



Demand Analysis Report- Republic of Liberia



Programme Management Unit (FTF-ITT)
National Institute of Agricultural Extension Management
(An autonomous organization of Ministry of Agriculture & Farmers Welfare, Govt. of India)
Hyderabad - 500 030, India.

www.manage.gov.in

CONTENTS

	<i>Page. No.</i>
<i>I. An overview on Republic of Liberia</i>	<i>03</i>
<i>II. An overview of agriculture sector, policies, programmes and priorities of Liberia</i>	<i>12</i>
<i>III. An overview of horticulture, animal husbandry and fisheries sectors of Liberia</i>	<i>32</i>
<i>IV. Present status and challenges in agricultural extension, marketing, insurance, agriculture mechanization, food processing, infrastructure and any other relevant issues in Liberia</i>	<i>44</i>
<i>V. Status of agricultural extension and research system in Liberia</i>	<i>56</i>
<i>VI. Public and private institutions of Liberia and their relevance in its agricultural development</i>	<i>72</i>
<i>VII. Liberia's present capacity building programmes and potential areas</i>	<i>82</i>
<i>VIII. Training priorities of Liberia in agriculture and allied sectors</i>	<i>88</i>

Bibliography

Chapter – I

AN OVERVIEW ON REPUBLIC OF LIBERIA

Geography

Liberia, officially the Republic of Liberia, is a country on the West African coast. Liberia means "Land of the Free" in Latin. Liberia is a Sub-Saharan (Sub-Saharan Africa is geographically the area of the continent of Africa that lies south of the Sahara desert) nation in West Africa located. It lies between latitudes 4° and 9°N, and longitudes 7° and 12°W. Located on the west coast of Africa, it has an area of about 111,370 sq km (43,000 sq mi), with a length of 548 km (341 mi) *east-southeast – west-northwest* and a width of 274 km (170 mi) *north-northeast – south-southwest*. Out of the total 111,370 square kilometers, 96,300 square kilometers is land and 15,070 square kilometers is water. Liberia has a mostly hilly terrain, from rolling plains along the coast to a rolling plateau and low mountains in the northeast.

The total length of Liberia's land borders is 1,587 kilometres (986 mi): 310 kilometres (190 mi) with Sierra Leone on the northwest, 560 kilometres (350 mi) with Guinea to the north, and 716 kilometres (445 mi) with Ivory Coast and North Atlantic Ocean to the country's southwest. Liberia currently claims a territorial sea of 200 nmi (370 km; 230 mi). Liberia has a mostly hilly terrain, from rolling plains along the coast to a rolling plateau and low mountains in the northeast.

Topography

There are three distinct belts lying parallel to the coast. The low coastal belt is about 40 km wide, with tidal creeks, shallow lagoons, and mangrove marshes. The land then rises to rolling hills, with elevations of 60–150 m (200–500 ft). The third belt, comprising the bulk of Liberia, is marked by abrupt changes of elevation in a series of low mountains and plateaus, less densely forested than the hilly region.

The highest point wholly within Liberia is Mount Wuteve at 1,440 meters (4,724 ft) above sea level in the northwestern Liberia range of the West Africa Mountains and the Guinea Highlands. However, Mount Nimba near Yekepa, is higher at 1,752 metres (5,748 ft) above sea level but is not wholly within Liberia as Nimba shares a border with Guinea and Ivory Coast and is their tallest mountain as well.

Climate

The climate is tropical and humid, with little change in temperature throughout the year. The mean is 27°C (81°F), with temperatures rarely exceeding 36°C (97°F) or falling below 20°C (68°F). On the coast the heat is tempered by an almost constant breeze. Yearly rainfall is as high as 510 cm (200 inch) on the coast, decreasing to about 200 cm (80 inch) in areas farthest inland. There are distinct wet and dry seasons, most of the rainfall occurring between late April and mid-November. Average relative humidity in the coastal area is about 82% during the rainy season and 78% in the dry, but it may drop to 50% or lower between December and March, when the dust-laden harmattan blows from the Sahara.

Annual rainfall is approximately 1,700 mm in the north and in excess of 4,500 mm in the south; it falls mainly between June and October (80–95% of the total annual level). Evapotranspiration is estimated to be between 3.0 and 4.5 mm per day, while relative humidity ranges from 65–80%. Sunshine averages 2–8 hours per day. The wind conditions are described as generally mild. There are some evidences to suggest that rainfall patterns are changing and perhaps diminishing because of the removal of large areas of vegetation due to the farming practice of shifting cultivation.

History

[Liberia](#) is a country in [West Africa](#) which was founded, established, colonized, and controlled by citizens of the [United States](#) and ex-Caribbean slaves as a colony for former [African American slaves](#) and their free black descendants. It is believed that many of the peoples of Liberia migrated there between the 12th and 16th centuries. Portuguese explorers first visited the coast in 1461, and Europeans traded with coastal tribes during the next three centuries. Modern Liberia was founded in 1822 by freed slaves from the United States. They were sent to Africa under the auspices of the American Colonization Society, a private organization whose purpose was "to promote and execute a plan for colonizing in Africa, with their own consent, the free people of color residing in the United States. It is one of only two sovereign countries in the world that were started by citizens and ex-Caribbean slaves of a political power as a colony for former slaves of the same political power, the other being [Sierra Leone](#), established by [Great Britain](#). "With the help of the United States government under President James Monroe (after whom Monrovia is named), the first settlement was made on Providence Island near where the present capital city, Monrovia, is located. Thus, Liberia was

under control and as [protectorate](#) of United States. In 1847, Liberia proclaimed its independence from the [American Colonization Society](#) (ACS). Up until 1980, Liberia was dominated by the small minority of descendants of the free black colonists, known collectively as [Americo-Liberians](#).

Government

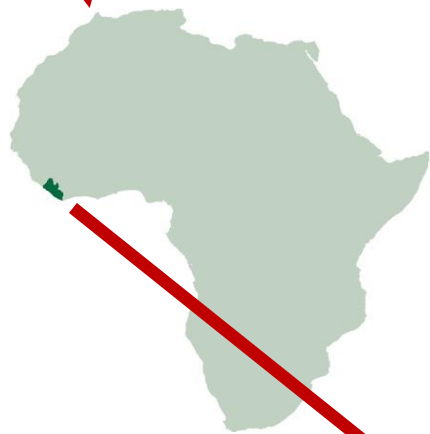
The Liberian republic is modeled after the United States. The president and vice president are elected jointly by universal suffrage (at age 18) for a six-year term with a limit of two consecutive terms. Candidacy is again allowed after the lapse of at least one term. The president is both the chief of state and head of government. Because of the country's unique history, the constitution stipulates that "only persons who are Negro or of Negro descent shall qualify by birth or by naturalization to be citizens of Liberia," and only citizens may own land.

Local Government

Liberia is divided into fifteen counties, which, in turn, are subdivided into a total of 90 districts and further subdivided into *clans*.

The oldest counties are Grand Bassa and Montserrado, both founded in 1839 prior to Liberian independence. Gbarpolu is the newest county, created in 2001. Nimba is the largest of the counties in size at 11,551 km² (4,460 sq mi), while Montserrado is the smallest at 1,909 km² (737 sq mi). Montserrado is also the most populous county with 1,144,806 residents as of the 2008 census.

The fifteen counties are administered by superintendents appointed by the president. The central government is supposed to appoint the county and territory superintendents. Counties are subdivided into districts headed by commissioners. There are also paramount, clan, and town chiefs. Cities elect their own mayors and councils.



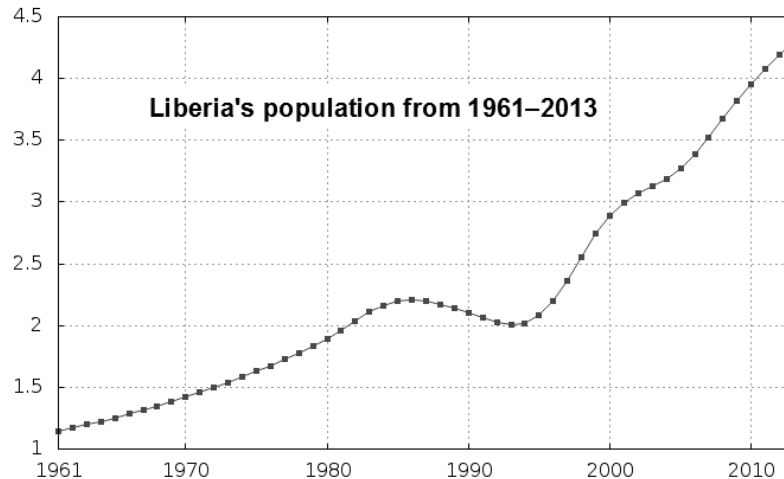
LOCATION OF REPUBLIC OF LIBERIA



Sl. No.	County	Capital	Population (2008 Census)	Area (km ²)	No. of districts	Established in
1.	Bomi	Tubmanburg	84,119	1,932	4	1984
2.	Bong	Gbarnga	333,481	8,754	12	1964
3.	Gbarpolu	Bopolu	83,388	9,953	6	2001
4.	Grand Bassa	Buchanan	221,693	7,814	8	1847
5.	Grand Cape Mount	Robertsonport	127,076	4,781	5	1856
6.	Grand Gedeh	Zwedru	125,258	10,855	3	1964
7.	Grand Kru	Barclayville	57,913	3,895	18	1984
8.	Lofa	Voinjama	276,863	9,982	6	1964
9.	Margibi	Kakata	209,923	2,691	4	1985
10.	Maryland	Harper	135,938	2,297	2	1857
11.	Montserrado	Bensonville	1,118,241	1,880	4	1847
12.	Nimba	Sanniquellie	462,026	11,551	6	1964
13.	Rivercess	Rivercess	71,509	5,564	6	1985
14.	River Gee	Fish Town	66,789	5,113	6	2000
15.	Sinoe	Greenville	102,391	9,764	17	1847

Demographics

As of the 2008 national census, Liberia was home to 3,476,608 people. Of those, 1,118,241 lived in Montserrado County, the most populous county in the country and home to the capital of Monrovia. The Greater Monrovia District has 970,824 residents. Nimba County is the next most populous county, with 462,026 residents. As revealed in the 2008 census, Monrovia is more than four times more populous than all the county capitals combined.



Prior to the 2008 census, the last census had been held in 1984 and listed the country's population as 2,101,628. The population of Liberia was 1,016,443 in 1962 and increased to 1,503,368 in 1974. As of 2006, Liberia has the highest population growth rate in the world (4.50% per annum). In 2010 some 43.5% of Liberians were below the age of 15. Liberia's population tripled in 40 years.

Ethnic Groups

Liberia is peopled by about 28 ethnic groups, each with its own language. Linguistically, the tribes may be divided into three main groups: the Mande people in the north and far west, the Kru tribes (including the Krahn) in the east and southeast, and the Mel in the northwest. The largest groups are the Kpellé, Bassa, Gio, Kru, Grebo, Mano, Krahn, Gola, Gbandi, Loma, Kissi, Vai, and Bella. About 2.5% of the population is Americo-Liberian, descendants of immigrants from the United States who had been slaves. Because of intermarriage and an aggressive national unification program, tribal divisions are rapidly becoming less distinct, especially around the capital. Nevertheless, there is a strong tendency among the indigenous people to preserve their tribal identities.

Languages

English is the official language, but only a minority of the people (about 20%) can speak or write it. The tribal people use their own languages, of which there are about 20 tribal languages. Of these, Vai, Bassa, and Loma can be written and are being used in correspondence by these tribes. The International Phonetic Alphabet, introduced by missionaries, has facilitated the use of many of the other tribal languages for correspondence and publication of local newsletters.

Religion in Liberia

According to the 2008 National Census, 85.5% of Liberia's population practices Christianity. Muslims comprise 12.2% of the population, largely coming from the Mandingo and Vai ethnic groups. The vast majority of Muslims are Malikite Sunni, with sizeable Shia and Ahmadiyya minorities. Traditional indigenous religions are practiced by 0.5% of the population, while 1.8% subscribe to no religion.

Education

In 2010, the literacy rate of Liberia was estimated at 60.8% (64.8% for males and 56.8% for females). In some areas primary and secondary education is free and compulsory from the ages of 6 to 16, though enforcement of attendance is negligent. In other areas children are required to pay a tuition fee to attend school. The country's education sector is hampered by inadequate schools and supplies, as well as a lack of qualified teachers.

Higher education is provided by a number of public and private universities. The University of Liberia is the country's largest and oldest university. Located in Monrovia. Today it has six colleges, including a medical school and the nation's only law school, Louis Arthur Grimes School of Law.

Environment

Tropical rainforests cover the hills, while elephant grass and semi-deciduous forests make up the dominant vegetation in the northern sections. The equatorial climate is hot year-round with heavy rainfall from May to October with a short interlude in mid-July to August. During the winter months of November to March, dry dust-laden harmattan winds blow inland, causing many problems for residents.

The nation lacks regulatory agencies to supervise the preservation of the environment. As the 1980s began, Liberia was one of the last West African countries with significant primary forest reserves, but recent estimates suggest that deforestation continues at a rate of about 2% per year. Commercial logging, firewood cutting, and a government land-clearing program all threaten primary forestland. Forests currently account for less than 40% of Liberia's land. By the mid-1980s, the country had lost over 70% of its mangrove swamps. Hunting and loss of habitat have decimated wildlife along the coastal plain, and there are no longer any large herds of big game in the interior.

The water supply is usually limited to open sources such as streams, swamps, and shallow, uncovered wells; the result, especially during the rainy season, is that insects and parasites thrive, creating a major health hazard. The Mano and St. John rivers are becoming increasingly polluted from the dumping of iron ore tailings, and the coastal waters from oil residue and the dumping of untreated sewage and waste water.

According to a 2006 report issued by the International Union for Conservation of Nature and Natural Resources (IUCN), the number of threatened species included 20 types of mammals, 11 species of birds, 2 types of reptiles, 4 species of amphibians, 29 species of fish, 16 types of mollusks, 11 species of other invertebrates, and 103 species of plants.

Agriculture

Before the civil war, agriculture was the main source of livelihood for the great majority of Liberians. Except on plantations operated by foreign concessionaires and wealthy Liberians, farming techniques are primitive. The "bush rotation" system of shifting cultivation is followed, in which the farmer clears up to two hectares of wild forest or low bush each year. Cassava, sugarcane and rice are considered to be the major field crops produced. Rubber is the leading cash crop. The principal export crops produced by small farmers are coffee, oil palm nuts, sugarcane, and fruits in particular banana. The rain forest soils, while well drained, are strongly leached, making Liberia better adapted to tree-crop agriculture than to annual field-crop production. Liberian agriculture comprises food and tree crops, fisheries, and livestock. Rice and cassava are the main food crops, and rubber, oil palm, and cocoa are the dominant export oriented tree crops. Fisheries consist of industrial and artisanal industries, as well as aquaculture, while livestock is largely small ruminants.

Water Resources

Liberia shares international water resources with its neighbors; nine major perennial river systems and short coastal watercourses drain approximately 66% and 3% of the country, respectively. The irrigation potential is about 600,000 ha, of which only 1,000 ha can be described as relatively developed.

Of the principal rivers, all of which are at right angles to the coast and flow into the Atlantic Ocean, only the Farmington is of much commercial importance. Liberia's main northwestern boundary is traversed by the Mano River while its southeast limits are bounded by the Cavalla River. Liberia's three largest rivers are St. Pau river exiting near Monrovia, the

river St. John at Buchanan and the Cestos River, all of which flow into the Atlantic. The Cavalla is the longest river in the nation at 515 kilometers (320 mi).

Land and Soil Resources

Land and Soil Resources: Liberia occupies a land area of approximately 111,370 km², of which 96,160 km² (86%) is dry land and the remaining 15,210 km² is covered by water. The country's coastline is made up of four physiographic units: coastal plains (upto 100 meters above sea level [MASL]), interior hills (100–300 MASL), interior plateaus (300-600 MASL), and mountainous areas (in excess of 600 MASL). Land types present in Liberia include tidal swamps, coastal beach plains, flood plains, valley swamps, and low and high hills, all of which have different land use capabilities.

Economic Overview

Liberia's economy deteriorated further in 2015, with GDP growth of 0.3%, further down from 0.7% in 2014. The country is struggling to recover from the twin shocks of the Ebola crisis and the sharp decline in commodity prices, which led to business closures, including of mines and consequent job losses and reduced fiscal revenues. Substantial downside risks remain, which challenge the government's recovery efforts and plans to diversify the economy to mitigate the impact of such future shocks. The continued terms-of-trade shocks and the reversal in private investment inflows due to the outbreak of the Ebola Virus Disease (EVD), have prolonged Liberia's post-Ebola economic recovery. GDP growth is projected to recover to about 3.9% in 2016. The recovery is expected to be driven by the coming on stream of a new gold mining concession, and improvements in services as rural and urban markets re-open.

Chapter – II

AN OVERVIEW OF AGRICULTURE SECTOR, POLICIES, PROGRAMMES AND PRIORITIES OF LIBERIA

1. Agriculture sector

Agriculture provided the mainstay of the economy throughout the Liberian conflict and has accounted for over half of GDP in the postwar period (compared to one-tenth in the late 1970s). The sector accounted for 42.2% of real GDP for 2008. A large proportion of the economically active population of Liberia is engaged either directly or indirectly in smallholder subsistence agriculture.

Liberia's farm family population is heavily concentrated in Nimba County followed by Bong and Lofa counties. Over 90% of these farm families are small scale subsistence farmers primarily engaged in growing rice and cassava the smallholder sector which, dominates agricultural activities, currently experiences poor tenure security.

Liberia's agriculture sector is dominated by traditional subsistence farming systems on uplands that are characterized by labor intensive- shifting cultivation, low technologies, and use of rudimentary inputs, resulting in low productivity. The farming systems are primarily forest based and they cover the largest portion of cultivated land area, are concentrated in the central belt of the country, and account for almost half (50%) of the total land area and almost 90% of arable land.

Small acreages of tree crops are maintained for generating cash income while rice, intercropped with vegetables and other food crops, occupy the major portion of cultivated land (about 87%), which is on upland. Currently over 95% of Liberia's farms are located on uplands, which are far less productive and contribute to environmental degradation. A secondary root and tuber based farming system (involving some cereals) is concentrated in the northern region, and a third farming system occurs in the costal belt with fishing as a major activity complemented with mixed cropping.

Commercial agricultural activities are almost exclusively plantation estates of rubber, and to a lesser extent oil palm. Coffee and cocoa are produced mainly by smallholders and exclusively for export. Value addition is limited and restricted to rubber. Besides the plantation estates, very little commercial investment has been made in the agriculture sector, except for limited commodities' trading which has persisted over the years.

Land and water resources are abundant and offer potential for significant expansion of agricultural production. Lowland areas comprise approximately 6.1% of total land but many are in small, noncontiguous areas and widely scattered or in narrow valleys, thus limiting the maximization of their highly productive and environmentally preferable potentials. Significant potential for irrigation exists (estimated at about 600,000 hectares), with less than 1% of it presently developed.

Structure of Production:

Forest-based farming systems cover the largest proportion of the land area in Liberia. They include tree crop-based systems in which vegetables and other food crops are produced on a minor scale, mostly in the central belt of the country; root crop based systems (with cereals) concentrated in the northern region; and fishing and land based mixed cropping enterprises along the coastal belt. The three main structures of production are:

- large plantations that produce major export crops such as rubber, oil palm, and to a lesser, degree coffee and cocoa;
- domestically owned, medium-sized commercial farms that cultivate industrial crops for export and livestock for the local market; and
- small household farms that use traditional production techniques and limited improved inputs.

Food Crops:

Food production is growing in post-conflict Liberia. However, crop yields are low, value chains are undeveloped, and institutions that provide support services are very weak. Contributing factors include lack of improved planting materials; absence of integrated nutrient and pest management; high post-harvest losses caused by storage, processing and other marketing infrastructure inadequacies; and poor market access.

Rice is the staple food with annual per capita consumption of 53 kilograms. According to estimates, 71% of farm families are involved in the cultivation of rice. The resumption of agricultural activities in post-conflict Liberia resulted in a sharp increase in rice production, from 85,000 tons in 2005 to 144,000 tons in 2007. Despite this 70% increase in domestic rice production, Liberia remains a net importer of this crop. Imports accounted for 60% of the 322,000 tons consumed in 2007, and the import bill doubled from about US\$100 million in 2007 to approximately US\$200 million in 2008 due largely to global food price increases.

Notwithstanding favorable agro-ecological conditions, rice productivity is low. It is estimated that average yields of 736 kg/hectare (ha) and 815 kg/ha are obtained from upland and lowland rain-fed production on an average farm size of 1.0 ha. Globally, average rice yields in recent years have been at 3,900 kg/ha for paddy rice, while in sub-Saharan Africa, yields have recently averaged 1,500 kg/ha—twice the yield of Liberia.

