000 000	400 000	800 000	600 000	200 000	0	2 000 000
Importation and distribution of goats	10 000	150	1 500 000	300 000	600 000	450 000	150 000	0	1 500 000
Distribution of pigs	10 000	100	1 000 000	200 000	400 000	300 000	100 000	0	1 000 000
Procurement and distribution of vaccines	Lump sum		800 000	160 000	160 000	160 000	160 000	160 000	800 000
Support for construction of animal sheds	Lump sum		500 000	100 000	200 000	150 000	50 000	0	500 000
Feed production and management	Lump sum		500 000	100 000	200 000	150 000	50 000	0	500 000
Establishment of SR multiplication centre / support to CARI	Lump sum		1 000 000	200 000	400 000	300 000	100 000	0	1 000 000
Promotion of cattle production	Lump sum		300 000	60 000	120 000	90 000	30 000	0	300 000
Sub total			7 600 000	1 520 000	2 880 000	2 200,000	840 000	160 000	7 600 000
Component 2: Capacity building									
Training veterinary doctors, animal scientists, livestock technicians		Lump sum	2 000 000	400 000	400 000	400 000	400 000	400 000	2 000 000
Assessment of livestock FBOs		Lump sum	50 000	50 000	0	0	0	0	50 000

Livestock Development Programme									
Facilitate formation of FBOs		Lump sum	50 000	0	50 000	0	0	0	50 000
Establish and conduct farmer field schools for livestock		Lump sum	2 000 000	400 000	400 000	400 000	400 000	400 000	2 000 000
Assessment of Association of Butchers of Liberia		Lump sum	50 000	50 000	0	0	0	0	50 000
Capacity building of butchers and butchers' association		Lump sum	500 000	0	166 667	166 667	166 667	0	500 000
Sub total			4 650 000	900 000	1 016 667	966 667	966 667	800 000	4 650 000
Component 3: Livestock processing and marketing									
Construct 5 slaughter houses		400 000	2 000 000	0	1 000 000	1 000 000	0	0	2 000 000
Construct and equip 5 live animal markets		200 000	1 000 000	0	500 000	500 000	0	0	1 000 000
Construct and equip 100 kiosks for meat distribution		8 000	800 000	0	400 000	400 000	0	0	800 000
Facilitate linkages between producers and buyers	Lump sum	100 000		30 000	30 000	40 000	0	100 000	
Sub total		3 900 000	0	1 930 000	1 930 000	40 000	0	3 900 000	
Component 4: Programme coordination / management									
Programme coordination / management		Lump sum	500 000	100 000	100 000	100 000	100 000	100 000	500 000
Monitoring and evaluation		Lump sum	100 000	20 000	20 000	20 000	20 000	20 000	100 000
Review of acts, legislations and policies		Lump sum	250 000	0	250 000	0	0	0	250 000

Livestock Development Programme									
Develop a medium term master plan to improve livestock value chains		Lump sum	100 000	0	100 000	0	0	0	100 000
Procurement of vehicles		Lump sum	100 000	100 000	0	0	0	0	100 000
Training of key personnel			100 000	0	50 000	50 000	0	0	100 000
Operating cost			80 000	16 000	16 000	16 000	16 000	16 000	80 000
Sub total			1 230 000	236 000	536 000	186 000	136 000	136,000	1 230 000
Total			17 380 000	2 656 000	6 362 667	5 282 667	1 982 667	1 096 000	17 380 000

