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FOOD SECURITY DESK REVIEW FOR LIBERIA,
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ACRONYMS AND ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
BMI	body mass index
BNF	Bureau of National Fisheries
CAADP	Comprehensive African Agriculture Development Program
CARI	Center for Agricultural Research Institute
CDC	Congress for Democratic Change
CDCS	Country Development Cooperation Strategy
CFSNS	Comprehensive Food Security and Nutrition Survey
CLTS	Community-Led Total Sanitation (CLTS)
CSB	corn-soy blend
CSI	Coping Strategy Index
DAI	Development Alternatives, Inc.
DHS	Demographic and Health Survey
dL	deciliter
DO	development objectives
DRMC	Disaster Risk Management Committee
EHP	Essential Health Package
ENA	Essential Nutrition Actions
EPA	Environmental Protection Agency (Liberia)
FAO	Food and Agriculture Organization of the United Nations
FAWE	Forum for African Women Educationalists
FED	Food and Enterprise Development
FEWS NET	Famine Early Warning Systems Network
FFP	Office of Food for Peace
FSCF	Food Security Country Framework
g	gram(s)
gCHV	general community health volunteer
GDP	gross domestic product
GOL	Government of Liberia
ha	hectare(s)
HANDS	Health, Agriculture, and Nutrition Development for Sustainability
HIV	human immunodeficiency virus
IDA	International Development Association
IFAD	International Fund for Agricultural Development
IPC	infection prevention and control
ITN	insecticide-treated net
IYCF	infant and young child feeding

kg	kilogram(s)
km	kilometer(s)
l	liter
LASIP	Liberia Agriculture Sector Investment Program
LAUNCH	Liberian Agricultural Upgrading, Nutrition and Child Health Project
LISGIS	Liberia Institute of Statistics and Geo-Information Services
m	meter(s)
MCHN	maternal and child health and nutrition
MDG	Millennium Development Goal
MFI	microfinance institution
mm	millimeter(s)
MOAFS	Ministry of Agriculture and Food Security
MOE	Ministry of Education
MOHSW	Ministry of Health and Social Welfare
MT	metric ton(s)
µg	microgram
MUAC	mid-upper arm circumference
NAPA	National Adaptation Program of Action
NGO	nongovernmental organization
NHSWP	National Health and Social Welfare Policy and Plan
OICI	Opportunities Industrialization Centers International
SBC	social and behavior change
SBCC	social and behavior change communication
SO	strategic objective
STCRSP	Smallholder Tree Crop Revitalization Support Project
SUN	Scaling Up Nutrition
U.N.	United Nations
UNDP	United Nations Development Programme
USAID	U.S. Agency for International Development
WAAPP	West African Agricultural Productivity Project
WASH	water, sanitation, and hygiene
WFP	World Food Programme
WHO	World Health Organization
WISHH	World Initiative for Soy in Human Health

EXECUTIVE SUMMARY

The goal of the U.S. Agency for International Development Office of Food for Peace (USAID/FFP) Food Security Desk Review for Liberia is to provide an overview of the current food security and nutrition situation including the impact of the Ebola outbreak in 2014–15. The desk review summarizes data on the causes and distribution of chronic food insecurity in Liberia; identifies the most at-risk population groups; and describes existing policies, strategies, and programs that aim to reduce food insecurity and strengthen resilience in Liberia.

Liberia has improved dramatically following its prolonged civil war. Despite steady progress in the development of economic, health, and other key development strategies, food insecurity, political fragility, and weak health infrastructure need urgent attention, particularly in the context of the catastrophic Ebola outbreak. Most Liberians (83%) live below the poverty line of US\$1.25/day and 49% of the population are considered food insecure (World Food Programme [WFP] 2015). Nearly a third of children under 5 are stunted. There are high rates of fertility, teenage pregnancy, and neonatal and maternal mortality. The unprecedented and devastating Ebola outbreak that began in March 2014 claimed 4,808 lives among 10,672 suspected, probable, and confirmed cases (U.S. Centers for Disease Control and Prevention 2015). Although the epidemic was officially declared over on May 9, 2015, another six cases were identified to date, resulting in two deaths (Ibid). The crisis plunged Liberia into a state of emergency requiring sealed borders, the closure of schools, and a military presence to maintain a quarantine of Ebola-affected areas. World Health Organization (WHO) officials singled out Liberia for urgent attention given the rapid spread of Ebola and the threat to 1.3 million people in Monrovia, where overstretched health care workers struggled to care for patients (Cumming-Bruce 2014).