Rice Production and Consumption in Liberia (2001-2008)

	1990	2000	2002	2004	2005-06	2006-07	2007-08
Area (ha)	175,000	143,000	120,000	120,000	110,000	152,000	190,000
Production (MT)	180,000	183,000	110,000	110,000	100,000	144,000	170,000
Average Yield (MT/Ha)	1.03	1.28	0.92	0.92	0.87	0.90	0.9
Consumption (MT)				300,000	310,000	320,000	332,000
Food Assistance (MT)				100,000	74,000	22,000	20,000
Import (MT)	70,000	100,000	100,000	120,000	160,000	154,000	140,000
Value US\$ million	25	37	20	22	140	170	200*

Source: Ministry of Agriculture of Liberia. "Liberia National Rice Development Strategy." Liberia: Ministry of Agriculture, February 2009 (based on 2001 and 2008 crop surveys)

Cassava is the second most important food crop with 2007 production estimated at 1.7 million wet tons. Crop area averages 0.5 ha, and yields are estimated to be between 6 and 10 metric tons (MT)/ha on upland farms. Other food crops include vegetables such as pepper, bitter balls (garden eggs), and groundnuts. Urban and peri-urban vegetable production is practiced on a limited scale, taking advantage of the ready market in urban centers.

The food crop subsector is mainly subsistence and characterized by low productivity with little surpluses available for sale, and very little value addition. Cereal yields, although less than 40% of average world yields, roughly equate to that of other African countries, while rice yields are far below Africa's and the world's performance. Production of rice, staple food in the country, and vegetables are below national requirements. However, between 2005-2006 and 2007-2008 crop years and as a result of area expansion, milled rice output rose close to 70 percent while cassava production, measured in wet tons, increased over 160 percent.

Tree Crops:

Rubber, oil palm, cocoa, and coffee accounted for 22% of the GDP in 2005, and tree crops are a significant element of export earnings and employment. It is estimated that more than half of the agricultural households may currently be directly or indirectly involved in tree crop production and in related down-stream activities; Nimba, Bong, and Lofa counties are the major producers.

Rubber is the most important cash crop in Liberia. It is estimated that a little over 200,000 ha of rubber have been planted in Liberia, of which 65,000 are industrial estates and 130,000 are small and medium-size private farms. In 2005, with mining and forestry having ground to a halt and subsistence agriculture only beginning to recover, the rubber sector accounted for more than 20% of Liberia's total GDP and 90% of its total exports. Three years later, rubber's influence remains unchallenged; at the end of November 2008, rubber exports accounted for 86.1% of total exports.

The rubber industry generated approximately US\$218 million in revenues in 2007, and it creates a steady stream of employment and supports the livelihoods of thousands of smallholder farmers. In 2008, foreign-owned concessionaires and Liberian commercial farmers employed over 14,000 people and contributed to the economy more than US\$40 million in wages. In the same year, foreign-owned concessionaires and Liberian commercial farms spent a minimum of US\$10 million on education, health, housing, and road maintenance.

Cocoa is Liberia's second most important export crop, with about 40,000 households engaged in its production. Although official exports were 3285 tons in 2008 and between 2000 and 3000 tons annually in earlier years, total production is estimated at about 10,000 tons from about 30,000 ha. Most of the production is informally exported to international markets via neighboring countries. Average yields of 400 kg/ha experienced in the 1980s have declined to between 100–200 kg/ha. Yields within West Africa are 400 kg/ha, but these can be increased to 1.0–1.5 ton/ha using the new hybrid varieties grown in Ghana and Côte d'Ivoire.

Oil palm is an essential tree crop for smallholders. Liberia's pre-war crude palm oil (CPO) output of between 135,000 and 170,000 MT has fallen to about 35,000 MT. A net exporter of palm oil until the late 1980s, the country now imports about 7,000 tons of edible oils, i.e., about 20% of a total estimated domestic demand. A significant volume of CPO (2,000–3,000 MT) is exported to neighboring countries through informal border trade. It is estimated that there may be about 25,000 ha of medium-to-large oil palm plantations, of which approximately 17,000 ha are state-owned plantations; smallholder farms represent another 75,000 ha. It is also projected that the annual production of existing plantations is about 20,000 MT of CPO, with about half of the country's total production coming from wild groves.

Coffee experienced a large expansion in area harvested and production between the 1960s and the 1980s, increasing from 8670 ha and 4410 tons to 21,310 ha and 8250 tons,

respectively. While export quantities averaged 7600 tons in the 1980s (perhaps due to cross-border trading), only 124 tons were reported to have been exported in 2008. In spite of extension programs under various agricultural development projects in the past, yields have remained low.

Fisheries:

Liberia's fisheries sector—which includes an established marine fishery involving industrial and artisanal fishing activities, an inland fishery that is exclusively artisanal, and aquaculture practiced in rural areas through fishpond culture—provides about 3% of the country's GDP. However, this sector provides employment for about 37,000 fishers and processors and contributes significantly to nutrition in terms of protein intake, making it of importance locally.

Liberia's 560-kilometer (km) coastline and the continental shelf, which averages 34 km in width and extends 200 nautical miles offshore, provide about 20,000 km² of fishing grounds. These areas hold considerable maritime fish resources, including the main oceanic pelagic species (e.g., tuna). Crustaceans (e.g., shrimps and lobsters) are less abundant but of much higher value than finfish species. The fisheries sub-sector is also under developed, but has good potential for growth, since only about 6.8% of sustainable yield is harvested annually.

The pre-war estimated maximum sustainable yield (MSY) of the continental shelf area was 180,000 MT/year. Liberia also has approximately 1810 km of rivers that traverse the country, and countless perennial swamps and inland water bodies with enormous potential for increased production from inland fisheries and aquaculture. The estimated MSY of inland fishery is 40,000 MT/year; illegal fishing, however, costs Liberia about US\$12 million annually.

Artisanal fishery provides livelihood for 33,120 full-time fishers and processors in both marine and inland waters—about 61% of whom are Liberians and 60% are female. Artisanal fish landings were estimated to be 7,700 MT in 2004 at ten sites, making up about 75% of the total fish landings.

Aquaculture was developed in the 1970s with technical support from donor projects. It has now reverted to a subsistence activity with production estimated at 38.81 MT in 2004. At its peak in the 1980s, 3,600 fishers nationwide used 450 ponds of various sizes with a total area of about 17.5 ha distributed in 159 communities around the country. However, most of the

ponds have not been in use since the early 1990s. The fisheries sub-sector is also under developed, but has good potential for growth, since only about 6.8% of sustainable yield is harvested annually.

Livestock:

The livestock sub-sector was decimated as a result of years of civil conflicts. Current livestock population is below 10% of national requirements. Although Liberia has an estimated 2 million ha of pastureland, the livestock sector accounts for only 14% of agricultural GDP. Estimates suggest there is slow growth in aggregate livestock numbers comprising mainly cattle, poultry, and swine. Traditional livestock farmers dominate, as was the case before the war. According to CAAS-Lib, traditional systems accounted for 100% of the holdings of cattle, goats, and sheep; 58% of pigs; and 100% of guinea fowl. A few modern peri-urban livestock farmers produced rabbits, guinea pigs, poultry, and ducks.

According to data from the Ministry of Commerce and Industry (MCI), imports of meat and meat products in 2005/06 amounted to US\$6 million (Annex Table 6). In addition, an estimated 26,000 head of live cattle and 15,000–16,000 head of live sheep and goats were imported from neighboring countries (estimated to equate to 3,000 and 312 MT, respectively). The Central Bank of Liberia (CBL) has indicated that the cost of imports for food and live animals grew by 56.8% in 2008 to US\$205.3 million, driven mainly by rice imports, which accounted for 61.3% of expenditures in this category.

2. Policies

ECOWAS Agricultural Policy (ECOWAP)

The regional agricultural policy (ECOWAP) was adopted in January 2005 by heads of states and government of ECOWAS who insisted that national policy should be aligned with regional policy. The preparation of a plan of action for the implementation of ECOWAP in October 2005, took into account the Comprehensive Africa Agricultural Development Program (CAADP) for which ECOWAS was mandated to implement within the sub-region. These two initiatives were merged into one thereby giving a unique Action Plan developed at the national level call the national agricultural investment program and regional level as regional agricultural program. Thus the regional agricultural investment program was developed to add value to national agricultural investment programs in the West Africa region.

The goal of the Common ECOWAS Agricultural Policy (ECOWAP) and Comprehensive Africa Agricultural Development Programme (CAADP) is to serve as a framework for intervention in agricultural policies and development strategies in West Africa and in Africa, respectively. These frameworks are also intended to be integral parts of national efforts to promote agriculture sector growth and overall economic development in the countries.

Further, the government of Liberia has prepared three important agricultural policy documents since 2006: the Statement of Policy Intent for the Agricultural Sector of 2006, the 2008 NSFNS, and the 2009 FAPS.

Statement of Policy Intent for the Agricultural Sector

This policy was an interim measure that envisioned the holistic development of agriculture into a sustainable, diversified, income generating, modernized, and competitive sector well-integrated into domestic and international markets. In this regard, the GOL sought to promote the production and productivity of key food and tree crops, fisheries, forestry, and animal husbandry; increase domestic and sub-regional commerce; foster on- and off-farm diversification; and facilitate agro-processing and sustainable management of natural resources. The Statement of Policy Intent also recognized the necessity of crafting effective land administration, flexible land use planning approaches, adaptive sustainable land management practices, and other improvements.

The MOA is promoting agricultural development through inclusive and private sector led growth while it concentrates on providing a sound policy and regulatory environment, as well as essential service delivery such as extension, research, and marketing infrastructure that support smallholder farmers, thus improving food security and contributing to poverty reduction.

Food Security and Nutrition Strategy (FSNS)

The key objective of the FSNS is to make certain that “all Liberians have reliable access to the food they need to live active and healthy lives”. Although the strategy encompasses the food security and nutrition needs of all Liberians, it prioritizes the needs of food insecure and nutritionally vulnerable groups in the society, including the elderly who have little support, female-headed households, orphans, and HIV-affected households. The FSNS addresses four separate dimensions of food security, namely, availability, access to food, utilization and vulnerability. To enhance food availability, the FSNS calls for the formulation of a policy

statement on food self-sufficiency; exploiting all opportunities for food production by addressing the production constraints farmers face; diversifying food production; improving post-harvest processing; safeguarding of communal resources that are important food sources; maintaining predictable and stable food imports; strengthening of Liberia's strategic food reserve mechanisms; and making appropriate use of international food assistance.

To improve access to food, factors of production are to be secured; markets for both food and non-food produce improved; and safety net programs strengthened. To promote better food utilization and improved nutritional status, the strategy calls for the promotion of child growth; taking of essential nutrition actions; making efforts to save acutely undernourished children; addressing the food and nutrition needs of those affected by HIV; improving nutritional caring practices; fortifying foods with micronutrients; enforcing food standards; diversifying diet; and increasing access to safe water, sanitation and proper housing. In addressing the needs of nutritionally vulnerable households, and in working to safeguard the food security and good nutritional status of others, two demographic groups are targeted – infants and children under 5 years of age and pregnant and lactating women. Thus, the central outcome measures of whether this strategy can be judged successful are those that establish whether the food and nutritional needs of young children in Liberia are being met.

Food and Agriculture Policy and Strategy (FAPS): From Subsistence to Sufficiency

The Food and Agriculture Policy and Strategy (FAPS) was developed within the context of the Government of Liberia's framework for national reconstruction and development and the PRS. It was developed through a participatory process involving all stakeholders, i.e. the public sector, private sector, civil society organizations, and development partners. It is evidence-based, as it relied on findings and recommendations emanating from the Comprehensive Assessment of the Agriculture Sector of Liberia (CAAS-Lib). FAPS identifies specific sector and sub-sector policies and strategies that will be implemented to revitalize and strengthen the food and agriculture sector, enabling it to maximize its contribution to the Government's overall development goals.

FAPS accentuates pro-poor policies and associated strategies that will harness and utilize the potentials of the large number of smallholders in the sector. It envisions "a nation with food and nutritional adequacy and security enabling a nourished population, thus contributing to optimal health, education and training, economic growth and development, and

improved and sustained quality of life of the people.” Its goal is “a revitalized and modernized agriculture sector that is contributing to shared, inclusive and sustainable economic growth and development of Liberia.” Its guiding principles are macroeconomic stability, pluralism and clarity of roles; enhanced private sector involvement and competition; self-reliance; maximization of comparative advantage; value addition; sustainable development management and decentralization. Specific objectives are: (i) safe and nutritious foods available in sufficient quantity and quality at all times to satisfy the nutritional needs for optimal health of all Liberians throughout their life cycles; (ii) enhanced, inclusive and pro-poor growth in agricultural production, productivity, competitiveness, value addition and diversification, and linkages to markets; and (iii) effective and efficient human and institutional capacities of stakeholders (public sector, private sector, civil society organizations, especially grassroots community based organizations) to undertake planning, delivery of services, investments, and monitoring activities, while concurrently sustaining natural resources, mitigating risks to producers and mainstreaming gender and youth considerations in sector activities.

3. Programmes

Lift Liberia Poverty Reduction Strategy (PRS)

The Lift Liberia Poverty Reduction Strategy (PRS) which covers the period 2008–2011 articulates the government’s overall vision and major strategy for moving toward rapid, inclusive and sustainable growth and development. The PRS took into consideration the country’s aspirations for achieving the Millennium Development Goals (MDGs), especially halving of hunger and extreme poverty by 2015. The PRS recognizes the role of natural resources, agriculture in particular, in achieving or realizing the country’s growth potential. It believes that revitalizing the agricultural sector is crucial to overall economic recovery, ensuring that growth is inclusive, promoting peace and stability, and sustaining poverty reduction. Natural resource-based industries are believed to have the potential to create significant numbers of jobs, provide substantial budget revenues and initiate rapid growth.

The three-pronged growth strategy underlying the PRS comprises: (i) rebuilding of basic infrastructure, especially roads; (ii) restoration of production of rubber, timber, mining, cash crops and other key natural resource products; and (iii) reduction of production costs to encourage diversification of the economy over the medium-to-long term. To meet agricultural growth target of 6% by the end of 2010 and in 2011, the government will develop more

competitive, efficient, and sustainable food and agricultural value chains and linkages to markets; improve food security and nutrition, especially for vulnerable groups, including pregnant and lactating women and children under five; and strengthen human and institutional capacity. National

Integrated Water Resources Management Policy (IWRMP)

Although the FAPS addresses water resource issues from the perspective of the agricultural sector, it is the Integrated Water Resources Management Policy (IWRMP) that constitutes the national policy for this valuable asset. The policy covers two broad areas, water resource management and water resource use. The goals are to ensure: (i) full socio-economic benefits for present and future generations; (ii) access to safe and adequate water for people; (iii) the availability of adequate quantity and quality of water for the environment and ecology; (iv) the availability of sufficient quantity and quality water for food security; and (v) the availability of water for other uses such as hydropower generation, industry, transportation, recreation, etc. Key strategies comprise: (i) decentralization of economic incentives and efficient and proper disposal of solid and liquid wastes; (ii) establishment of appropriate bodies responsible for water resources management; (iii) development and enhancement of national human resources and technological capacities; (iv) fostering of international cooperation in the management of shared river basins; (v) ensuring efficient means of domestic water supply; (vi) integrated and sustainable development and management of water resources for all sectors; (vii) protection of all water resources; and (viii) prevention of natural disasters and the effects of climate change.

Liberia Agriculture Sector Investment Program (LASIP)

The Liberia Agriculture Investment Program (LASIP) seeks to transform Liberian agriculture and in so doing maximize the sector's contribution to economic growth, employment and income generation, food and nutrition security, and poverty reduction. To overcome pervasive structural impediments and a poor policy environment which have undermined agricultural growth and development, LASIP adopts a pro-poor approach to raising agricultural productivity, strengthening institutions, and making markets work for households and communities through commercialization and private sector initiatives. LASIP identifies priority areas from which investment projects aligning national objectives and CAADP are to be developed. These objectives are embodied in Liberia's national vision and goal for the

agricultural sector as stated in the PRS as well as the food and agricultural vision contained in the FAPS.

Programs under the PRS/LASIP

The PRS/LASIP will have four major programs: (i) land and water development, (ii) food and nutrition security, (iii) competitive value chains and market linkages, (iv) institutional development.

Land and Water Development

The program's objective is to ensure that the country's endowment of land and water are used to accelerate food production and facilitate income generation through proper planning, development and management.

Land policy reform and capacity building: to ensure that statutes and policies regarding ownership as well as tenure of land are reviewed to facilitate the availability of land for sustained crop area expansion and for investment in agriculture.

Enhanced land husbandry: to improve and maintain soil fertility and promote complementary utilization of organic, mineral and physical components of soil management in support of agricultural intensification.

Expansion of irrigable land: to increase the share of arable land under cultivation under irrigation from less than 0.2 to 5%.

Improved wet and degraded land management: to develop and increase the total area of wet and degraded land for year-round utilization to produce food crops, particularly rice and vegetables.

Food and Nutrition Security

This program aims to achieve the goal of the FSNS, to ensure that all Liberians have reliable access to the food they need and are able to utilize that food to live active and healthy lives.

Food crop production and productivity enhancement: to make food available, accessible and moving towards achieving MDG1 by 2015.

Smallholder tree crops and agro-forestry development: to increase smallholder participation in the tree crop and forestry sub sector by 50% between 2011 and 2015.

Sustainable fisheries sub-sector development: to increase fisheries contribution to food supply and GDP.

Livestock development and promotion: to expand domestic livestock production to meet more than half of domestic demand.

Special women and youth initiative: to increase participation of women and youth in agriculture-related activities by 50% by 2015.

Competitive Value Chains and Market Linkages

This program seeks to improve market access through increased investment in rural roads, marketing infrastructure, such as physical marketplaces, storage and processing facilities for crops, livestock and fisheries, and energy.

Rehabilitation and expansion of rural roads: to rehabilitate and upgrade the network of rural roads, which are of major importance to agriculture. At least 250 km of feeder roads are to be rehabilitated/constructed in five years.

Rural agricultural infrastructure and energy: to improve market accessibility of agricultural products through the construction and operation of rural agricultural infrastructure.

Rural financial services: to increase the share of total commercial bank credits allocated to the agricultural sector from 5% to at least 15% and expand the accessibility of farmers and farm-based organizations to formal rural financial services in 5 years.

Labor-saving intermediate devices and technologies: to enhance productivity and expand acreage through small-scale mechanization by formulating a targeted mechanization strategy that encourages and supports individual farmers, farm-based organizations and other private sector entities in the acquisition and utilization of transitional devices and technologies throughout the value chain.

Market and enterprise development: to rebuild and commercialize value chains using various approaches including out-grower schemes that link commercial entities and smallholders in an effort to increase agricultural productivity and farmer income.

Institutional Development

This program will develop enduring capacities in the public sector for evidence-based policy formulation, planning, coordination and supervision, together with the implementation of programs and projects.

Rebuilding the Ministry of Agriculture and Agricultural Parastatals: rebuilding and decentralizing the ministry's activities to achieve its pre-war status in the next five years.

Revitalizing agricultural research: achieving the Central Agricultural Research (CARI) pre-war status and bringing it at par with other national research institutes in the sub-region.

Technology dissemination and adoption: to have a decentralized demand driven agricultural extension service in the next three years.

Renewing agricultural education and training: improving training institutions to meet pre-war status and include higher education in specialized fields in agriculture.

Reframing agricultural parastatals: Redefining the role of all agricultural parastatals to conform to present day reality.

Promoting and strengthening farm-based organizations: the establishment and offering of training and other technical skills to at least ten farm-based organizations in each country

4. Priorities

Agriculture

Agriculture is the predominant source of livelihoods for over 70% of the population. Two of the most important agricultural commodities in Liberia are oil palm and rubber. Although Liberia's agricultural sector has made significant gains, many challenges remain. Sustainability of the agricultural sector requires an integrated approach to resource use, including innovative farming practices, conservation of critical wildlife habitat, and sound land use planning. Enhanced production of Liberian staple foods – rice and cassava - is needed. Substantial improvement in land administration – a complex and politically charged issue in Liberia – will be critical going forward. The farming sector is currently under performing with low productive capacity, contributing to food insecurity. Dependency on imported food is increasing, two-thirds of the food on the Liberian market is imported. Food insecurity remains a major challenge for Liberians, with 41% of the population undernourished. So, enhanced production of Liberian staple foods – rice and cassava- will alleviate the challenge of food security.

The Liberian government goal for the agricultural sector is to promote a robust, competitive, and modernized agricultural sector supportive of sustainable economic growth and development. The priorities include capacity building for farmers and increased investment in the agriculture sector. This will include support to rural agricultural financing and diversification of farming practices.

A national agricultural land resource database should be established and investment has to be made in capacity building of farmers which will increase food production and sustainability of agriculture sector.

Forestry

The forestry sector in Liberia generates major revenue for the Government. Approximately 60 different timber species are routinely harvested in Liberia. To ensure the sustainability of the sector, improved management of forest resources is essential. This includes promoting alternative livelihood strategies that enable business opportunities for communities from the development of non-timber forest products, ecotourism and payments for ecosystem services.

Deforestation and inadequate implementation of reforestation remain primary concerns for the forestry sector. Sustainability of the sector requires a dual approach that supports commercial forestry while protecting our natural resources through conservation. The Forest Reform Law of 2006 requires an integration of the commercial, conservation, and community uses of forests for sustainable forest management.

Social

Social development is a necessary factor in the transition for becoming a middle-income country. The key social challenges in Liberia include poverty, education, health, and gender. Continued investment in the education and health sector are the keys to Liberia's goal of reaching middle income status. Poverty reduction remains a challenge for Liberia. Approximately 1.7 million Liberians live below the national poverty line. Of these, about 1.3 million people live in extreme poverty. Poverty is an even greater challenge in rural areas (68%) than in urban areas (55%). Overwhelming challenges, however, still hinder development efforts. Rural to urban migration to Monrovia and other major cities has resulted in overpopulation, placing severe stress on the environment and resulting in poor sanitary conditions and increased prevalence of communicable diseases.

Food and Nutrition

Food availability, accessibility, and utilization are major challenges on account of low production and productivity, bad road conditions, high post-harvest losses, low income levels, and poor systems of coordination and information management. Liberians are therefore net buyers of food, making reducing the real cost of food a major food security objective. Fisheries,

including artisanal fisheries, are hampered by weak institutional capacities for planning, advice and monitoring, and surveillance; lack of infrastructure (such as harbors); and limited facilities for storage, processing, and handling.

Enhancing food availability

- Strengthening rice, cassava, vegetables, and livestock value chains will lead to increased production and greater availability of these foods
- Increased production can link to school feeding programs that increase food availability for the most vulnerable populations

Improving access to food

- Increasing incomes will lead to greater ability to purchase food
- Improving marketing in targeted value chains will lead, over time, to lower overall prices and increased ability to purchase these foods

Promoting better food utilization

- Promoting diet diversification, producing more nutritious varieties of crops, and investing in marketing and behavior change in food purchasing habits will improve nutritional status
- Creating synergies with Essential Nutrition Actions, Integrated Management of Childhood Illnesses

Efforts have to be made to rehabilitate, expand, and diversify smallholder tree crops, and agro-forestry will be given special attention. Attention has to be paid to import trade policy to help Liberian producers to compete with imports. Good governance and sustainable management of fisheries and livestock development have to be promoted. Investments have to be made to improve women's access to land, credit, inputs, and extension services and enhance their participation in value chains.

Environment

Sound environmental management in Liberia is particularly important in light of our recent history and the direct dependency of much of the population on natural resources. Liberians rely heavily on ecosystem services for their basic needs and livelihoods. Sustainable development requires maintaining healthy ecosystems and the critical services they provide. Efforts are underway to improve management of existing protected areas and to set aside more

land. Environmental policy is improving incrementally. Protection of ecosystems, including conservation and protection of the environment, must underpin the development agenda.

Liberia has the largest remaining portion of the Upper Guinean Forest and contains unique species of flora and fauna. As a world biological diversity hotspot, the potential for ecotourism is substantial. However, deforestation and other human activities are affecting the integrity of the forests. It is estimated that approximately 480,000 acres (192,000 hectares) of forestland is lost annually due to logging, shifting cultivation and other activities, while government has replanted less than 27,000 acres (10,927 hectares).

The reforestation efforts taken by the Liberian Government is minimal and it must be a priority for the government. Protection of forest resources and ecosystem services is critical. So, improved monitoring is required to ensure reforestation, which is a key component of forest management.

Water Resources

With 14% of Liberia's surface area covered by water and a particularly heavy annual rainfall, the country's water resource potential is vast. During the rainy season, annual rainfall averages 4,320 mm. Liberia's groundwater is exploited primarily through wells and boreholes. Liberia's abundant water resources are also favorable to agricultural and rural energy development. However, low capacity and a lack of modern technologies hinders the ability to provide critical services. Population growth, particularly in urban centers like Monrovia has placed tremendous stress on water resources. Other stressors such as uncontrolled waste disposal, industrial processes, agricultural activities, and mining contribute to decreased water quality. Proper water resource management is essential for combating water issues. Liberia needs integrated approach, including strong policy and coordination among government ministries responsible for managing water resources.

Marine and Coastal Issues

Liberia's coastline stretches for 350 miles along the Atlantic Ocean. The coastal and marine ecosystems in Liberia include lagoons, estuaries, bays, creeks, etc. The marine ecosystem plays a significant ecological role, exerting influence over local processes such as the absorption of atmospheric carbon dioxide. Locally, the marine and coastal areas are home to a wide variety of species including plants, birds, mammals, reptiles, fisheries and insects. The coastal ecosystem in Liberia also provides many economic benefits to society by

supporting industries ranging from fisheries to sustainable tourism. Intensive fishing, shipping, land-based pollution and development, the increasing human population are negatively impacting coastal areas. Liberia coastal cities face severe threat from sea erosion. Uncontrolled beach sand mining for development purposes has endangered coastal cities. The coastal city of Buchanan, in particular, is in critical condition, requiring immediate intervention to mitigate the damage.

Competitive Value Chains and Market linkages

Value chains are undeveloped and markets are inaccessible in Liberia. Rural infrastructure, including roads, is limited and deplorable. Storage, drying, and processing facilities are rare, and food safety and quality control system remain a challenge. Linkages between producers and markets are poor, and farmers lack appropriate information to enable them make prudent marketing decisions. There is a severe limitation of agricultural credit; in 2012, agriculture accounted for only 5% of all commercial bank credit. Financial services are particularly limited in rural communities. Agriculture continues to be undertaken by simple hand tools, and Liberian farmers lack skills and knowledge needed to operate and maintain labour-saving technologies.

There is also very low national and sector capacity for the efficient utilization of new technology and management of agricultural innovations and machinery. Liberia has to urgently rehabilitate and expand its transportation and agricultural infrastructure to enhance access to markets. Under this component, farm-to-market roads are to be rehabilitated and expanded as storage and processing facilities and infrastructures for crops, livestock and fisheries are to be improved. There is an identified need to develop a coastal highway to reduce travel and transport times from Buchanan to Harper en route to Cote d'Ivoire.

Capacity of smallholders and other value chain participants has to be built through development of agribusiness skills and knowledge, dissemination of information, and the use of technology innovations and rural finance/credit. The capacity of the Ministry of Agriculture, relevant ministries and agencies to enforce international commitments is also to be developed, greater use of indigenous agricultural products and foods produced by local producers has to be promoted.

Institutional Development

The institutional development will allow Liberian farmers to be served by efficient and diverse extension services provided by the Ministry of Agriculture, NGOs, the private sector, and others with a focus on transfer of improved production, value addition, and marketing technologies.

There are limited trained staff and resources. The Central Agricultural Research Institute was virtually destroyed by the Liberian civil war, but the Institute is now painfully reinventing its programs and rehabilitating its infrastructure. This provides an opportunity to adapt to the major paradigm shifts seen in developing countries, including emphases on innovation systems, value chains, and development of adaptive research in cooperation with regional institutions.

Small farmers are illiterate and live largely in isolated villages with little or no facilities to receive updated information on agriculture and rural development. Agricultural extension services (nongovernmental organizations [NGOs], private extension, etc.) have to be decentralized and demand-driven. Persistent operational under-funding and conflict have limited the scope and impact of the diverse extension service.

Organizations including Liberian Produce Marketing Corporation, the Liberia Rubber Development Authority, the Cooperative Development Authority, and the Agricultural Cooperative Development Bank, are to be assessed and rehabilitated along the Public-Private-Partnership strategy. Thus, some could be privatized and others strengthened to perform oversight or regulatory role.

Gender equality and women's empowerment

Women have played a major role throughout the history of Liberia. They comprise 54 percent of the labour force in both the formal and informal sectors. In agriculture they constitute the majority of smallholder producers and it is estimated that they produce approximately 60 percent of agricultural products, carry out more than 80 percent of trading activities in the rural areas and are heavily engaged in the artisanal fishing industry, in addition to fulfilling daily household chores.

Yet women remain among the most disadvantaged. They are disproportionately clustered in the least productive sectors, with 90 percent employed in the informal sector or agriculture. Their predominance in the informal economy translates into low productivity, meagre earnings and exposure to exploitation. Illiteracy rates among women aged 15-49 are

particularly high (60 percent) compared to men (30 percent). 42 percent of Liberian women and 18 percent of men have never attended school. In rural areas, literacy rates are staggeringly low at 26 percent, while the gender gap in secondary school attendance is very high, with a net attendance ratio of 6 percent for females. While 19 percent of men have completed secondary school or higher, only 8 percent of women have accomplished the same.

According to the 2007 Liberia Demographic and Health Survey, 48 percent of Liberian women become pregnant by the age of 18. Forty percent of the Liberian women lack sustainable livelihoods, employment skills and suffer from higher rates of malnutrition. Vicious and systematic acts of sexual violence were perpetrated against a significant number of Liberian women throughout the years of conflict. The Liberian women may be empowered through:

- Strengthening coordination and accountability mechanisms for gender equality and women's empowerment
- Capacity building for relevant government agencies and civil society, at various levels, to foster effective engagement and accountability in implementation of gender sensitive policies and programmes
- Increasing women's empowerment through enhancing earning potential, increasing employment opportunities and improving educational achievement

Integrated Cropping / Livestock Farming

Liberia's agriculture is agrarian. The civil war destroyed the agricultural infrastructure and disrupted farming. There was large population displacement, particularly the rural one into refugees' camps. Farms and equipment were abandoned and looted, with livestock either killed or looted by fighters of the civil war. The Central Agriculture Research Institute (CARI), responsible for research activities was also vandalized and destroyed. The Ministry of Agriculture was not spared by the destruction and looting of the civil war. This has created an acute shortage of planting materials and livestock and livestock products in the country.

Integrated cropping and livestock farming is a low cost alternative to increased agricultural productivity and ensuring ecological integrity. This method of farming will further help address the severe food security problem Liberia face which is at crisis proportion in rural areas. With fifty four percent (54%) of the estimated 2.9 million population of Liberia being rural and survive on subsistence agriculture, Integrated Cropping / Livestock Farming method with such potential is therefore desirable

Improved Monitoring of Climate Change

The annual variability of rainfall experienced in Liberia manifests changes in weather and thus in climate. Water resources, agriculture, forestry and fishery etc are vulnerable to changes and variations in the climate. Henceforth, predicting climate change, including regional aspect of analysis of climate variability constitute the primary in the planning and operational stages in these sectors.

Coastal Defense System

The Liberia coastal ecosystem consists of mangrove related vegetation, which serves as nurseries for fisheries and sanctuaries for many marine reptiles, mammals and migratory birds. Also common in the coastal zone are oil palms, raphia, mango and other fruit and ornamental plants. The areas along the coast where erosion is most severe are Monrovia City, (Bushrod Island), Buchanan and Cestos Cities. Actions to control beach erosion around seaports and costal settlements in Liberia are therefore critically important to maintain their viability as sites for potential tourism, recreation and commercial activities.

Chapter – III

AN OVERVIEW OF HORTICULTURE, ANIMAL HUSBANDRY AND FISHERIES SECTORS OF LIBERIA

Horticulture

Horticulture in Liberia was previously dominated by export crops which included rubber, oil palm, coffee, cocoa and citrus. Although these export crops still account for a substantial portion of Liberia's foreign exchange earnings, an increase in other horticulture crops like cassava, cocoa and other root crops, banana, pulses and vegetables is now very evident. The most prevalent methods of cropping are "slash and burn" and shifting cultivation.

Cassava

Introduced into coastal Liberia nearly 400 years ago, Cassava (*Manihot esculenta* Crantz) is second to rice as the most important food crop in Liberia and plays a significant role in the farming system. Together with sweet potato, it supplies the population with more than 25% of their daily caloric intake. Likewise, cassava is, and will remain, an important food security / subsistence crop for smallholders, playing an important role in caloric intake for large number of Liberian households. The shrub makes up 23% of Liberian agricultural GDP. Cassava is well-adapted to growing conditions in Liberia, quite resilient to pests. It grows under almost all conditions and is easily stored in the ground un-harvested until needed.

Cassava grows in most soils, even poor soils in Liberia. As mentioned above, from a food security standpoint, cassava is a critical alternative to rice, ranking second to rice as the most important source of calories in the Liberian diet.

It is grown throughout the country, although the area covered may vary considerably for different counties. The cassava production and consumption is in the southeast and central regions of Liberia among the Bassa, Gio, Grebo, Krahn, Kru and Mano ethnic groups. Cassava is normally left in the ground until it is ready to be sold, eaten, or processed into a more durable form. Besides the roots, the leaves are consumed extensively as vegetables.

Fresh cassava production in Liberia, 2008 – 2013 (in MT)

Year	Production
2008	4,96,290
2009	4,95,300
2010	4,93,000
2011	4,89,270
2012	4,85,190
2013	4,91,810
Average	4,96,296

Most Liberian cassava is processed into various forms for human consumption. Cassava can be ground into farina flour by removing the skin and grinding it in hammer mills or by hand in a traditional mortar. This is after it has been dried, most typically in the sun. Farina is produced throughout the country, especially in Bassa, Bomi and Nimba counties.

As a commercial activity, there may be some opportunity to add value through processing, such as by producing gari, fufu, and dumba for rural and urban markets. For example, a farmers' cooperative associated with the Farmers Union Network in Bomi county is producing Bomi Gari, for sale in supermarkets in Monrovia. However, only fragmented landholdings are dedicated to cassava—on average 0.5 hectares (ha) per farm—and yields are low (on average 4 metric tons [MT] per hectare). These factors have resulted in relatively high raw cassava prices and little investment in cassava processing. Therefore, in the short term, cassava has little prospect for commercialization or value addition that would benefit smallholders.

Whether or not investable, the Central Agricultural Research Institute, Suakoko, Liberia has ongoing breeding, testing, screening, and outreach programs in cassava, and those programs should be supported to the extent possible. With this respect, it is screening many cultivars developed by the International Institute of Tropical Agriculture (IITA).

FAO encourages their use as animal feed. Hence, it is used as animal feed by few commercial pig farmers in the country. However, feeding of cassava leaves, cassava peels and unwanted (thin) tubers to pigs and small ruminants is commonly practiced in the rural areas.

Overall, however, the combination of high transportation costs, low on-farm productivity (around 4 MT/ha), and lack of raw material for even medium-scale processing, suggest that for the time being, cassava will remain a food security crop. That is, a crop important to a household's caloric intake but not produced in sufficient volumes or commanding high enough prices to encourage commercialization and not a cash crop for Liberian farmers.

Issues and Constraints on cassava

- Production of cassava is by traditional technologies, with very low levels of value addition or product development.
- Appropriate knowledge, technical information and advice, and improved planting materials that can facilitate investment in the value chains of this crop are limited.
- Infrastructure for post-harvest management, i.e. handling, storage, processing and transportation are negligible, resulting in relatively high losses, high transaction costs and low returns that render investment in the industry and related enterprises unattractive.
- Industrialization of cassava production and post –harvest value adding is limited and will require investment in hardware, training and promotion.

Cocoa

In Liberia, cocoa is an important cash crop whose export potential remains dormant as a result of 14 years of civil conflict that plagued the country from 1989 to 2003. The civil war resulted in widespread destruction or abandonment of cocoa farms as well as the limited processing infrastructure that existed in the country. The war displaced hundreds of thousands of people and left Liberia's agriculture sector and basic infrastructure in ruins. Today according to the UN some 80 percent of Liberians are jobless.

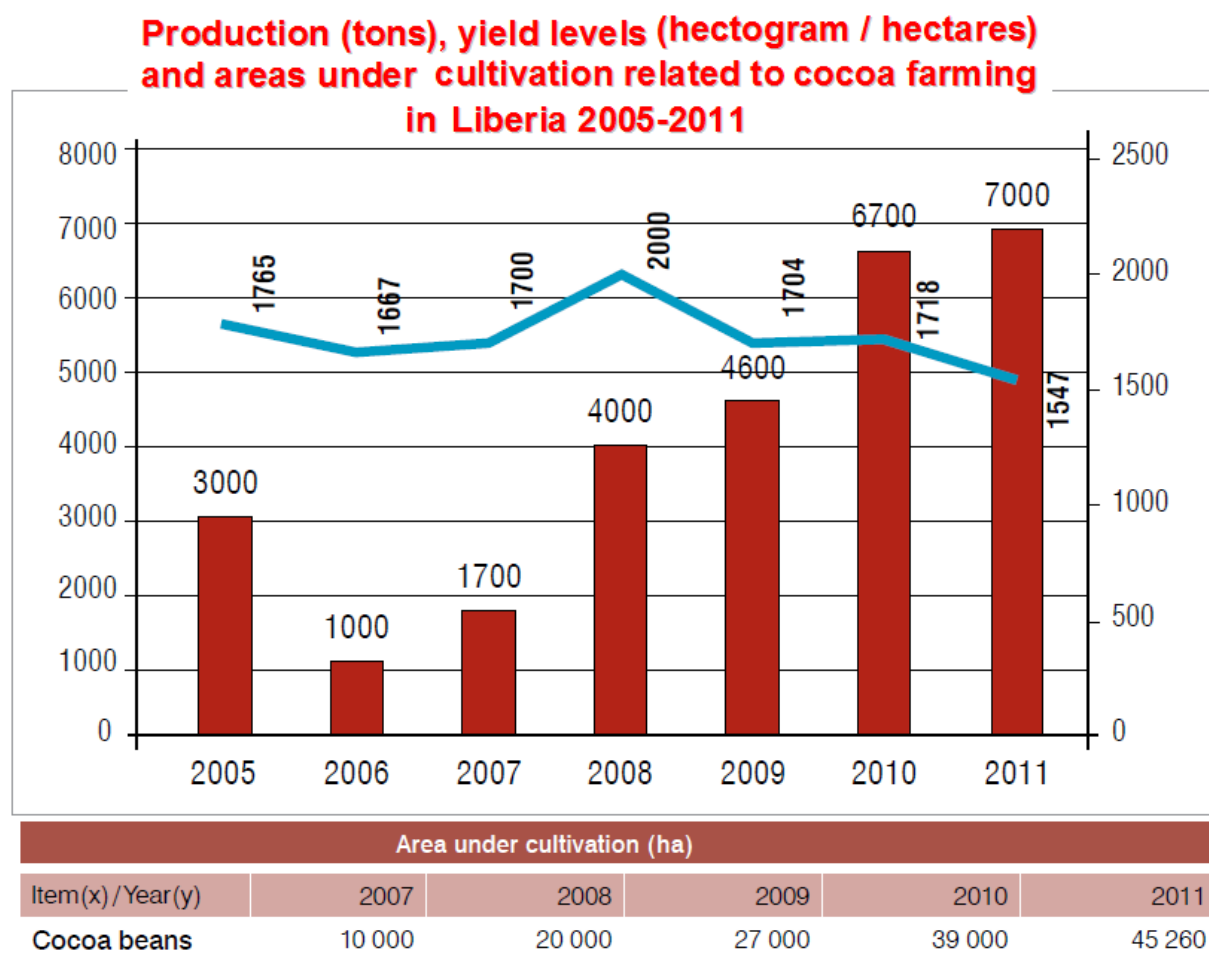
Some farmers are now comeback to their towns and they desperately want to start their cocoa farming as it is the only means of them gaining income to sustain themselves. Nearly 22,000 farmers who produced cocoa before the 1989-2003 war are now returned to their towns and they desperately want to start their cocoa farming as it is the only means of them gaining income to sustain themselves.

A Ministry of Agriculture (MoA) survey published in 2002 noted that the number of cocoa farms operating in 2001 had dropped to 38% of the pre-war level (1988), indicating the widespread impact. Since the end of the conflict in 2003 the government has initiated steps to

resuscitate the cocoa sector in a bid to realize the potential offered by the sector for both export earnings and jobs.

Cocoa production in Liberia has exhibited a gradual increase since 2005, although yield levels are going down – indicating an increase in area under cocoa cultivation. As per 2005 statistics, cocoa production in Liberia was accounted for 5.1 percent of GDP.

The following figure indicates the production levels in tons (bar graph) and yield levels (line graph on secondary axis) in hectogram/hectares.



Three counties –Bong, Nimba, and Lofa– make up 90% of total cocoa production, and 80% of the employment generated by the sector. All three counties share a border with Guinea, while Nimba shares a border with Côte d'Ivoire and Lofa shares a border with Sierra Leone. The following figure indicates the main geographical regions of cocoa cultivation. The cocoa group primarily grows well in interior counties with slightly higher altitudes, such as Grand Gedeh, River Gee, Lofa, and Gbarpolu.

Major cultivation areas of cocoa in Liberia



In Liberia, the cocoa sector is composed of approximately 30,000 smallholders, with average holding sizes of 1-3 ha. The cocoa sector accounts for as much as 12.6% of total employment in the agriculture sector. Cocoa farmers, who make up a significant portion of cash crop production, are some of the poorest and most food insecure populations in Liberia.