Significant disparities in food security can be found throughout Liberia. While nearly 80% of Monrovia residents are considered food secure, only 50% are food secure nationally (WFP 2013). Food diversity among the most vulnerable households is extremely poor, and few have access to adequate drinking water and sanitation facilities. Though the country has ample land, rainfall, good quality soil, coastal access, and mineral resources, few of these assets are used optimally. The country relies on imported food due to low agricultural production output caused by poor farming practices, high post-harvest losses, and substandard road access. The Ebola epidemic severely affected agricultural production since farmers were unable to hire laborers during the height of the epidemic (August–October 2014), which coincided with the harvest period. Quarantine measures to stem the spread of Ebola, such as the closure of international borders and proliferation of numerous road blocks within the country, contributed to a massive increase in food prices.

Literacy rates are poor due to the civil conflict and its aftermath, and a generation of Liberians did not have an opportunity to attend school. Many schools were destroyed during the conflict, and there is a need for qualified teachers and schools to accommodate school-age children. President Ellen Johnson Sirleaf, Africa's first female president, is in her second term of office and is hailed internationally for bringing the country back from the brink of disaster, but significant needs remain. With a population poised to double by 2040, the government and its development partners must act to stem increasing poverty.

1. INTRODUCTION

Since the cessation of civil war hostilities 10 years ago, Liberia has become more stable politically and economically. Numerous investors vie for mineral and land rights to iron ore, gold, timber, and cash crop plantations of oil palm, rubber, coffee, cocoa, and sugar. Much of the economic growth in the past decade is linked to resurgence in the mining and cash crop sectors. President Ellen Johnson Sirleaf has brought a measure of stability and unity to the political realm and champions the rights of women. Nonetheless, food insecurity is widespread and is particularly high in remote parts of the country, which have poor roads or lack them altogether. Adding to Liberia's significant development challenges, an outbreak of Ebola in 2014 overwhelmed the national health system, prompting a state of emergency to be declared on August 7, 2014 and threatening the economic and social stability of the country. Until the epidemic was brought under control in May 2015, Liberia had the highest number of people infected than any other country in West Africa or since the first outbreaks occurred in East Africa. A total of 4,808 people died of Ebola among 10,672 confirmed, suspected, and probable cases, the majority of which occurred in Monrovia (U.S. Centers for Disease Control and Prevention 2015).

Over the past decade, FFP development food assistance programs have worked in the most vulnerable counties in Liberia to improve maternal and child health and nutrition (MCHN), agricultural production, livelihoods, and youth education. Globally, the objectives of the FFP programs are “to target the underlying causes of hunger and malnutrition, reduce chronic malnutrition among children under 5 years of age and pregnant and lactating women, increase and diversify household income, and strengthen and diversify agricultural production and productivity to build resilience and reduce the need for food assistance.”

The Food Security Desk Review for Liberia was drawn from secondary data, interviews with staff implementing the current Title II development food assistance programs in Liberia, and representatives from USAID/Liberia, Government of Liberia (GOL) ministries, donors, and bilateral agencies such as the United Nations (U.N.) and the World Bank. The desk review also draws from discussions with program participants in current FFP program interventions and other USAID Mission-funded activities. The desk review is guided by USAID's Policy Determination 19, which states: “Food security exists when all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life.” This document uses this definition of food security and the concepts of risk, vulnerability, and resilience as a framework to describe the context and determinants of food insecurity in Liberia, and the programmatic actions recommended to reduce food insecurity in the country. (See Appendix 1 for a map of Liberia for reference and the following box for key definitions.)

Key Definitions

Food availability: Having sufficient quantities of food from household production, other domestic output, commercial imports, or food assistance

Food access: Having adequate resources to obtain appropriate foods for a nutritious diet, which depends on available income, distribution of income in the household, and food prices

Food utilization: Proper biological use of food, requiring a diet with sufficient energy and essential nutrients; potable water and adequate sanitation; knowledge of food storage, processing, basic nutrition, and child care and illness management

Resilience to recurrent crisis: The ability of people, households, communities, countries, and systems to mitigate, adapt to, and recover from shocks and stresses in a manner that reduces chronic vulnerability and facilitates inclusive growth

Layering: Targeting the same populations when appropriate with different and complementary programming

Integrating: Ensuring that resilience-building activities and vulnerable populations are included in humanitarian and development programs, and improving coordination between humanitarian and development assistance programs