In some areas of Liberia cocoa trees are being cut and burned for charcoal. If farmers are working on their cocoa plantations, replanting trees and cultivating cocoa, people would not be cutting and burning cocoa trees.

In spite of relatively favourable market access conditions, the Liberian cocoa export value chain is affected by constraints so severe they have prevented it from meeting the requirements of international markets.

On the supply side, the absence of a well-functioning inputs market has led to a high dependency on imports and increased operating costs. The cocoa tree stock in the country is largely dilapidated and old. As is the case with other agricultural sectors, farming equipment is in short supply. Technological and mechanization levels are very low. Other important supply-

side weaknesses include an impoverished and outdated human capital base, and weak organization levels among sector stakeholders.

The sector faces significant challenges in terms of the business environment and institutional support. As in the case of other sectors, the trade support network of the cocoa sector is weak. The extension services branch of the Ministry of Agriculture has been struggling to maintain a technical presence in the field, due to which best practices and technical innovations have been slow to gain ground.

There is significant progress to be made in terms of building a global brand for Liberian cocoa that not only builds upon high levels of supply consistency and quality but is also identified through a brand of its own in international target markets.

Issues and Constraints on cocoa

- Most tree crops are old, overgrown, and of outdated varieties; they require urgent rehabilitation and replanting.
- Small holders and commercial farmers of tree crops suffer from inadequate output market and public goods and services to rehabilitate and promote sustainable production.
- Liberia is a price-taker in the world market for tree crops commodities and a cyclical decline in agricultural commodity prices increases the vulnerability of the country and reduces farmers' real incomes.
- Illegal cross-border trade of cocoa and coffee and, to some degree, palm oil, has reduced the contribution of these commodities to the national economy.
- LPMC's statutory monopoly prevents entry into the market and farmer access to benefits of competition.

Oil palm

Liberia had a very important oil palm sector with both private and state plantations which, before the war, could compete with other African countries such as Ivory Coast, Ghana and Nigeria. Although it is difficult to establish with certainty the total planted acreage of oil palm plantations before the civil unrest, which might have been around 27,000 Ha, the total land allocated to the various operators in the Oil Palm Sector for exploitation was estimated at 50,000 Ha. Liberia also produced between 135,000 to 170,000MT of Crude Palm Oil (CPO) before the war.

Today, the country produces only 30,00MT and had to import 7000MT for domestic consumption in 2006 (IFC, 2008), moving Liberia from being a CPO exporter to a net importer. There are about 27,000 hectares of oil palm plantations owned by Parastatals (LPMC, LPPC and DOPC). Smallholder oil palm plantations are popular with Liberian farmers but most of the current tree stocks were planted during the civil war years.

Issues and Constraints on oil palm

- Majority of the palm trees are old and of outdated varieties. As a matter of urgency, there is a need to rehabilitate existing plantations and introduce newer varieties.
- Actors in the inputs markets are inadequate and insufficient to address needs in the Oil Palm sector.
- Value addition is limited to primary processing into Crude Palm Oil.
- Most of the palm plantations in the past were under big concessions with very little small holder, private involvement.
- Lack of proper management on plantations has led to poor quality in production and eventually to a discounted price of Liberia's Palm Oil on the world market.

Fruits and vegetables

Vegetables (exotic and local) are grown under nearly all farming systems including the swamps during the dry season. Urban and peri-urban vegetable production is also practiced albeit on a limited scale, taking advantage of the ready market in the urban centers. There is great potential for expanding vegetables, mangoes, and avocados production in Liberia because of available land, and favorable climate and domestic resource costs for the crops. Fruits are produced throughout the country although not in organized manner for markets. Their cultivation, as with vegetables, allows for pro-poor growth and productive employment, especially for women and youth. There is also scope for increasing production and productivity, including reducing post harvest loss.

Issues and Constraints on fruits and vegetables

- Institutional and human capacity to guide and support the development of the horticulture sub sector is extremely limited
- Lack of organized availability of essential inputs such as seeds and other planting materials, fertilizer and pesticides; transport and appropriate handling facilities; and appropriate communal storage facilities

- Low investment capacities of the small holders who operate in the sub-sector
- Locally produced commodities are not competitive with external products. Despite the country's huge potential to produce these commodities, large volumes of vegetables and fruits are currently imported from neighboring such as Guinea and Cote d'Ivoire, and from distant economies of Europe, USA or the Middle East.
- Low competitiveness of the products resulting from high domestic resource costs and their low quality, and unmanaged pests and diseases
- No reliable systems of market information to enable producers and their organizations to be competitive in the industry
- Storage facilities to handle perishable vegetables and fruits are mostly ground floor spaces in verandas of houses, rickety baskets or damaged wooden or plastic boxes. Processing and preservation technologies are low output, with far less quality products. Low competitiveness of the products resulting from high domestic resource costs and their low quality, and unmanaged pests and diseases;
- No reliable systems of market information to enable producers and their organizations to be competitive in the industry; and • Storage facilities to handle perishable vegetables and fruits are mostly ground floor spaces in verandas of houses, rickety baskets or damaged wooden or plastic boxes. Processing and preservation technologies are low output, with far less quality products.

Animal husbandry

Livestock is a major source of many valuable products and by-products (meat, milk, eggs, leather etc). The livestock sector contributes to food security sustainable agriculture by converting forages and crop residues into organic fertilizers and by providing manure for bio-gas. It also constitutes inflation free investment channel, while fulfilling cultural roles particularly throughout rural Liberia. Major livestock product chains are the cattle meat, milk, skin, poultry, swine and the animal health industries. There was also a large scale domestic poultry sector prior to Liberia's civil crisis, suggesting a scope for expansion in the near future. Nevertheless, domestic livestock production falls far short of demand, and import of meat and live animals is substantial. An estimated 26,000 heads of live cattle and 15,000-16,000 of live sheep and goats (estimated to equate to respectively, 3000 metric tons and 312 metric tons) were imported from neighboring countries in 2005/2006. This does not account for frozen meat

imported by supermarkets in Monrovia which is populated with third or more of the country total populace. The livestock sector is labor intensive, but the value chains offer a potential source 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.

Issues and Constraints on animal husbandry

- Livestock regulation is characterized largely by out-dated legislations (regulation and operational rules) and there is absence of adequate policy measures to boost the sector, help monitor, and coordinate various activities, and promote effective reduction of environmental, animal and human health threats
- While Liberia is still dealing largely with out-dated legislation, sector regulation at the regional and international levels is rapidly changing, restricting the country from applying the modern technical and zoo-sanitary standards that ensure safety and quality
- The weak institutional capacities for planning and extension make it difficult to disseminate information and provide adequate service delivery. Thus little is known of the incidence of animal diseases in Liberia and only few resources are available to support public awareness efforts in animal health and food safety issues
- Other limitations to the development of sector include weak livestock farmers' knowledge and skills, a lack of adequate infrastructure (Abattoirs, Cold chains for product development, slaughtering, storage, and distribution of livestock products) useful for processing and marketing livestock products and market information
- Absence of credit facilities to acquire breeding stocks and other necessary inputs is slowing down expected and desired rapid growth in the livestock sector
- Like the veterinary services and laboratories, technology transfer centers such as the seven ranches totaling more than 2,025 ha are dilapidated and presently not functioning. As such, transboundary animal diseases and zoo-sanitary inspectorate charged with import and export control of animal and animal products does not currently operate properly
- Land tenure system, and water and pasture resources lack proper arrangements to allocate land, provide ownership of grazing areas or to allow access and usage according to traditional or legal procedure

- 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
- A low genetic potential of livestock coupled with limited supply of livestock has led to poor production in the livestock industry.
- Although major disease outbreaks have not been reported in recent years, it is recognized that livestock diseases are among the constraints that present a big challenge to the development the livestock industry.

Despite the numerous constraints, opportunities exist for the sector to increase its contribution to the national economy, to food security and to rural household livelihood. These opportunities, not limited to diverse livestock resources in ECOWAS countries, include a pasture land estimated at least to 2 million hectares, diverse and favorable climate and agro-ecological zones, the potential for domestic markets, relatively low Labour cost and favorable macroeconomic policies in the region. More importantly, many regulatory and institutional reforms are underway.

Fisheries

The coastline and continental shelf of Liberia provide an area of about 20,000 km² of fishing grounds. Liberia also has approximately 1810.125 km of rivers that transverse the country, and countless perennial swamps and inland water bodies with enormous potential for increased production of inland capture fisheries and aquaculture. Over 80 percent of the population directly depends on fish for animal protein supply.

The sub-sector creates jobs and income for a substantial number of urban and rural inhabitants particularly youth and women. The Government is fully aware of the vast potential of the fisheries sub-sector to make significant contribution to the rehabilitation and recovery of the country's economy in the short, medium and long-term. Consequently, there is an urgent need to improve fish production, preservation, distribution and marketing through improved fisheries governance guided by principles of the Code of Conduct for Responsible Fisheries (CCFR).

Artisanal Fishery

Artisanal fishery provides a means of livelihood to approximately 33, 000 full-time fishers and processors in the coastal counties. Liberian participation is about 80% with females

accounting for about 60% (BNF 2004). Artisanal fishery operators are mainly indigenous Kru fishers and their families, and Fanti and Popoe fishers and their families who migrated to Liberia from Benin, Ghana and Cote D'Ivoire. A recent development is the presence of Gambian and Senegalese fishermen in Cape Mount County. Malian and Fulani fishers also operate in inland areas. There are an estimated 3,473 canoes operating in the marine waters of Liberia with only 8% motorized (BNF 2004).

Industrial Fishery

Industrial fishery is a high capital investment undertaking involving fishing trawlers and cold storage facilities. There are currently fourteen (14) fishing companies operating in Liberia: 6 companies are exclusively engaged in the importation of frozen fish from the high seas; and 8 companies are engaged in fish catching activities, operating 27 fishing vessels with a combined Gross Registered Tonnage (GRT) of approximately 4,000 tons. Fishing vessels operating in Liberian waters range in size from 91 GRT Chinese pair trawlers (ice carriers), to 251GRT fishing trawlers with onboard freezing, processing and storage facilities. Industrial fishing vessels land their catches at the fishing pier in the Free Port of Monrovia. The fishing vessels that fish in Liberian waters are required to pay taxes while imported fish are tax exempt. The employment of Liberian nationals in industrial fisheries is estimated at 75%, representing 28 % of total employment in the fisheries sub-sector. Foreign nationals presently dominate the industrial fishery; they own all fishing companies and occupy the senior management positions.

Inland Fishery and Aquaculture

Liberia is blessed with six major rivers which flow from the Fouta Djallon Mountains of Guinea. The Lofa, St. Paul, St. John and Cestos Rivers are within the country. The Mano River forms the border with Sierra Leone and the Cavalla River runs along the southern border with Cote d'Ivoire. In total, the country has some 1,800 km of rivers, nearly all of which are shallow, rocky and not navigable. There are also large swamp areas and numerous coastal lagoons, including Lake Piso, one of West Africa's larger lagoons. The number of people engaged in inland capture fisheries is not known, so is the volume and value of production. However, it is an important seasonal subsistence activity for riverside communities who use mainly traditional fishing gears and traps.

Fish farming in Liberia is largely subsistent. There are about 3,581 fish farmers nationwide engaged in some form of fish culture on part-time basis. 449 ponds of various sizes

with a total area of 17.47 hectares are distributed in 159 communities around the country. Most of these ponds have been dormant since 1990 and are now being rehabilitated, although the process of rehabilitation is slow and laborious. The rehabilitation works are providing employment for women and youths (including ex-combatants). Presently, there are 704 women participating in aquaculture.

Issues and constraints on fisheries

- Weak institutional capacities for planning, advice, regulation and monitoring (e.g. unclear fishery regulations and rules of operation; low capacity at the Bureau of National Fisheries; non operational Monitoring, Control and Surveillance system)
- Lack of basic fisheries infrastructure; no fisheries harbors to facilitate discharge of cargo and supply of essential commodities, refueling, trans-shipment and for dry-docking; very limited or costly facilities for storage, processing and handling.
- High operational costs and low volume, low quality products from artisanal fisheries (Primitive fish processing methods limited mainly to fish smoking; high costs of fishing inputs and lack of a credit scheme; few motorized boats and low output fishing gears; interference from illegal industrial fishing fleet).
- Highly subsistence agriculture that needs to be commercialized level.
- Large presence of illegal fishing entities in Liberia's EEZ engaged in illicit fishing and transshipments of catches on the high seas resulting to gross underreporting.
- Value chains for fish and fish products remain largely limited to freezing (for industrial fishing), smoking, salting and fermentation for artisanal and aquaculture fishing.

Chapter – IV

PRESENT STATUS AND CHALLENGES IN AGRICULTURAL EXTENSION, MARKETING, INSURANCE, AGRICULTURE MECHANIZATION, FOOD PROCESSING, INFRASTRUCTURE AND ANY OTHER RELEVANT ISSUES IN LIBERIA

Agricultural Extension

Agricultural Extension in Liberia is organized in a two tier system:

- a) The Rubber Extension Service for Liberian commercial farmers organized by the concessions and the Rubber Planters Association. It employs about 50 extension officers.
- b) The extension service of the Department of Agriculture, which has been operating since 1960, is in charge of the traditional farmers. Beside the Directorate at the Department level, it has a county agent in each of the 9 counties, and a total of 7 assistant county agents and 76 extension aids in the country. Moreover, 10 rural youth aids and 24 home economic aids work in their particular fields.

While the county agents have a bachelor degree in agriculture and sometimes foreign training, the training of the aids is of a rather low standard. Some are graduates of the Booker Washington Institute, while others just completed primary school, and some are even illiterate. The average duration of schooling of the aids is 8,7 years.

A county agent has a pick-up at his disposal, while the aids have to travel by bicycle or on foot to reach the farmers. Equipment to help the extension staff is almost nonexistent and, of the whole budget of the extension service, 84 per cent is used for salaries, while only 16 per cent remains for support.

The rather low average density of one county agent for 16,700 and one aid for 2,000 farmers makes intensive work impossible. A low work discipline and the absence of a well defined extension programme make the operations rather diffuse. In the counties visited, the activities so far were limited to service for 60 100 usually larger farmers who requested such assistance like provision of planting material and mechanical land levelling. The bulk of the traditional farmers receive no assistance at all from the extension service.

In order to concentrate its efforts, the department recently set up a scheme to specialize extension work and use the aids for one subject only, like rice, tree crops, livestock, etc. This will make in service training easier and help to overcome the training deficiencies of the lower

extension staff. A serious hindrance for extension work is the lack of feedback from agricultural research.

If an attempt is to be made at developing agriculture, a complete change in the extension service seems to be necessary. It would include change in the quality of personnel, development of a sound extension programme and a change from work with single peasants to mass extension work with organized groups of farmers.

Liberia's Agricultural Extension system is pluralistic extension system that was working before the war but was brought down by the civil war that lasted 15 years. Extension services in Liberia are provided by govt, and NGOs. The pluralistic extension system in Liberia includes various extension activities.

The 'extension services consist of i) an input vendor advising a farmer about what seed to plant, ii) use of mass media eg television, iii) a supermarket advising traders about what standards are required for the vegetables they purchase or a farmer organization lobbying for research that reflects the demands of its members for new technologies. These three entities approach to extension and programs delivery to farmers have not strengthened the capacity of smallholder farmers to increase agricultural production in Liberia.

The Ministry of Agriculture is also providing Technical backstopping services for the field extension workers .Despite the practice of pluralistic Agricultural extension system in Liberia, farmers still rely on traditional agricultural knowledge which in many cases does not lead to increase in production and productivity .

The Ministry of Agriculture is in the process of building County Agricultural Extension Centers consisting of offices, training centers, guest quarters, and active demonstration farms in all the 15 counties.

Ministry of Agriculture has begun identifying innovative farmers in each County that are used as teaching tool to demonstrate the benefits of intensifying and/or diversifying the crop/livestock/ fisheries production systems. Instead of providing handouts, some international NGOs are following a different strategies in providing advisory services to farmers.

Small farmers in Liberia live largely in isolated villages with negligible facilities to receive updated information on agriculture and rural development, and many are illiterate. An extension service system is necessary to disseminate, in such rural settings, new technologies, innovations and information. Recent extension approaches such as agricultural advisory

services and the Farmers Field School (FFS) have facilitated greatly farmers' involvement and public-private partnerships in ensuring that technology dissemination is demand-driven, client-oriented, and farmer-led.

Challenges

- Agricultural extension services in the past have been centrally controlled and supply-driven with little attention to local knowledge, demands and participation.
- Shortage of staff, inadequate funding and lack of new technologies have limited the scope and impact of extension activities.
- Lack of market, high post harvest losses, high cost of inputs, lack of value addition and the lack of access to suitable land have undermined the effectiveness of extension
- NGOs provide extension services but these are largely limited to the distribution of seeds and hand tools, with little or no contribution to build the capacities of beneficiaries.
- Private sector involvement in extension has always been minimal.
- Inadequate capacity of farmer organizations limit the extent to which such organizations could be used in reaching farmers, especially women farmers, with technical assistance and services.
- Negligible involvement of commercial entities in extension services

Marketing

Liberian agriculture has four marketing channels for its different products.

a. Concessions

All the rubber product is sold to one of the four factories belonging to three concessions. The concessions fix their buying price monthly according to the New York price of the previous month, so that the price for Liberian farmers follows the world market price with a slight lag.

Liberia has an official rubber price support scheme which fixes a minimum price. If the factory price is lower, the government advances the difference, but this advance must be repaid if a fixed maximum price is exceeded. Transportation costs are an important factor determining the actual proceeds of the farmers. While the road system as such is of minor importance here rubber farms are usually established only where roads exist. The distance to the factory determines transportation costs. Small producers are at a disadvantage because they have, to use taxis to transport their limited quantities and the transport price of taxis is 4 5 times that of trucks,

b. Liberia Produce Marketing Corporation (LPMC)

The LPMC is a marketing board which has the monopoly of all agricultural exports except rubber. The shares of the corporation belong, to equal parts, to the Liberian Government and to the East Asiatic Company which supplies the management and exports the crops on a commission basis. Every month, the LPMC fixes standard buying prices for the whole country. At this price, the six agents appointed by the LPMC buy coffee, cocoa, palm kernel and piassava. For their services, the agents receive a fixed commission from the LPMC which also pays for transport, bags, etc.. The LPMC tries to keep the prices at a constant level and has built up a reserve fund which can be used to compensate fluctuations of the world market price.

The peasants usually sell to Lebanese traders who again sell to sub agents and these deliver the products to the agents. As the traders know the agent's buying price, they have to calculate their prices so as to cover not only their handling expenses and profits, but also the losses due to drying and deterioration. Peasants may be aware of the agent's buying prices as these are announced on the radio, but the knowledge is often of little value to them since most of them have a vague notion of the meaning of the various units of weights and measures used. Profiteering on the part of the traders and unawareness of the marketing costs on the part of the peasants cause great distrust in local marketing. LPMC buys upgraded products and does the cleaning and grading on its own premises. It maintains warehouses, coffeemills, palms kernel crackers, etc

To promote agriculture, the LPMC established a model coffee estate, distributed high yielding planting material from its nurseries, sent 12 agriculturists abroad for training in tree crop cultivation and launched a rice project. 4 caterpillars and a low loader have also been purchased for clearing land for future tree crops. The establishment of a network of rice purchasing agents and milling facilities at strategic points of production is under way.

The LPMC was quite successful in reducing the price fluctuations of export crops and in organizing a marketing system within the country. This had undoubtedly a stimulating effect on the production. Unfortunately, besides appointing six agents, the LPMC did nothing to create an intensive marketing network and arrange for local grading. The prices paid by the LPMC were attractive for the farmers and even for farmers of neighbouring countries, but still rather low when compared with the selling price of the LPMC. To date, its high profits have not been ploughed back into agriculture but represent a tax on the agricultural producer.

c. Lebanese Traders

To a large extent, the retail market is in the hands of Lebanese traders. They replaced the Liberian traders who often had to give up business because family members did not repay advances. Little is known about quantities marketed and marketing procedures of the Lebanese traders. The main crops are rice, cassava, fruits, oil, sweet potatoes and peppers. The process of price formulation is often disguised because unknown interest rates for credits granted are included a situation which offers wide scope for cheating the producers.

d. Women "making market"

At the local level, women "making market" play an important role. Numerous markets throughout the country are held either daily or on certain days of the week. The markets are organized and controlled by the government, and the marketing process lies completely in the hands of women. One group consists of the "target marketers", i. e. women from the families of traditional farmers who occasionally sell surpluses to get cash to purchase certain items they need. Another group is that of the professional traders, women who buy products for resale in order to earn an income. In both cases, the daily turnover and the amount of products in stock are often extremely limited. "Making market" is not only an occupation to earn an income, but also a way of life.

Access to markets is one of the major prerequisites to stimulate and underpin the transition from low-production subsistence farming to high-productivity commercial production. Further economic benefits are realized when complementarities and interdependence between agriculture and agribusiness are forged through promoting forward and backward linkages. In view of the limited size of the domestic market, Liberia should also take advantage of the opportunities presented by regional and international markets to achieve significant growth in the sector through agri-business.

Challenges

- Heavy presence of parastatals in the value chain operations of cash crops prior to the war, and destruction of infrastructure (roads, railways and physical market places) have all resulted in widespread market failures as reflected in high transportation and transaction costs, and low competition of the value chains.
- Only a handful of medium-scale produce buyers exist, and they lack either the financial capacity and/or necessary transport facilities to buy larger quantities of farmers' produce.

The few large buyers are prevented from participating in transportation services by prevailing legislations.

- Over seventy five percent of the villages in producing areas are not accessible by vehicles and many other areas become inaccessible during the rainy season.
- Inadequate storage facilities, coupled with poor handling and poor post-harvest technologies make post-harvest losses (excluding pre-harvest losses) exceptionally high for many farmers; for rice and cassava, losses amount to about 25% of production and as much as 45% in vegetables.
- Because of bad roads and insufficient number of produce traders, considerable informal cross-border trade exists between Liberia and neighboring countries to the detriment of small producers.
- The Liberia Market Association (LMA) which was established as a semi-autonomous government institution with the mandate to manage markets has generally failed to meet its obligations despite extracting fees from traders.

Insurance

The Global Food Security Response Liberia Rice Study undertaken by the United States Agency for International Development in 2009 reported that in Liberia, insurance companies are active in the market, but offer only basic products. Crop production insurance, warehoused crop insurance and other types of agribusiness insurance products are not available. If such products were available, it is unclear if the market could support them as there are only a few fully commercial agribusinesses and only one in the rice sector (the Libyan-supported commercial rice concession ADA). Over the longer term, as commercial production, milling and storage scale up, these types of products will become important. Liquidity in the insurance industry is likely to be high and represents a possible near-term source of capital for commercial ventures.

According to the report on “Government Support to Agricultural Insurance - Challenges and Options for Developing Countries - 2010” of the International Bank for Reconstruction and Development / The World Bank it was observed that no indication was noticed in Liberia (a country fell under low-income group) for the Agricultural insurance offered by the Government during the year 2008.

The Africa Competitiveness Report (2015) of the African Development Bank stated that the lack of economic institutions in Africa, especially in the insurance sectors, has hampered farmers' ability to develop. Moreover, most of the countries lack tailored insurance products. This means that adverse shocks, such as droughts, often lead to famine because farmers are unprepared to respond. In this context, micro-insurance is emerging as a valuable instrument for protecting farmers.

Challenges

- The provision of crop insurance offers many benefits, but designing a successful program in developing country like Liberia, is problematic.
- Crop insurance in developed countries is heavily funded through government subsidies, and not fiscally viable to developing countries facing decisions between building roads and schools or subsidizing insurance.
- There are significant demographic differences within farming communities between developed and developing countries. In developed countries, agricultural communities are a smaller proportion of the total population (2 % in the United States) and require fewer resources to design and administer programs. In contrast, agricultural producers in developing countries can account for over 30% of the population (60 – 70% in Liberia) and cause a substantial administrative burden.
- Differences in institutional strength between developed and developing countries are another factor in determining feasibility of crop insurance programs, as many developing countries lack the legal infrastructure and data collection efforts necessary to implement agricultural insurance programs. The differences in rural demographics and institutional strengths between industrialized and developing countries present definite challenges in transferring insurance models from rich to poor countries.

Agriculture mechanization

The main power source for agricultural operations in nearly all the production areas in Liberia is labour intensive using simple hand tools. But agricultural operations from land preparation to post harvest or value addition can be supported by mechanization, with resulting benefits of reduction in drudgery and increase in labor productivity. Simple equipment such as power tillers; corn harvesters, mechanized cassava graters, mechanized cereal and coffee

hullers, and oil palm mills have been proven to have a significant impact on production, productivity and competitiveness.

Challenges

- Labor available for agricultural production is declining and technology has not improved beyond the hoe and cutlass to make the necessary substitution.
- Farm machines and equipment suitable to local conditions are lacking.
- High cost of farm machinery and rising fuel price, low purchasing power of farmers, and small farm sizes and fragmented plots have constrained the use of farm power.
- There are no guidelines for use of mechanical cultivation or processing in the agriculture sector.
- There is no unit at MOA with oversight responsibility for policy, planning, coordination and monitoring of agricultural mechanization.
- Available machines are inefficiently utilized due to lack of skills, importation of inappropriate brands, lack of standardization and ready availability of spare parts, and acute shortage of trained personnel to provide repair and routine maintenance services.

Food Processing

Liberia is blessed with ample fertile soils and ample rainfall; however it imports substantial quantities of its staple food, including rice which accounts for over 10% of its imports with over US\$20 million. The total value of food imported annually is over 30 US\$ million. This food could be grown locally.

It is time for Liberian people “to grow what they eat and eat what they grow”. Once, Liberians produce their food in plenty, there comes the thinking of food processing and value addition. At present, the Liberians give poor attention to these and this situation presents huge opportunities available in the food processing sector.

Rice Consumption in Liberia, 2007

	Percentage of Households Consuming Rice		Average Consumption for all Households (estimated and converted to US\$ for 2007) ⁴		
	Domestic Rice	Imported Rice	Domestic Rice	Imported Rice	Total
Rural	80%	79.2%	\$216	\$172	\$388
Urban	17.1%	97.3%	\$26	\$305	\$331

Source: Tsimpo, Clarence and Quentin T. Wodon. “Rice Prices and Poverty in Liberia.” World Bank Policy Research Working Paper No. 4742. World Bank, 2008; from 2007 Core Welfare Indicators Questionnaire in Liberia Survey

Liberia imports 90% of the rice consumed. To be import hundreds of thousands of metric tons of rice each year is not only a waste of money but it traps Liberia into poverty. Hence, an end has to be made to this unfortunate situation by establishing rice mills. Moreover, rice milling is a profitable activity in rural areas.

Cassava is a crop of great potential, first as a staple food; and second as a big potential export crop, because of its multi-purposes in glue, starch, medical care, animal feed and more. So, small scale industries may be initiated to produce cassava flour, Gari, fufu. Many Liberian farmers are able to produce large quantities of cassava as raw materials. By processing cassava into flour, gari and fufu, etc, cassava could be preserved and sold with an added value. Simple technology and small machines are now available to process cassava. These technologies will provide cassava food products of high quality at good prices.

In Liberia, the transformation and processing activities for the cocoa are limited to fermentation and drying. So, advanced technologies in cocoa processing may be started.

The production of palm kernel oil and cake is a value-adding agro-processing opportunity in Liberia that can be carried out profitably on a small scale. By using palm kernels, smallholder oil palm producers will have another cash generating product to sell, and the oil extraction process produces a much-needed, low-cost livestock and fish feed ingredient.

There is no single unit producing fruits products in Liberia. Despite tremendous potential to produce fruits such as mangoes and pineapples, the fruit juices, jams and marmalades are totally imported. Moreover, the prices of fresh fruits on the market are very low; subsequently fruits products produced locally can be very competitive. So, there is an urgent need of processing fruits locally to make juices and jam.

With Atlantic coastline of 570 km and a continental shelf averaging 34 km in width, Liberia offers some 20,000 sq km of fishing ground. The total product of the fishery sector was estimated to be about 7,000 tons in 2005, but the potential is estimated over 50,000 tons. Currently, the fishing equipment and processing material are obsolete in many fisheries communities. The fishing is one of the most lucrative activities. Hence, processing and value addition in fisheries sector may be thought of.

The urban population is growing rapidly and adequate foods are needed to meet the food demand. In Monrovia, there are few places where good quality bread is available. The demand of bread is huge. Therefore, value addition of wheat could be a new venture.

In urban areas of Liberia, processing is limited to the drying of some vegetables and is done in a very basic fashion, only for household consumption. The most common dried vegetable is pepper followed by bitter ball and okra.

The process for drying consists of placing vegetables on a metal sheet. A majority of the farmers do not sell their own produce, those who, mostly women, merchandise fresh vegetables, ornamental plants and small livestock usually at the farm gate. Cabbage, lettuce, corn, okra, pepper, eggplant and tomato are most often sold, approximately 70 percent of production (WHH and CARE survey, 2010).

Restaurants, hotels, mining companies, supermarkets and hospitals provide a major expanding outlet for urban agriculture produce, especially poultry and exotic vegetables, but adequate storage facilities and post-harvest technologies (hence access to finance) are needed. NGOs like ACDI-VOCA, CARE Liberia, FED and Welthungerhilfe in cooperation with Ministry of Agriculture are supporting farmers to add value to their production by developing indigenous incentive structures, improving production and marketing capacity and connecting farmers to hotels, major restaurants, and supermarkets, or developing specific farmers markets in Greater Monrovia, Gbarnga and Tubmanburg.

Therefore, investments in agriculture storage and food processing facilities in the short term will concentrate on preserving the foods that are already produced by farmers, so that food products will be available throughout the year. In the long term, emphasis could be placed on large farm cultivations, storage and processing facilities for both domestic and export consumption.

Challenges

- Infrastructure for post-harvest management, i.e. handling, storage, processing and transportation for cassava are negligible, resulting in relatively high losses, high transaction costs and low returns that render investment in the industry and related enterprises unattractive.
- Infrastructures for post-harvest management of food crops, including handling, storage, processing and transportation are negligible, resulting in high transaction costs and low returns, thus making investments in such enterprises unattractive.

- Storage facilities to handle perishable vegetables and fruits are mostly ground floor spaces in verandas of houses, rickety baskets or damaged wooden or plastic boxes. Processing and preservation technologies are low output, with far less quality products.
- Value addition of rubber is limited to primary processing of latex and coagulum, except for rubber wood for which a processing facility was recently established.
- Value addition is limited to primary processing into Crude Palm Oil.
- Lack of adequate infrastructure (Abattoirs, Cold chains for product development, slaughtering, storage, and distribution of livestock products) useful for processing livestock products.
- Lack of basic fisheries infrastructure; very limited or costly facilities for storage, processing and handling.
- There are no guidelines for use of processing in the agriculture sector.
- Existing market infrastructure is without storage, processing and related facilities.

Infrastructure

Infrastructure is exceptionally weak in Liberia. The poor condition or nonexistence of roads is frequently cited as a constraint to the flow of rice and other commodities—both for moving imported rice from Monrovia to the countryside and for transporting domestic production in rural areas to local regional markets. There is a private train service operated by Geoservices Inc. that runs between Monrovia and Bong Mines in Bong County. The service runs three days a week and includes both passengers and cargo. For a fixed price of 50 LBD (\$0.75), a 50 kg sack of rice can be transported anywhere along the line.

There are not enough mills or adequate warehouses in the country, and those that do exist are either no longer in operation or operate vastly under capacity. The FAO, WFP and other donors have introduced portable mills randomly in the countryside, but these are community focused and not ideally located for commercial rice production. To encourage domestic production and improve agro-processing (milling) by cooperatives, the WFP has launched a Purchase for Progress program to be implemented in the counties of Lofa, Nimba and Bong. The plan is to guarantee the purchase of rice from local farmers and provide them with milling and storage services.

The most common method of milling in rural areas is either by manual pounding or with small, portable milling machines donated by NGOs. There are no milling facilities for rice in

Monrovia, but there is some private-sector interest in investing in mills, which could be used not only for the milling of rice but also the polishing of older rice to improve appearance and retain market value. Overall, there are currently no reliable milling services in Liberia, and the lack of a dependable electricity supply needs to be addressed before further investment in new milling infrastructure can be expected to occur.

Infrastructure such as roads, market structures, handling, processing, storage facilities, irrigation systems, water supplies and communications networks are essential to stimulate increased production and productivity, and enhance the competitiveness of the sector.

Challenges

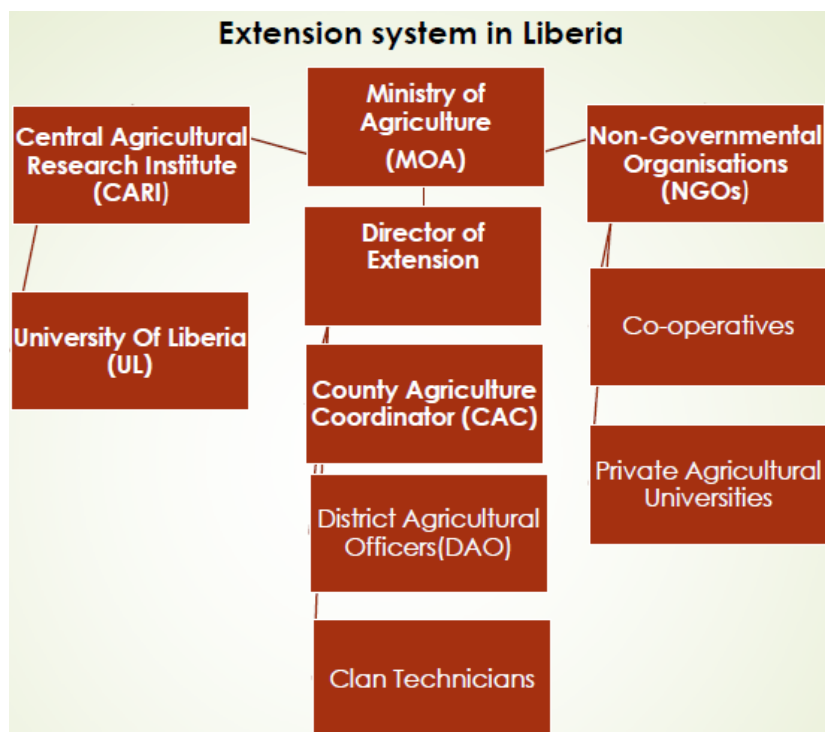
- The road network is generally limited and poor; during the rainy season most roads are get flooded or bridges are destroyed and as such many production areas are cut off from trunk roads and markets.
- Only about 4.6 % of Liberian villages have access to functional markets.
- Access to and movement from market places is cumbersome and disorganized; a great amount of portage is required to carry the goods from trucks to stalls, thus increasing market costs is contributing to produce damage due to multiple handling; transport costs are relatively very high, discouraging the small holders to carry their wares to high value markets.
- Absence of large storage facilities in production or assembly areas causes many farmers to produce less for fear of losing their produce to pests, theft or weather damage, and eventual reduction in quality for perishables.
- Physical markets for farm produce are characterized by decrepit infrastructure, lack of suitable commodity specific storage facilities, unhygienic premises and over-crowding.
- Infrastructure for landing and hygienic handling of fish from artisanal fisheries and storage at the landing sites are negligible to non-existent. In addition, supplies of hatcheries for poultry and structures for aquaculture services are non-existent.

Chapter – V

STATUS OF AGRICULTURAL EXTENSION AND RESEARCH SYSTEM IN LIBERIA **Agricultural Extension**

Agricultural Extension system in Liberia finds itself in a transition period as Liberia moves from the period of post-war relief and rehabilitation to an environment of development and growth. One of the four pillars of the country's overall poverty reduction strategy is rebuilding infrastructure and providing basic services to a population including people economically active in agriculture.

Small farmers in Liberia live largely in isolated villages with negligible facilities to receive updated information on agriculture and rural development, and many are illiterate. An extension service system is necessary to disseminate, in such rural settings, new technologies, innovations and information. Recent extension approaches such as agricultural advisory services and the Farmers Field School (FFS) have facilitated greatly farmers' involvement and public-private partnerships in ensuring that technology dissemination is demand-driven, client oriented, and farmer-led.

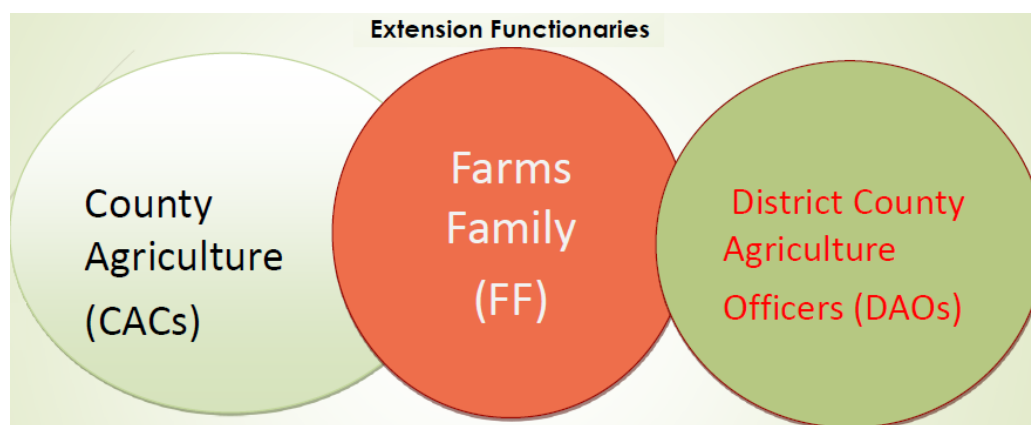


The extension system in Liberia includes extension services and programs delivered by public and private sectors. The public sector is delivered by the ministry of agriculture, Central

Agricultural Research Institute and the University of Liberia. While the private sector is delivered by the NGOs, Cooperatives and private agricultural Universities.

Extension Functionaries

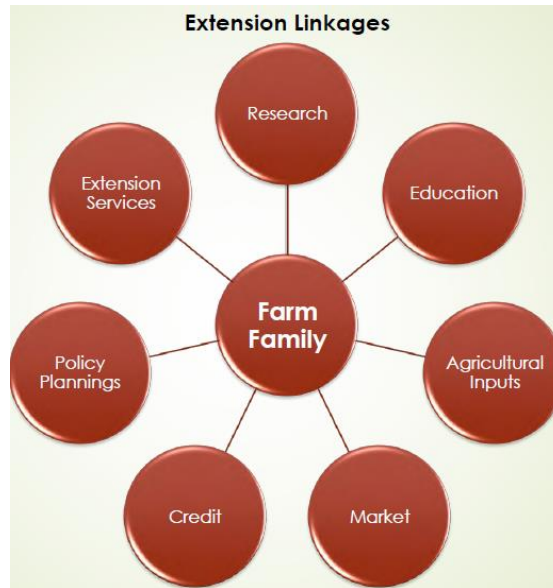
The Extension unit in Liberia has two categories, The County Agriculture Coordinators and the Districts Agriculture Officers why it is true that the districts extension programme are integral part of the county which is headed by the CAC who represent the minister of agriculture. They both meet with the farmers and farm families, through the farmer's field school.



The pluralistic extension system in Liberia includes extension activities and programs delivered by NGOs, the Ministry of Agriculture's (MOA) Extension program, and a variety of emerging private sector actors. While these three entities differ in their approach to extension and programs delivery to farmers, coordination comes from the Ministry of Agriculture through a committee (Agriculture Coordinating Committee) within the Department of Rural Development, Extension and Research, which meets monthly at the national level. These meetings serve as a platform for all extension actors for discussion of policy and agricultural concerns, and sharing of programmatic approaches.

The Department of Research, Extension and Rural Development (DRERD) is the most visibly decentralized department at the field level which faces similar staffing challenges as the MOA itself.

Agricultural development may be vital and sustainable with strong linkages with agriculture research as well as agriculture partners such as farmers, farmers union, cooperatives and NGOs all gear towards achieving a common goal in improving the living condition of rural poor.



Public Sector Extension Institutions

The public sector is represented by the Ministry of Agriculture, the University of Liberia, College of Agriculture, and other universities and research institutions around the country. These institutions provide extension services through various departments and institutes as listed below:

Ministry of Agriculture (MOA)

The Ministry of agriculture (MOA) is the government arm responsible for agriculture activities in Liberia, therefore it linkages with farmers group to include farmers union, cooperatives, on-governmental organization (NGOs), as well the untied nation food and agriculture organization.

The MOA is in the process of building County Extension Centers (CECs) consisting of offices, training centers, guest quarters, and an active demonstration farm in all 15 counties, though progress on establishing these CECs has been very limited, due to financial constraints. In the future, the MOA might consider developing smaller, district level extension centers (office / demonstration farms).

In terms of methodology, the MOA extension system would benefit from explicit utilization of Participatory Rural Appraisal (PRA) and related approaches in its move towards more farmer-led extension programming.

MOA has an important role to play in developing and delivering extension programs and messages, including technical guidance, such as recommended practices, fact sheets, audio files, etc

Non-Public Sector

Private Sector Firms

The private sector in Liberia remains very underdeveloped and is still recovering from the war. The sector's provision of extension and advisory services is noticeable in the areas of input supply to farmers; contract to provide extension services and technical advice to farmers associations. Most private sector suppliers of agricultural inputs are based in Monrovia and most of their businesses are conducted with NGOs who purchase inputs on behalf of farmers.

Non-Governmental Organizations and other Donors

It is estimated that at least sixty (60) NGOs provide extension and advisory services in different counties and districts throughout Liberia. The New African Research and Development Agency (NARDA), a consortium of Liberian NGOs formed in 1987 coordinates the activities of NGOs, which operate through county networks. These NGO are actively involved in implementing different strategies to increase agricultural productivity and farm income among small-scale farm households both in urban and rural areas. The MEAS team met with ten of these international NGOs and most of them have subcontracts with local NGOs who actually provide the direct advisory services to farmers. It should be noted that the MEAS team is concerned that some NGOs are following an unsustainable and flawed model of handing out free inputs and tools; thereby creating "farmer dependence" on these NGOs.

Instead of providing handouts, some international NGOs such as ACIDI-VOCA and CARE, are following a different strategies in providing advisory services to farmers. In the case of ACIDI-VOCA, their key is in organizing and linking farmers to exporters for key tree crops (e.g., cacao and oil palm) and then training them how to use this income to further diversify their farming systems in producing locally consumed, high-value products (vegetables, livestock and fish).

ACIDI-VOCA indicated that they were serving about 10,600 farmers in their LIFE project and an additional 1,000 farmers in ACE project. ACIDI-VOCA, CARE and some of the other international NGOs have been actively organizing farmers into groups to share production practice knowledge and for marketing purposes. While many NGO managed extension related

projects seem to be quite successful, they are costly and serve only a very limited number of farmers.

Funds available for projects come from several donors and the most cited are USAID, FAO, IFAD, Gate & Melinda Foundation, Some of the larger international NGOs include:

- ACDI-VOCA
- Action-Aid, International Relief and Development (IRD)
- Africare-Liberia
- BRAC
- CARE International
- Catholic Relief Services (CRS)
- Concern Worldwide (CW)
- Danish Relief Council (DRC)
- German Agro Action (GAA)
- Human Development Foundation (HDF)
- Partners for Productivity
- Plan International
- Samaritan's Purse

Farmer Based Organizations and Cooperatives

Producer organizations that group together smallholders and other forms of collective action (e.g., cooperatives) have proven to be effective in improving the performance of value chains and contributing to improved farmer welfare. In Liberia, farmers in each county are organized into community, farmer and/or producer groups. The size of the group varies between thirty and approximately one hundred members. The County Extension Officer (CEO) is responsible for facilitating the organization and coordination of these groups. Producers are organized on the basis of the crops they produce. For example, in Margibi County there were community groups such as cacao producers (mainly men), corn and peanut growers, rice and vegetable crops (cassava, pineapple) growers, and collective farming group.

Some NGOs like BRAC use an integrated approach of providing micro-credit, inputs and advisory services to women. To implement their program, BRAC organizes women farmers as well as rural women into community groups. Other farmer based organizations include:

- Progressive Farmer Organization, provides hand tools and seed supplied by the FAO through the CEO to farmers
- Women in Peace Building Network specialized in producing vegetables (okra, long green bean etc.) on public land allocated by the MOA
- United Farmers Association, has been operational for 5 years and focus on producing roots and tubers

These organizations and many more throughout Liberia have the merit of facilitating the provision of services such as extension, credit, inputs and marketing and through economies of scale, increase market power which may prove elusive to a single farmer.

List of Extension Providers for Liberia

Sl. No.	Name of extension organization	Type of organisation	City	Country
1.	National Women's Commission of Liberia	NGO	Monrovia	Liberia
2.	Center for Environmental Education and Protection of Liberia	NGO	Monrovia	Liberia
3.	Acres of Hope Liberia	NGO	Monrovia	Liberia
4.	Africare Liberia	NGO	Monrovia	Liberia
5.	Focus Liberia	NGO	Monrovia	Liberia
6.	AAH - Action Against Hunger	NGO	Monrovia	Liberia
7.	ACDI / VOCA - Agricultural Cooperative Development International	NGO	Monrovia	Liberia
8.	AVSF - Agronomes et V	NGO	Monrovia	Liberia
9.	WPCDC - West Point Community Development Cooperative	NGO	Monrovia	Liberia
10.	University of Liberia College of Agricultural and Extension	University	Monrovia	Liberia
11.	Ministry of Agriculture	Public	Monrovia	Liberia
12.	Ministry of Agriculture - Regional Development and Extension Divisions	Public	Monrovia	Liberia

Challenges

- Agricultural extension services in the past have been centrally controlled and supply-driven with little attention to local knowledge, demands and participation.
- Shortage of staff, inadequate funding and lack of new technologies has limited the scope and impact of extension activities.
- According to the CAAS-Lib Synthesis Report (2007), the Department had only 20 of its 134 staff members deployed outside Monrovia, the Country's capital. The report further

noted the shortage in extension personnel. A limited number of Subject Matter Specialists (SMSs) are actually located in the Department of Technical Services (DTS), which is a different unit from the Department of Research, Extension and Rural Development (DRERD).

- Low average density of one county agent for 16700 and one aid for 2,000 farmers make intensive work impossible.
- In terms of the public extension staff, the MOA faces the situation where well over half of the district agricultural officers (DAOs) are over 50 years old. Many of them require additional training in up-to-date technical and process (extension) skills if they are going to function effectively in an increasingly decentralized, farmer-led, market-driven extension system.
- MOA staff reported that they had very limited resources available for the development and delivery of extension programs, including very limited funds for vehicles and motorcycles, especially monthly fuel costs.
 - Low work discipline and the absence of a well define extension program mark the operation rather diffuse.
 - Lack of market, high post harvest losses, high cost of inputs, lack of value addition and the lack of access to suitable land have undermined the effectiveness of extension.
 - The successful work of NGOs can result in a weakening of public sector extension services because the NGOs can often pay higher salaries and provide operational funds to their personnel, thus attracting some of the most competent staff away from the public extension system.
- NGOs provide extension services but these are largely limited to the distribution of seeds and hand tools, with little or no contribution to build the capacities of beneficiaries
- The problem is that the NGOs pay too much or that the public sector pays too little. The concern is that too heavy dependence on NGOs may have a negative net effect on the pluralistic system as a whole and that the services provided by NGOs reach a very small number of farmers at a high cost per farmer.
- Private sector involvement in extension has always been minimal.

- Inadequate capacity of farmer organizations limit the extent to which such organizations could be used in reaching farmers, especially women farmers, with technical assistance and services.
- Negligible involvement of commercial entities in extension services

Recommendations

The recommendations have three main thrusts

- 1) Capacity development and institutional strengthening of the MOA and its ability to both coordinate and deliver needed extension services.
 - 2) Strengthening the extension methodologies used throughout the pluralistic extension system, including participatory approaches (e.g., farmer-led), including Innovative Farmers (positive deviance approaches, asset-based agricultural development approaches).
 - 3) Strengthening of the extension education and training programs that better prepare extension workers to pursue a more farmer-led and market-driven approach to developing the agricultural sector in Liberia.
- CORE Functions analysis may be conducted on current extension and support services and designing and implementing a National Agricultural Extension Project (NAEP) with the participation of all categories of farmers, other users, and all providers of extension services.
 - A national extension strategy may be developed.
 - The capacities of Farmer-Based Organizations (FBO) and Community-Based Organizations (CBOs) may be built up to seek services from both private and public sector service providers.
 - Establishment of private Agricultural Advisory Service providers may be promoted so that such services are provided on competitive outsourcing basis.
 - Agri-business consultancy and technical services may be supported and promoted.
 - Information Centers may be established at strategic locations across the country with the necessary information and communication gadgets in order to provide global information to farmers on a demand basis.

Other major recommendtaions

Farmer-led Extension Programming

Development of farmer advisory committees (FACs) at the county level would help to determine priorities for extension services being provided within each county, and possibly even differentiating priorities by districts within each county. The committees would consist of 10 to 15 farm leaders, for example the heads of producer groups. At least one third of the members, ideally half of them, should be female. The FACs would meet monthly to help determine extension program priorities, as well as to monitor the performance of extension personnel in the county and its districts. Functional FACs will result in the extension system becoming more farmer-driven. By being involved in the setting of priorities, farmers will be involved in determining how resources are allocated within each county for program development and the delivery of advisory services.

Development of County and District Level Demonstration Plots/Farms

The MOA has to develop both Extension Training Centers and effective Demonstration Farms at the County level. Eventually, these demonstration farms could also be established at the District level. Based on the feedback and approval of the FAC, these demonstration farms should showcase the recommended production practices and farming systems that are being recommended within each county and/or district. If properly managed, these demonstration farms could become revenue generating units for the County Extension Office. Furthermore, as farmers get organized into producer groups, they could use the County Extension Office (and farm) as the collection point for livestock as well as for gathering, packaging and marketing high-value crops throughout the county and the Monrovia market.

Capacity Development and Training of MOA Extension Personnel

A series of in-service training activities is needed to up-date the skills and knowledge of the current extension workers. These in-service training courses should focus on a) extension methods and process skills (e.g., participatory extension methods like PRA), b) how to organize producer groups and link them to available markets, so these farmers can successfully market their agricultural products and c) specific technical training on crop/livestock/fishery management practices, especially for those new crop and livestock systems that need to be introduced into the different counties across Liberia.

Some of the younger, more competent extension personnel with diplomas should be selected to continue their education and earn B.Sc. degrees in agricultural extension. One or more of the Liberian universities could be selected to carry out this in-service training for the Current County and district extension staff. Course and curriculum development could be done in collaboration with the MEAS project.

MEAS is already putting together training modules on a range of topics that can be made available to the Liberian partners. Together the material can be adapted to the local needs and delivered in formats that are suited either for workshops for full-time staff or integrated into the universities on-going agricultural extension degree program.

The University of Liberia (UL) has an Agricultural Extension Department, which has faculty to teach extension education. The Cuttington University (CU) has a functioning agricultural development oriented program, and it could also serve as a place to deliver in-service training for MOA Extension personnel. These training activities could be shared between CU and UL and also disseminated to other colleges and training institutions such as the Booker T. Washington Institute.

Establishing an Extension Communications Unit

Develop a small unit within the MOA to begin developing and distributing new extension materials (handouts, fact sheets, media products, including an on-line website that would include technical materials, videos and sound files), as well as other educational materials that could be used by both the public extension staff and other advisory service providers (e.g., private sector and NGOs) in Liberia. The unit should be positioned to assist in transforming research findings into useable extension messages that can be easily used by field extension staff and understood by all types of farmers.

Internet Resource Website

It would be important to keep up-to-date technical, marketing and other needed information available on internet websites, so this information can be easily accessed by each County Extension Office (CEO), NGO service providers and to progressive farmers who eventually will have improved internet access.

Making “Tablets” Available to Field Extension Workers

The MOA should provide electronic tablets (e.g., iPads), which should include information on all approved and recommended crop, livestock, fisheries and other technologies

and management practices. These tablets should be loaded with available information (both from the MOA and other countries within the region) and then distributed to both the county and district extension staff. In this way, they can then easily share this information and technical recommendations directly with farmers and farmer groups within their respective county or district.

Farm Radio

Farm Radio should be introduced to all different radio stations across Liberia. The MOA could play a supporting role for farm radio by producing content and facilitating a network of farm radio participating stations. Additionally, the MOA can use the Extension system and farmer groups to facilitate the identification and development of extension-related radio messages. In addition, as market information becomes more readily available, this information should be shared on a daily basis through Farm Radio broadcasts.

Capacity Development Using Emerging Innovative Farmer Leaders

The District Agricultural Officers (DAOs) and the County Agricultural Coordinators (CAC) /County Extension Office CEOs should carry out a participatory rural appraisals (PRA) to identify innovative farmers within their respective district and county. The innovative farmers identified through the PRA could then be visited by the emerging leaders of different community and/or producer groups to learn more about how these new community groups might begin supplying specific markets,. They will also learn how the producer groups might need to adjust their practices for specific products, post-harvest processing and marketing activities.

Using Innovative Farmers for Peer Training

Engage the innovative farmers to share their best farm management and marketing practices within their particular district and county. Through field visits and/or talks these innovative farmers can share their specific farm management practices with potential lead farmers in other villages, communities and districts.

Marketplace Literacy Curriculum and Implementation

An entrepreneurial market literacy program, which will engage and empower poor subsistence farmers (especially women farmers and landless rural women) to participate in the marketplace will result in mutually beneficial exchanges.

Other Possible Recommendations for Consideration

Pay for Extension Performance

Work with MOA on the basis of a “performance plan” with some limited, up-front funds to strengthen a specific County’s extension program. These funds would be used for the accomplishment of key milestones and tasks related to extension program development.

Launching of Trained High Potential Farmers

Work with selected universities and colleges to identify and promote skilled young farmers with high potential (from rural area, previous experience in farming, good performance in school and good basic writing and reading and analysis skills) into an agricultural business to serve as model farmers within specific districts and counties.

Student Placements in Extension Programs

The students should be assigned to work with progressive and effective extension workers, so they can learn how these field staff inform and train farmers and farmer groups on how to increase their productivity and income.

Curriculum development on effective extension methods

All up-to-date and effective training extension methods including the most effective ways of organizing sustainable producer groups and linking them to markets should be shared with the universities and colleges offering B.Sc. Degree program in Agricultural Extension within Liberia.

Developing an up-to-date agribusiness program

This would allow additional training opportunities for future MOA staff (as well as upgrading skills for current MOA staff) to develop skills in agricultural business domains and strengthen their market orientation.

Private sector extension matching fund

In order to encourage and strengthen private sector a network of private sector outreach programs would be developed for sharing approaches and information. A small-grant facility could be established so that private company funds can be leveraged for outreach educational efforts.

Agricultural Research System

African countries are revising their approaches to agricultural research to participatory, demand driven systems, with the aim of combining farmers' indigenous traditional knowledge

(ITK) with the more widely recognized expertise of the agricultural research community. The approach also allows for the active involvement of farmers or users in setting research agenda, implementing trials and analyzing findings and results. The trend towards this approach has been influenced by the emerging involvement of non-government organizations and the private sector in agricultural technology development.

Agricultural research is critical to the national development of Liberia since it provides the basic information needed for poverty reduction / alleviation and food security. Sound agricultural research and associated policies ensure the availability of demand-driven and transformed technologies such as, viable seeds, good quality planting materials and animal breeds that are essential to agricultural production and productivity (Joint Special Committee on CARI, 2013). The central role of agriculture research in transforming and modernizing agriculture in Liberia cannot therefore be overemphasized. The returns from investments in agricultural research are two to three times higher than from other agricultural and non-agricultural investments (CARI, 2009). The benefits of additional income generated from agricultural research are passed on to producers through higher profits, and to consumers in the form of lower prices. Therefore, investment in agricultural research plays a big role in a country's economic growth since the benefits it produces are widely and more equitably distributed. From the perspective of regenerating the agricultural research system, one of the major impacts has been human resource capacity. The war saw skilled professional and technical staff killed, scattered or migrated abroad and the disruption of the education system during this period means that the following generation were also severely impacted.

In effect, two generations have been lost along with much of the corporate memory of those in employment during the war. Rebuilding under such conditions will be challenging.

Some public research and educational institutions available in Liberia

- Central Agricultural Research Institute (CARI)
- Department of Regional Development, Research and Extension (DRDRE)
- Forest Development Authority (FDA)
- Liberia Rubber Research Institute (LRRI)
- University of Liberia, College of Agriculture
- Cuttington University
- Booker T. Washington's (BTW) Vocational Education Institute

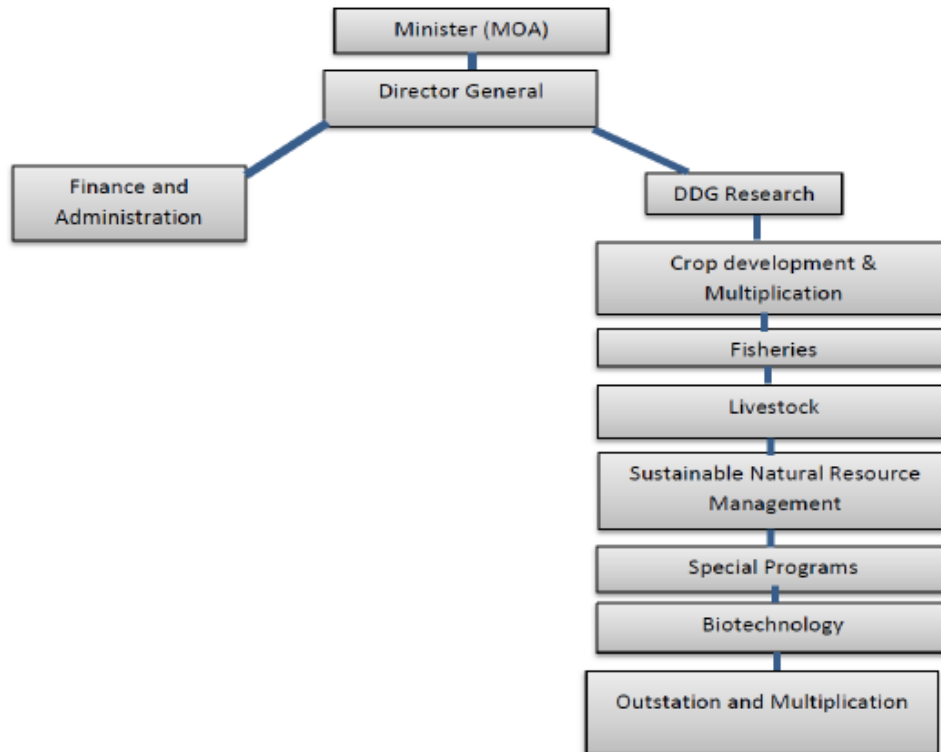
- Songhai Agro-Enterprise Center
- Department of Agricultural Extension and Education

The Central Agricultural Research Institution (CARI) is the main agricultural research Institution in Liberia. It is situated in the central part of Liberia i.e. at Suakoko, some 180 km north west of Monrovia. CARI was created in 1980 from the Central Agricultural Experiment Station (CARES) to conduct both adaptive and applied research in agriculture. When CARI was started it had seven commodity based programmes (rice, cassava, cattle, swine, cocoa, coffee and vegetables) and planning had been initiated for a cropping systems programme. However, CARI was devastated by the civil war both in human and physical terms. The physical infrastructure was severely damaged, the contents of buildings looted and professional and technical staff scattered both in-country and abroad and in some instances killed.

CARI restarted with very limited operations in 2006, focusing on the provision of planting materials for rice (from WARDA), cassava, yams and a limited range of cultivars of maize, beans and soybeans (from IITA) (Ministry of Agriculture, 2008) a focus which has continued with little change to date. On the other hand various initiatives have been mooted since 2007 to re-vitalize CARI but so far progress has been extremely limited. Ideally CARI should be a semiautonomous organ of the Ministry of Agriculture.

The following Figure shows the organization structure of CARI with a Director General (DG) as its Chief Executive. Under the DG, there is one post of Deputy DG of Research Programs (currently vacant) and one post of Assistant DG responsible for Finance and Administration which is also vacant.

Organisational structure of CARI



CARI is now poised to take a leadership position by taking on board the paradigm shift aimed at increased agricultural productivity in Liberia. During this Strategic Plan period (2015 -2025), CARI will have to make a positive impact at the community and national levels through a transformational, multi-faceted, multi-dimensional and multi-institutional approach tailored towards increasing the productivity, commercialization and competitiveness of the agricultural sector in line with the recommendations outlined in FAP and LASP.

Realization of this paradigm shift shall require innovative, committed, well-trained and motivated employees with a changed mind-set to the new way of conducting research through the Agricultural Product Value Chain approach.

Challenges

- Liberia's agricultural research system, formerly dominated by the public sector, was severely disrupted and terminated by the war, and is now being revived.
- Agriculture research is carried out by multiple public and private sector and civil society organizations among which the Central Agricultural Research Institute is predominant. Regrettably, these activities are not coordinated.

- Smallholders have not benefited from research mainly because the service is supply driven and limited in scope, and not seen to directly respond to the production problems of farmers.
- There are no clear organizational frameworks or institutional mechanisms (e.g. competitive grant systems) to encourage cost effectiveness and inter-agency partnerships in research, nor is there a formal mechanism to bring together researchers, extension agents, producers, processors, policy makers and the private sector.
- There are no clearly defined and well-thought out programs for agricultural research.
- NGOs have some potential but currently contribute little or nothing to research efforts.

Recommendations

- A Natural Agricultural Innovations System (NAIS) may be established to provide responsive, pluralistic, effective and efficient agricultural development related research and extensive services
- A strategic vision may be adopted for rebuilding agricultural research service, a component of NAIS, and its integral organizations including CARI, guided by the need to strengthen demand for services, improve quality of service and assure service sustainability.
- Appropriate legal and governance framework may be established to provide efficiency and flexibility in managing human, physical and human resources and to ensure accountability to client, funders and other stakeholders.
- Linkages with other internal and external research providers, clients, technology transfer agencies and developmental organizations may be established.
- A national agricultural research strategy may be developed to guide research activities including adaptive research
- CARI rehabilitation strategy may be implemented, which comprises inceptual undertaking, capacity building and expansion and strengthening of linkages

Chapter – VI

PUBLIC AND PRIVATE INSTITUTIONS OF LIBERIA AND THEIR RELEVANCE IN ITS AGRICULTURAL DEVELOPMENT

The effective implementation of various agricultural development programmes hinges on appropriate governance and management arrangements, many of which are already in place or will soon be. These arrangements are consistent with the nature, structure and operations of the Government and its interactions with non-government sectors. The arrangements seek to ensure continued focus, commitment, coordination and accountability of efforts, resources, and outputs. Following are the several public and private institutional arrangements that are in existence or will soon be put into place in Liberia and their respective roles in agricultural development are as follows:

1. Office of the President / Cabinet

The President of Liberia will provide global oversight as Head State and Government. The president will undertake this function through vertical and horizontal interactions with all elements within and under the institutional arrangements, particularly via the Stakeholder's Forum and other similar opportunities. Accordingly, through the Office of the President, the Cabinet will be regularly informed and consulted.

Stakeholders' Forum: This is a national consultative forum of all stakeholders held periodically for the purposes of sharing information and experiences and discussing progress in implementing the policy and strategy. The Forum shall be chaired by the President of Liberia.

2. Sector Level

An *inter-ministerial body*, the *Food Security and Nutrition Technical Committee (FSNTC)* will be the highest decision-making body in the implementation of the policy and strategy. It will provide overall policy direction and guidance for implementing the policy and strategy. The FSNTC will be chaired by the Minister of Agriculture and include, but not be limited to the following agencies: Ministry of Finance, Ministry of Commerce and Industry, Central Bank of Liberia, Ministry of Internal Affairs, Ministry of Planning & Economic Affairs, Environmental Protection Agency, Liberian Business Association, Liberian Bankers Association, Liberia Federation of Cooperative Societies, Liberia National Farmers Union and Liberian National NGO Network (LINNK). Representatives of Donors and International NGOs will serve as observers. The FSNTC already exists.

The *Agricultural Coordination Committee (ACC)* will provide technical assistance in coordinating, implementing, monitoring and evaluating the policy and strategy. This committee shall comprise of technical staff of stakeholder institutions, NGOs, and other stakeholders. The ACC already exist, as one of three working groups of the FSNTC, and is focused on the availability component of the National Food and Nutrition Strategy. It is chaired by the Deputy Minister of Planning and Development, Ministry of Agriculture.

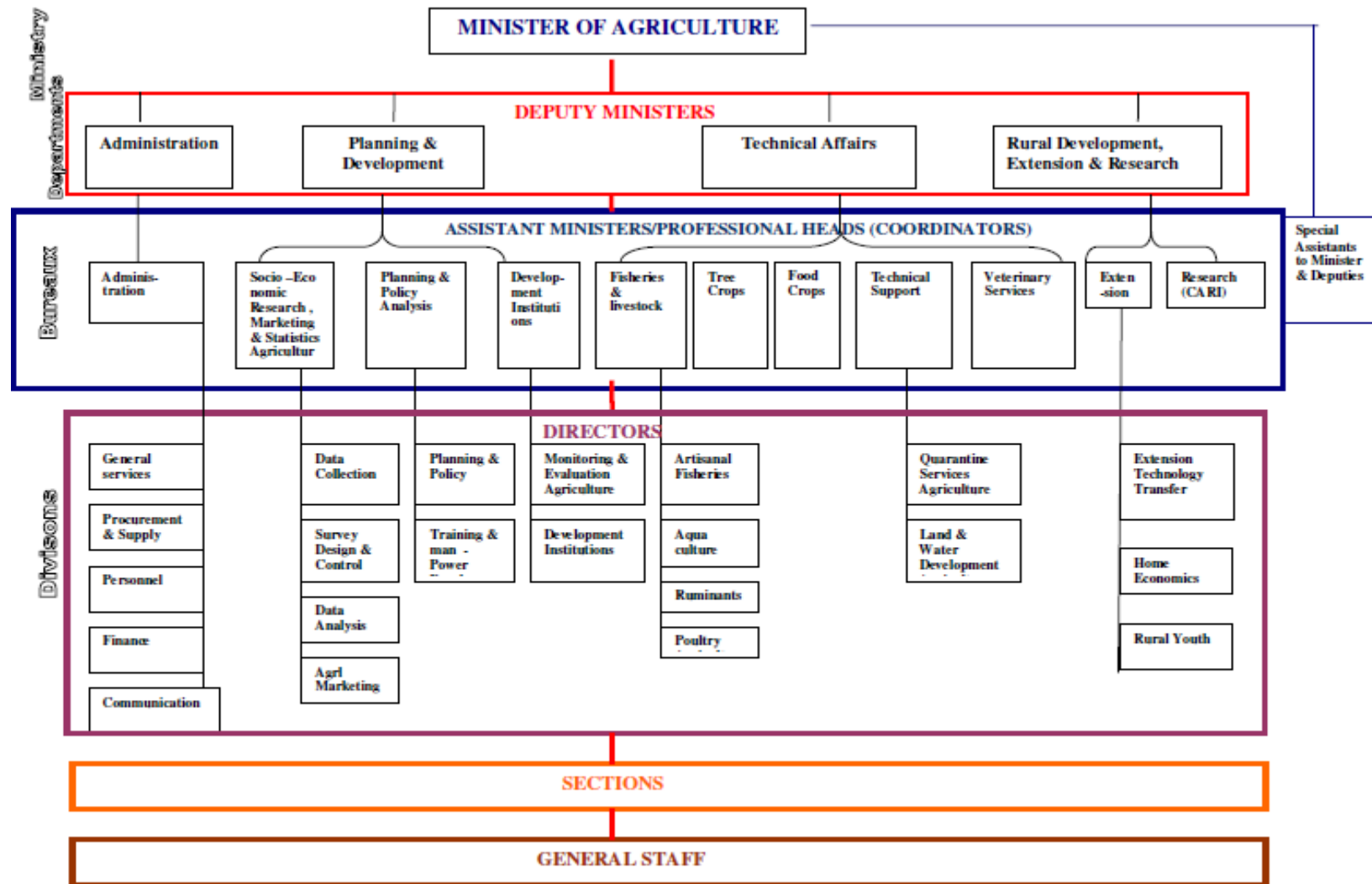
The *Ministry of Agriculture* shall also prepare annual plans drawing from elements of the policy and strategy for resource mobilization, allocation and utilization in the sector. The Ministry shall develop, as and when necessary, sector and sub-sector specific Plans of Action, programs and projects, (with short, medium and long term perspectives) in accordance with the FAPS, through the involvement and wider participation of the farming population, and other stakeholders.

Partners' Forum: This shall be a consultative forum of partners and the Government. It shall share progress reports and solicit the views of donors, advocate for resource mobilization within the donor community, and reassure donors of the Government's continuing commitment to agricultural sector growth and development. Its meetings and deliberations shall be co-chaired by the Minister of Agriculture and the highest-ranking United Nations official assigned in Liberia or as agreed by partners.

3. Decentralized Level

County level: The *County Development Steering Committee* will coordinate inputs from the County into the Annual Plans and programs prepared by MOA, and monitor their implementation in towns and other local communities. This Steering Committee will have various working groups, one of which is the Economic

Organisational structure of the Ministry of Agriculture, Liberia



Revitalization Workshop Group (ERWG) chaired by the MOA's highest ranking county staff.

Sub-county levels: Districts, towns and local communities will be assisted through their decentralized structures to organize, contribute, and develop annual performances of relevant components and subcomponents of this policy and strategy.

Roles of the institutions and their relevance

The ***Food and Agriculture sector*** is multidisciplinary in nature as it is multifunctional in operation. The successful implementation of policies and strategies will, therefore, depend on the effective cooperation of all the stakeholders: public sector, private sector; civil society; non-governmental organizations, and Development Partners. The Ministry of Agriculture will have oversight responsibility for coordinating the implementation of policies and strategies and will perform this function through established mechanisms in which all the relevant stakeholders will undertake the following in a participatory manner:

- Harmonize objectives, priorities, and methodologies towards achieving global sector goals
- Perform assigned roles and responsibilities in furtherance of policies and strategies, avoiding duplications and overlaps in functions and activities
- Share experiences, provide guidance and technical leadership, and foster an environment conducive for effective implementation
- Coordinate and resolve implementation issues, and provide periodic information to the public, government and donors
- Assess / evaluate progress or the lack of it, and make required adjustments as implementation proceeds.

General Roles of Government

The roles of Government in the development and functioning of the agriculture sector in Liberia in the past had been unclear in appropriateness of purpose, confusing in functions and less cost effective in performance. Government performed too many roles, (unilateral decider of ad hoc policies, financier, producer, extension agent, regulator, and at times a competitor in critical activities in the sector). The nature and scope of the problems to be addressed in the country today at the macroeconomic level and within the sector make it compelling for clarification of roles among the many stakeholders in the sector, essentially to ensure optimum use of comparative

advantages in competence and appropriateness of functions, and cost effectiveness of actions and performance.

Specific roles of Government functionaries

Roles of Ministry of Agriculture

- i. Provides oversight for policy formulation implementation and monitoring.
- ii. Coordinates planning, delivery of services and support to agents and beneficiaries, and monitor sector activities.
- iii. Advises Government on laws and guidelines to regulate the activities of the sector.
- iv. Liaises with the Environmental Protection Agency, Forestry Development Authority and others to ensure appropriateness of agricultural activities and practices for environmental protection
- v. Regularly assesses consistency of the policies and strategies of other sectors with the FAPS and analyze the impact of such policies on the agriculture sector.
- vi. Develops and maintains an enabling institutional framework that promotes development in the sector and makes it more responsive to the aspiration of sector participants
- vii. Promotes and facilitates public-private and private-private sectors dialogue and partnerships
- viii. Advocates for various sector interests at national level (inputs from cross-cutting matters from other sectors) and pursues related international initiatives and agreements
- ix. Facilitates the development, dissemination and promotion of research, technology and information
- x. Advocates and promotes the interests of small producers and provides technical and advisory services to such agents in the sector in order to increase productivity and output
- xi. Promotes the establishment of formal planning linkages between the agriculture sector and other sectors (especially, health, tourism, commerce, communication, education) in order to ensure a more integrated and coordinated approach to policy and program development aimed at reducing poverty
- xii. Provides phyto-sanitary and zoo-sanitary inspection services for exports and imports of agricultural commodities including crops, fisheries and livestock

- xiii. Promotes and facilitates the design and adoption of appropriate technologies for the use and management of water resources in the sector
- xiv. Provides leadership for government's food security and nutritional interventions including supporting improvements in the nutritional well-being of the population.

Specific roles of other Government Institutions

Ministry of Finance: in collaboration of the Ministry of Agriculture and the support of the Central Bank of Liberia, coordinates the mobilization of external resources in support of the agriculture sector.

Ministry of Commerce and Industry: facilitates external market access and enabling domestic market.

Ministry of Health and Social Welfare: collaborates with MOA to enhance the nutritional well-being of population and further the goals of the National Food Security and Nutrition Strategy.

Ministry of Education: supports development of human resources for agriculture and related sectors.

Ministry of Public Works: fosters improvement in roads infrastructure, particularly feeder roads linking producers to markets.

Ministry of Gender and Development: collaborates in advancing and empowering women.

Environmental Protection Agency (EPA): cooperates and supports efforts to adopt agricultural practices that protect the environment.

Forestry Development Authority (FDA): supports efforts to ensure sustainable land management and forest resources development.

Ministry of Internal Affairs: ensures that local governance structures and processes including decentralization are effective, supportive, and enabling of rural transformation and agricultural sector growth and development.

Ministry of Youth and Sports: collaborates to encourage youth involvement in agricultural development efforts.

Central Bank of Liberia: facilitates availability of financial services in support of agriculture sector programs.

Specific roles of Parastatals

Parastatals such as the Liberia Produce Marketing Corporation (LPMC), Liberia Cocoa and Coffee Corporation (LCCC), Agricultural Cooperative and Development (ACDB), Liberia Rubber

Development Authority (LRDA), the Cooperative Development Agency (CDA), and the National Palm Corporation (NPC) were all government operated entities established in the 70's and 80's. They contributed to economic growth but suffered huge losses, resulting in the abrupt closure of many. These organizations are being assessed, and their enabling legislations reviewed, to determine their relevance and substance in the nation's economic recovery program. Preliminary evidence supports the non-revitalization of LCCC and NPC.

While some of the parastatals will be reformed in accordance with the liberalization policy of the government, others will be reorganized to perform new roles including the following:

- I. **LPMC** and **LRDA** will be combined and transformed into an Agricultural Export Board (AEB) with responsibility for promotion, quality control, monitoring, advocacy, value addition and input supply facilitation.
- II. **ACDB** will be liquidated and alternative financial intermediaries such as a Farmers' and Cooperative Development Bank, FCDB (Liberia, Inc.). FCDP will be a profit-making bank focusing on agriculture and agribusiness development and run as a professional business without government interference. Other arrangements such as microfinance institutions, rural savings banks, dedicated windows of commercial banks; etc will be evaluated and encouraged.
- III. **CDA** will be restructured and enabled to coordinate, develop and regulate cooperatives and farm based associations undertaking agricultural economic activities.

Specific roles of the private sectors

Agricultural transformation from subsistence to sufficiency will be market-led, with the private sector being the driver. The sector controls the entire agricultural value chain, from production to marketing. The private sector role shall include but not be limited to:

- i. Cooperative societies and farmer-based organizations that advise, encourages and facilitates their members to exploit market-driven opportunities, establishes linkages with sources of support and advocates and plays leading roles in inputs supply and linkages to outputs markets to overcome market failures in agriculture.
- ii. Financial intermediaries will introduce lending strategies that target not only Farmers' Organizations, but individual farmers and private sector businesses investing in agriculture and

agribusiness; and they will establish appropriate rural banking facilities for the provision of credit to farmers and farmers' organizations.

- iii. Industrial concerns (e.g., mining, forestry and agriculture concessions, etc.) having direct relation to the sector will contribute appropriate funding support to accelerate agribusiness investment in food crops, livestock, fisheries, cash crops and value added processing; and they will support small holder economic empowerment via strategic partnerships such as out grower schemes.
- iv. Private investors, farmers' organizations and cooperatives will spearhead investments in agribusiness in the country; provides and facilitates linkages between producers (e.g. rice, vegetables, cocoa, coffee and oil palm) and local and external markets; participates in policy dialogues to ensure their interests are reflected in policies that affect them; participates in research and utilizes their results; and complies with laws and regulations and partners with government in sector development.

General roles of civil society organizations

Civil Society Organizations (CSOs) played pivotal roles in humanitarian support during the civil war by rehabilitating the lives of a war-affected population in areas of agriculture, health, education, livelihood activities, infrastructure, and water and sanitation amongst others. As the country progresses from emergency to recovery and long-term development, CSOs will have to adopt policies, evolve strategies, and develop plans that are consistent with the emerging demands for nation building, particularly ensuring complementarities of efforts to achieve desired and sustainable results in the agriculture sector which is the entry point to national economic recovery.

Specific roles of CSOs, NGOs and INGOs

- i. CSOs will strengthen public sector governance by giving voice to smallholders, rural women, and agricultural laborers; and they will foster participatory development and monitor agriculture policy making, strategy development, budgeting, and program implementation. Civil society will also hold policy makers and public administrators accountable, thus creating incentives for change.

- ii. INGOs and NGOs will mobilize resources and promote partnerships with external sources of support to the agriculture sector in collaboration/coordination with the inter-ministerial Food Security and Nutrition Technical Committee (FSNTC). In performing these roles, these organizations will submit sector specific action plans and periodic reports to the Technical Committee for the purposes of coordination, and monitoring and evaluation of donor aid projects and their impacts on intended beneficiaries. CSOs and NGOs will support capacity building to improve farmers' knowledge, technical skills and capacities.
- iii. CSOs and NGOs will support and promote women and youth empowerment, provide technical assistance in the performance of agricultural activities, and ensure adequate, balanced, impartial, in-kind support to vulnerable farmers. They will also participate in the delivery of various services, especially at the local government and community levels, and promote partnerships between grassroots organizations and sources of support.
- iv. NGOs will engage in standards setting, such as Fair Trade labeling, support water and sanitation, environmental protection, monitoring and evaluation, and campaign against HIV/AIDS and care for HIV/AIDS orphans.

General roles of development partners

Development Partners comprise regional cooperation organizations, bilateral and multi-lateral donors, UN organizations and various regional agricultural research organizations; funding agencies such as IFC, World Bank, ADB, USADF, OPEC, OXFAM, and ICO. The FAO, WFP, UNDP, and USAID are also included. Regional cooperation organizations such as ECOWAS and the Mano River Union will provide opportunities for expanding markets for goods and services.

The main role of Development Partners and donors is to provide all necessary support required to fill funding gaps that the government cannot otherwise cover.

Specific roles of development partners

- i. Facilitates policy dialogues and policy advocacies.
- ii. Provides technical and financial assistance and supports the Government in the management of such assistance.
- iii. Participates in the monitoring of activities and performance of the sector.

- iv. UN Agencies will provide technical assistance in formulating and implementing policies and strategies, and articulating areas and conditions of support to achieve the MDGs, and ensure Sustainable Human Development.
- v. CGIAR centers such as WARDA and IITA as well as regional agricultural networks (i.e. CORAF, FARA and NEPAD) will provide support in developing and supplying proven, new technologies, best farming practices and in replicating success stories from elsewhere.

Chapter – VII

LIBERIA’S PRESENT CAPACITY BUILDING PROGRAMMES AND POTENTIAL AREAS

Present Capacity Building Programmes

There are a number of existing programmes that cover some of the activities proposed and a number of donors in formulating projects in Liberia.

1. Liberia National Adaptation Programme of Action (NAPA)

The Comprehensive Vulnerability and Livelihood Assessment of the impacts of climate change on agriculture being conducted by the Liberia National Adaptation Programme of Action (NAPA) in Panta and Gbarzon Districts of Bong and Grand Gedeh Counties respectively, seeks to address barriers of insufficient knowledge and awareness amongst decision-makers and planners, low capacity of technical staff and extension agents and lack of information needed by farmers on climate change by supporting the ongoing process to increase resilience of poor, agriculturally-dependent communities and decrease vulnerability of the agricultural sector to climate change in Liberia.

2. Rural Women’s Rural Economic Empowerment (RWEE)

The Rural Women’s Rural Economic Empowerment (RWEE) is a five year programme which will support a results-oriented collaborative effort among FAO, IFAD, WFP and UN Women to promote the economic empowerment of rural women in Ethiopia, Guatemala, Kyrgyzstan, Liberia, Nepal, Niger and Rwanda. This Joint Programme was officially launched during a side event of the 67th UN General Assembly in New York on 27th September 2012, and then in Rome on 15th October 2012, the International Day of Rural Women. The programme is articulated around four outcomes. Out of which, the third expected outcome is on rural women’s enhanced leadership and participation in rural institutions and in shaping laws, policies and programmes promotes their agency in rural producer organizations, cooperatives and unions and in local governance. Actions under this outcome area will also strengthen rural women’s voice and influence in key policy processes. Activities involve:

- Strengthening rural women’s and youth self-confidence and capacity to take on leadership roles in local governance.

- Developing the capacities of rural women to organize into and participate in cooperative service provider and producer organization and/or worker unions.
- Help informal rural women's groups to affiliate with formal organizations.
- Supporting producer organizations, cooperatives and unions to make their corporate governance more transparent, effective, accountable, gender equitable and age inclusive.
- Raising awareness on rural women's rights through legal literacy, community listeners' clubs and community radios.
- Strengthening rural women's advocacy platforms so that they can engage in regional processes and advocate with their own governments to hold them accountable at national and local levels.
- Supporting regional level dialogue among rural producer organizations, both mixed groups and women and youth only.

3. Songhai Center Liberia

The Center Songhai Liberia Initiative (CSLI) is a government of Liberia program supported by partners (public, private, national and international non-governmental organizations) with the aim of creating decent employment opportunities for young Liberians. It is an integrated agricultural program that is modeled after Centre Songhai Benin. The principal business of CSLI is the training of men and women and equipping them with the skills to manage small and medium scale, commercially viable and environmentally sustainable agricultural production and agro-based enterprises. The overarching vision for the CSLI is greater self-determination, harmony and cooperation within Liberian communities and a sustained and sustainable growth in employment, reduction of restiveness and crime, particularly within the groups of unskilled youths.

4. Liberian Agriculture Transformation Agenda (LATA)

Liberian Agriculture Transformation Agenda (LATA) is a program launched by the Government of Liberia with the support of the African Development Bank. The program leverages on a technology provided by Cellulant Nigeria Ltd., probably the most innovative digital platform supplier in agri-business in Africa. It connects recipients of inputs (fertilizers and seeds) to financial services providers via mobile wallets. This new technology maps existing farms and tags them to their owners in a unique database. Its econometric model is able to project the amount of

input support needed from the collected information (land size, crop type, demand). It is expected that 1,50,000 Liberian farmers will be enumerated before the 2016 planting season is over. From a simple wallet in their home village, farmers will be able to directly receive input support for fertilizers, relevant data and alerts, be visible and simply exist in the financial system .

5. Smallholder Agricultural Productivity Enhancement and Commercialization Project (SAPEC)

The Government of Liberia (GoL) through the Ministry of Agriculture (MoA) has requested the Bank to support the Smallholder Agricultural Productivity Enhancement and Commercialization Project (SAPEC) which seeks to reduce poverty and strengthen food security of rural communities in Liberia by increasing agricultural productivity of staple foods (cassava, rice including vegetables), and improving rural infrastructure of economic significance (feeder roads and markets). The Project comprises of four (4) components. Out of which, the third component is on Capacity Building and Institutional Strengthening, under which the project will build the capacity of the Ministry of Agriculture, institutions of higher learning, and extension officers through training.

6. Livelihood Improvement for Farming Enterprises (LIFE) III

This programme is the USDA-funded program continues ACDI/VOCA's work to empower 10,000 smallholder cocoa farmers, farmer organizations, and suppliers to improve livelihoods by increasing the productivity, profitability, quality, and marketability of cocoa in Bong, Nimba, Lofa, Gbarpolu, Grand Gedeh, and River Gee counties of Liberia with an intention of providing farmer field school trainings to smallholder cocoa farmers that cover topics including crop production, pest management, post-harvest handling, and product quality management.

Indicative list of potential areas

- Farm Mechanization for Small Farmers
- Green House Technology
- Bee Keeping: Production processing and marketing
- Post-Harvest Technology and Management
- Modern Dairy Technology and Management
- Public Private Partnership in Agricultural Extension Management
- Modern Poultry Technology and Management
- Management of Soil Testing Laboratories

- Agri-entrepreneurship Development
- Management of Agriculture Cooperatives
- Food Processing Technologies and Management
- Advancement in Fisheries Technologies
- Good Practices in Agricultural Marketing
- Mushroom Production and Marketing
- ICT Application in Agricultural Extension
- Agricultural Extension Management

Potential areas vis-à-vis Liberia

Following is the list of potential areas wherein the capacity of public and private functionaries of Liberia may be built up:

1. ICT based e-governance for agriculture and allied sectors
2. Demand-driven and solution oriented extension service
3. Mainstreaming of gender and youth
4. Market-oriented farm management
5. Agricultural methods and life skills for the resettlement of people displaced by war conflict
6. Agricultural entrepreneurial ventures
7. Improved production and harvest methods of rice
8. Modern production, processing, value addition and preservation techniques of food crops
9. Best planting, maintenance, tapping and processing techniques of rubber and oil palm
10. Modern artisanal fishing and aquaculture
11. Advanced hands-on / practical agricultural training programmes
12. Building cassava and vegetable oil entrepreneurs as aspirant agripreneurs
13. Formulation of a National Plant Protection Policy
14. Water resource development and management techniques
15. Empowering women in agribusiness services

16. Designing of support programme to vulnerable groups
17. Sustainable use of natural resources
18. Reframing of civil society organizations and business associations
19. Retention of war riposte farmers on land and tenure security
20. Application of various ICTs tools in domestic and international input and output markets
21. Developing and executing a National Water Policy
22. Construction and management of water control structures
23. Advanced soil and water conservation strategies on uplands
24. Empowering farmers through Farmer Field Schools (FFS)
25. Modern aquaculture techniques through extension service
26. Management of hydrological and meteorological networks
27. Institutional strengthening of fish processing factories
28. Improved technologies of artisanal fisheries through support services
29. Household food security and farmers organization development
30. Training needs assessments and management training
31. Development of appropriate financial services and financial products
32. Upgrading and standardization of syllabi for both secondary and college agricultural curriculum
33. Sustainable fishery sector management
34. Improved livestock practices
35. Effective communication methods
36. Formation and management of producer groups (PGs) and organizations
37. Enhancing water use efficiency
38. Supply chain management
39. Promotion of Sericulture industry

40. Promotion of fisheries sector
41. Promotion of Animal husbandry sector
42. Farm business management
43. Community radio for agricultural development
44. Application of remote sensing and geographical information systems
45. Advanced production and marketing of vegetables
46. Modern plant health management
47. Rainfed agriculture vis-à-vis fisheries sector
48. Rainfed agriculture vis-à-vis livestock sector
49. Improvement of food security and entrepreneurial opportunities for women
50. Viable market and credit transactions
51. Best meat processing practices
52. Basic veterinary services
53. Breeding methods of goats and privately operated slaughterhouses
54. Establishment of farmer organizations
55. Climate change risks and adaptation requirements in agricultural sub-sectors

Chapter – VIII

TRAINING PRIORITIES OF LIBERIA IN AGRICULTURE AND ALLIED SECTORS

An acquaintance with the detailed information on Republic of Liberia that are presented from the chapters I to VII of this report has paved way for deriving out a handful number of training priority areas in agriculture and allied sectors and those priorities which are felt essential in which the Liberian extension personnel have to be trained are presented below:

1. Training of trainers on “*Modernizing ICT based e-governance issues for agriculture and allied sectors of Liberia*”
2. Training of trainers on “*Demand-driven and solution oriented extension service delivery to the Liberian farmers*”.
3. Training of trainers on “*Mainstreaming gender and youth in Liberian agriculture and rural development*”
4. “*Market-oriented farm management for the trainers of farmers in Liberia*”
5. Building trainers’ skill on “*Imparting quick impact training in agricultural methods and life skills for the resettlement of people of Liberia displaced by war conflict*”
6. Building trainers’ skills on “*Empowering Liberian farmers for agricultural entrepreneurial ventures*”
7. Training of trainers on “*Improved production and post-harvest processing, storage, handling, parboiling, threshing, winnowing, drying and milling methods of rice in Liberia*”.
8. Building trainers’ skills on “*Empowering farmers, women, youths and returnees of rural Liberia on processing, value addition and preservation of food crops, including vegetable oils, cocoa and cassava*”
9. Building trainers’ skills on “*Empowering Liberian rubber growers in best practices for planting, maintenance, proper application of chemicals (i.e. fungicides, insecticides, fertilizers and herbicides), tapping and processing techniques*”

10. Building trainers' skills on ***“Empowering Liberian oil palm growers in best practices for planting, maintenance, proper application of chemicals, value addition, product differentiation, quality control, social and environmental sensitivities and fair trade agreements”***
11. Building trainers' skills on ***“Empowering those engaged in artisanal fishing and aquaculture in Liberia”***
12. Building trainers' skills on ***“Designing and implementing hands-on / practical agricultural training programmes for farmers, youths, women, returnees, internally displaced persons, ex-combatants, leaders of women and farmers' organizations in collaboration with universities and colleges of Liberia”***
13. Training of trainers on ***“Empowering cassava and vegetable oil entrepreneurs of Liberia to become as aspirant agripreneurs”***
14. Training of trainers on ***“Formulation of a National Plant Protection Policy of Liberia that will incorporate plant quarantine and Integrated Pest Management”***
15. Training of trainers on ***“Water resource development and management in Liberia”***
16. Training of trainers on ***“Empowering Liberian women in agribusiness services”***
17. Building trainers' skills on ***“Designing and implementing support programme to the vulnerable groups of Liberia (i.e Families and individuals who are vulnerable because of the civil war like internally displaced persons , returnees, refugees , ex-combatants; households headed by elderly members - above 60 years of age, chronically ill or disabled persons and widows) for their resettlement and reintegration”***
18. Training of extension personnel on ***“Reframing civil society organizations of Liberia”***
19. Training of trainers on ***“Sustainable use of natural resources of Liberia”***
20. Training of trainers on ***“Mainstreaming artisanal fisheries and aquaculture development through the establishment and participatory management of Community Fisheries' Centers in selected counties of Liberia”***

21. Building trainers' skills on *"Promotion and revitalization of effective civil society organizations and business associations vis-à-vis decentralization and empowerment of local communities in Liberia"*
22. Training of trainers on *"Capacity building and retention of war riposte Liberian farmers on land and tenure security for acquisition of lands under their jurisdiction through conquering the backlog of land-related cases clogging up the courts so as to obtain the title deeds"*
23. Training of trainers on *"Capacity building of small holders of Liberia to have access to domestic and international input and output markets using various ICTs tools and applications"*
24. Building trainers' skills on *"Developing and executing a National Water Policy to Liberia for effective and efficient management of water resources intended for agriculture and other purposes"*
25. *"Empowering the skills of the extension personnel of Liberia on the construction and management of water control structures"*
26. *"Empowering the skills of the extension functionaries on soil and water conservation strategies on uplands of Liberia"*
27. Training of trainers on *"Capacity building of Liberian farmers through Farmer Field Schools (FFS)"*
28. Training of trainers on *"Designing of improved fishing, fish handling, fish processing and modern aquaculture techniques through extension service"*
29. *"Empowering the Liberian extension personnel on the management of hydrological and meteorological networks"*
30. Training of trainers on *"Institutional strengthening of Liberian fish processing factories through enhanced production, handling, processing, distribution and marketing of industrial fisheries"*
31. Training of trainers on *"Empowering Liberian fishers, fishmongers and fish processors on new improved technologies of artisanal fisheries through support services of spoilage"*

- reduction and effective handling, preservation, packaging and marketing of fish products”*
32. *“Empowering the facilitators of the Department of extension and community empowerment (DECE), and community based organizations (CBO) at the county and district levels of Liberia on household food security and farmers organization development”*
 33. *“Empowering the personnel of rural service providers i.e. commercial banks, credit unions, microfinance institutions and NGOs on the development of appropriate financial services, financial products and techniques to the farmers and other rural entrepreneurs of Liberia”*
 34. *“Empowering the extension functionaries of Liberia on training needs assessments, management training and mentoring programmes in agri-services planning and coordination”*
 35. *“Empowering the extension personnel of Liberia on participatory extension approaches, agribusiness / farm enterprise management, farmer groups and organizational development”*
 36. *“Empowering faculty members, teachers and instructors of universities, colleges and schools of Liberia to develop, upgrade and standardize strong syllabi for both secondary and college agricultural curriculum”*
 37. *“Empowering the Personnel of the Bureau of National Fisheries (NBF) of Liberia on Sustainable Fishery Sector Management”*
 38. Training of trainers on *“Empowering livestock farmers in selected counties of Liberia through improved livestock practices”*
 39. *“Effective communication methods for extension functionaries of Liberia”*
 40. Training of trainers on *“Formation and management of producer groups (PGs) and organizations in Liberia”*
 41. Training of trainers on *“Extension management approaches for enhancing water use efficiency in Liberian agriculture”*

42. Training of trainers on “*Supply chain management in Liberian agriculture and allied sectors*”
43. Training of trainers on “*Extension management approaches for promotion of sericulture industry in Liberia*”
44. Training of trainers on “*Extension management approaches for promotion of fisheries sector in Liberia*”
45. “*Empowering extension functionaries to address field level problems of animal husbandry in Liberia*”
46. Training of trainers on “*Farm business management for animal husbandry sector in Liberia*”
47. Training of trainers on “*Farm business management for horticulture sector in Liberia*”
48. Training of trainers on “*Community radio - A tool for agricultural development in Liberia*”
49. Training of trainers on “*Application of remote sensing and geographical information systems for agricultural development of Liberia*”
50. Training of trainers on “*Promotion of urban and peri-urban production and marketing of vegetables in Liberia*”
51. Training of extension personnel of Liberia on “*Plant health management*”
52. Training of trainers on “*Revitalization of Liberian rainfed agriculture vis-à-vis fisheries sector*”
53. Training of public and private animal health care workers on “*Revitalization of Liberian rainfed agriculture vis-à-vis livestock sector*”
54. Training of trainers on “*Integrated Agriculture for Women’s Empowerment (INAWE) programme to improve food security and entrepreneurial opportunities for Liberian women*”
55. Training of trainers on “*Capacity building of capacitate processors of Liberia to become key change agents in market and credit transactions*”

56. *“Capacity building of meat inspectors and slaughterhouse personnel of Liberia on best meat processing practices”*
57. *“Capacity building of community animal health workers of Liberia in providing basic veterinary services”*
58. Training of animal health workers on *“Capacity building of Liberian farmers in breeding of goats and to create business opportunities for privately operated slaughterhouses”*
59. Training of trainers on *“Capacity building of farmer organizations in Liberia”*
60. *“Capacity building of extension workers of Liberia based on the lessons emerging from Farmers Field Schools and county adaptation plans”*
61. *“Capacity building of extension functionaries of Liberia based on climate change risks and adaptation requirements in agricultural sub-sectors (crops, livestock, fisheries etc.)”*
62. Training of trainers on *“Capacity building of small farm holders of Liberia on modern farm mechanization technologies”*
63. Training of trainers on *“Capacity building of entrepreneurs of Liberia on greenhouse design, manufacturing, installation, maintenance and overall greenhouse management using automated processes”*
64. *“Capacity building of Master trainers on sustainable beekeeping, honey production, processing and marketing, value addition and value chain support in Liberia”*
65. Training of trainers on *“Building the capacity skills of resource poor Liberian farmers on post-harvest and food processing technologies of horticultural crops”*
66. Training of trainers on *“Capacity building of Liberian farmers on modern post-harvest technologies and management of food grains for improving market access and income”*
67. Training of trainers on *“Empowerment of Liberian farmers on commercial dairy farming and modern dairy technologies to improve market entry and sustainable income”*
68. *“Capacity building of master trainers on public-private partnerships (PPP) with special reference to Liberia”*

69. *“Capacity building of extension personnel on management of profitable poultry production and advanced poultry technologies for established agripreneurs in Liberia”*
70. *“Capacity building of extension personnel on management of modern soil testing (STL) and mobile soil testing (MSL) laboratories for soil amendment and fertilizer recommendations in Liberia”*
71. Training of trainers on *“Empowering the skills of Liberian farmers on various agricultural entrepreneurial ventures”*
72. *“Empowerment of young agricultural graduates of Liberia on community leadership and agri-preneurship”*
73. *“Capacity building of Liberian women smallholders on agricultural and enterprise skills”*
74. Training of trainers on *“Formation and management of farmer groups / cooperatives in Liberia”*
75. Training of trainers on *“Application of modern food processing technologies and management for entrepreneurship development among agripreneurs of Liberia”*
76. Training of trainers on *“Upgrading the skills of food processing entrepreneurs; and manpower development for promotion of new food industry and entrepreneurship in Liberia”*
77. *“Strengthening the skills of Liberian extension functionaries on advanced fisheries techniques vis-à-vis fish quality, fish handling, processing and marketing”*
78. *“Empowering the managerial skills of Liberian extension personnel on the importance of good marketing practices in agricultural marketing”*
79. *“Capacity building of extension personnel on advanced production, harvesting and marketing technologies of mushroom for prospective agripreneurs in Liberia”*
80. *“Empowering extension functionaries of Liberia on the application, promotion and integration of various ICTs tools and techniques for knowledge acquisition and sharing in their fields of work”*

81. Strengthening of agricultural extension management system and advisory services in Liberia through new and emerging approaches in extension management

The number of extension functionaries to be trained in each of the above priority areas may be fixed based upon the availability of funds, time and master trainers in each priority area. The felt needs of the extension personnel, national priorities, current policies and programmes; and existing status of extension manpower in Liberia may also be given due consideration while selecting the number of extension personnel.

BIBLIOGRAPHY

Accelerating progress toward the economic empowerment of rural women (RWE), 2013

<http://www.meas-extension.org/meas-offers/case-studies/songhai-center-liberia>

Agriculture in Liberia - https://en.wikipedia.org/wiki/Agriculture_in_Liberia

Bringing cocoa back to life

<http://www.irinnews.org/report/76429/liberia-bringing-cocoa-back-life>

Cassava (Manihot esculenta) in Liberia: History, geography, traditional processing and cyanogenic glycoside levels

https://www.researchgate.net/publication/254229967_Cassava_manihot_esculent_a_in_Liberia_History_geography_traditional_processing_and_cyanogenic_glycoside_levels

Cassava production and utilization in Liberia -

<http://www.fao.org/wairdocs/ilri/x5458e/x5458e0i.htm>

Central Agricultural Research Institute (CARI), Republic of Liberia Strategic Plan 2015 – 2025, 2014

<http://www.moa.gov.lr/doc/Central%20Agricultural%20Research%20Institute%20Strategic%20Plan%202015-2025.pdf>

Climate change adaptation agriculture project

http://www.lr.undp.org/content/liberia/en/home/operations/projects/environment_and_energy/climate-change-adaptation-agriculture-project.html

Comprehensive assessment of the agriculture sector in Liberia (CAAS-Lib) - 2007, Volume 1 - synthesis report, Ministry of Agriculture, Liberia.

Empowering women In Liberia joint programme on gender equality and women's empowerment

<https://undg.org/wp-content/uploads/2014/07/Liberia-Empowering-Women.pdf>

Extension service

<http://www.professor-frithjof-kuhnen.de/publications/agricultural-development-liberia/2-4.htm>

Food and agriculture policy and strategy - From subsistence to sufficiency, Ministry of Agriculture, Republic of Liberia, Monrovia, Liberia

http://www.gafspfund.org/sites/gafspfund.org/files/Documents/Liberia_5_of_7_FAPS_Food_Agriculture_Strategy_0.pdf

Good Agricultural Practices for greenhouse vegetable crops Principles for Mediterranean climate areas - <http://www.fao.org/3/a-i3284e.pdf>

Government Support to Agricultural Insurance: Challenges and options for developing countries - 2010

<https://openknowledge.worldbank.org/bitstream/handle/10986/2432/538810PUB0Gov e101Official0Use0Only1.pdf?sequence=1>

Greenhouse Specialist - <http://mail.gov.af/en/jobs/greenhouse-specialist>

Liberia - <https://en.wikipedia.org/wiki/Liberia>

Liberia - <http://www.g-fras.org/en/world-wide-extension-study/africa/western-africa/liberia.html>

Liberia - http://www.meas-extension.org/meas-offers/country_studies/country-overview /liberia

Liberia - <http://meas.illinois.edu/country-studies/liberia/>

Liberia - <http://www.tulane.edu/~internut/Countries/Liberia/liberiaxx.html>

Liberia agriculture investment opportunities brief - CAADP investment facilitation programme, 2013

Liberia agriculture sector investment program (LASIP) report, Prepared in partial fulfillment of the requirements for the comprehensive African agriculture development programme (CAADP) Compact, 2010, Republic of Liberia, Monrovia, Liberia, September 20

Liberia and FAO Building resilience and food and nutrition security
<http://www.fao.org/3/a-au072e.pdf>

Liberia - Country Profile,

Liberia – Livelihood Improvement for Farming Enterprises (LIFE) III
<http://acdivoca.org/our-programs/project-profiles/liberia-livelihood-improvement-farming-enterprises-life-iii>

Liberia – National adaptation programme of action (NAPA), 2008
<http://unfccc.int/resource/docs/napa/lbr01.pdf>

Liberia - Review of ongoing agricultural development efforts
<http://www.resakss.org/sites/default/files/pdfs/liberia-caadp-brochure-1-review-of-ongoing-agricul-42602.pdf>

Liberia's rural finance and agricultural marketing sub-sectors - 2007
<http://www.fao.org/3/a-ai565e/ai565e03.pdf>

National Sustainable Development Report, 2012, Republic of Liberia, Monrovia, Liberia, May 30

Opportunity knocks Insurance industry analysis – March, 2014

<https://www.pwc.co.za/en/assets/pdf/insurance-industry-analysis-march-2014.pdf>

Pluralistic agricultural extension system and its impact on the productivity of smallholding farmers in Liberia

http://www.cgg.gov.in/pdf_agri_inter/JOHN%20D.%20JAGBAYE.pdf

Religion in Liberia - https://en.wikipedia.org/wiki/Religion_in_Liberia

Research – Extension linkages in Liberia: Opportunities and challenges international conference on good governance in agriculture extension, Hyderabad ,India. 2015

http://www.cgg.gov.in/pdf_agri_inter/Amis.pdf

Smallholder agricultural productivity enhancement and commercialization project (SAPEC): Environmental and social management plan summary

<http://www.afdb.org/fileadmin/uploads/afdb/Documents/Environmental-and-Social-Assessments/LIBERIA%20SAPEC%20ESMP%20Summary%20Final%20to%20ORQR%20Feb%202012Final.pdf>

The development of a cassava program in liberia and dissemination of appropriate packages to farmers

http://www.actahort.org/books/380/380_82.htm

The republic of Liberia national export strategy cocoa export strategy, 2014 - 2018

http://moci.gov.lr/doc/Liberia_National_Cocoa_Export_Strategy2014_2018.pdf

Transforming Africa's Agriculture to Improve Competitiveness

<http://reports.weforum.org/africa-competitiveness-report-2015/chapter-2-1-transforming-africas-agriculture-to-improve-competitiveness/>

USAID - Liberia market study for selected agricultural products, January 2015

<http://eatproject.org/docs/EATMarketAnalysisLiberia.pdf>

USAID – Liberia - Strategic review feed the future, January 21, 2010

With AfDB support, 150,000 Liberian farmers to benefit from financing, innovative technology,

<http://www.afdb.org/en/news-and-events/article/with-afdb-support-150-000-liberian-farmers-to-benefit-from-financing-innovative-technology-15573/>