Sequencing: Examining areas where humanitarian assistance is no longer needed, and mainstreaming resilience concerns from these same areas into follow-on development activities

Sources: USAID 1992; USAID 2012a; USAID/Mali 2014

1.1 OVERVIEW OF RECENT FFP PROGRAMS IN LIBERIA

DEVELOPMENT PROGRAMS

ACDI/VOCA: ACDI/VOCA manages a \$40 million Title II Multi-Year Assistance Program known as the Liberia Agricultural Upgrading, Nutrition, and Child Health (LAUNCH) program, which aims to improve food security of vulnerable people in Bong and Nimba counties. LAUNCH targets 10,800 farmers in agriculture, 10,281 pregnant and lactating women, 16,770 children 6–23 months, as well as 98,094 family members. In addition, the program aims to reach 13,800 school children through institutional assistance to local schools and training in rural entrepreneurship to out-of-school youth. This allows targeted communities to benefit from sustainable livelihoods interventions as well as health and nutrition and education services. The project began in 2010 and although it was scheduled to end in 2014, USAID FFP extended its contract until June 2016 due to the Ebola epidemic in Bong and Nimba. Strategic Objectives (SOs) include:

- SO1: Increased availability of and access to food of vulnerable rural populations
- SO2: Reduced chronic malnutrition of vulnerable women and children
- SO3: Increased access to education opportunities

ACDI/VOCA is the lead organization and partners with PCI Global and John Snow International Inc., which manage SO2, while Concern International and Making Cents International oversee SO3. From the onset of the Ebola epidemic in March 2014, LAUNCH worked with communities and the Ministry of Health and Social Welfare (MOHSW) to spread awareness and prevent Ebola. This was particularly critical since the first cases were identified in Guinea, near LAUNCH's operational zone in Nimba County. The LAUNCH team crafted Ebola messages regarding early signs/symptoms and the risk of infection caused by traditional burial practices. The message were disseminated by project-supported community health workers during meetings, radio messages, and trainings. With the epidemic rapidly spreading by June 2014, ACDI/VOCA suspended its farming activities in SO1 and education efforts under SO3 due to school closures in August to devote its resources to support lead mothers; community health volunteers; Disaster Risk Management Committee (DRMC) members; and water, sanitation, and

hygiene (WASH) committees. They also distributed Ebola prevention educational materials, handwashing buckets, and medical supplies for rural health clinics in Bong and Nimba. Earlier support to DRMCs in rural areas proved critical as these groups identified sick community members, isolated these households, and reported them to district and county authorities. Their collective efforts reached 135,000 community members (ACDI/VOCA 2014). ACDI/VOCA and its partners returned to full project implementation in May 2015 once the epidemic had abated.

OICI: From 2010 to December 2015, Opportunities Industrialization Centers International (OICI) also had a Title II Multi-Year Assistance Program grant in Liberia valued at \$34.7 million. OICI managed the Health, Agriculture, and Nutrition Development for Sustainability (HANDS) program in conjunction with Liberia OIC, World Initiative for Soy in Human Health (WISHH), Malnutrition Matters, and Forum for African Women Educationalists (FAWE). The overall goal of HANDS was to lower the real costs of food for targeted beneficiaries through a value-chain approach that improves nutrition for pregnant and lactating women and children under 5 to eliminate the current food gap and nutritional deficit among Liberia’s most vulnerable rural populations in Grand Gedeh and River Gee counties. An estimated 34,589 residents were expected to benefit directly from the HANDS program by 2015. The three SOs of the HANDS program were:

- SO1: Improved food availability and access
- SO2: Reduced malnutrition among children under 5
- SO3: Increased educational attainment

During the early stages of the epidemic, HANDS provided updates on the situation in its coverage area related to increasing Ebola caseloads and the impact on market prices, which was significant. Most importantly, Grand Gedeh and River Gee counties had only 4 and 18 Ebola cases, respectively, by May 2015.

EMERGENCY PROGRAMS

Over the course of 2014–2015, USAID/FFP made seven awards to address acute food insecurity among vulnerable populations in Liberia, both directly and indirectly affected by Ebola, using a cash-based approach to restore household purchasing power, promote the recovery of market function and trade, and support agricultural production. USAID/FFP has partnered with four nongovernmental organizations in Liberia (ACDI/VOCA, PCI Global, Mercy Corps, and Save the Children) to distribute targeted cash transfers and food vouchers, organize agriculture and livelihoods fairs and cash-for-work opportunities, and recapitalize traders and savings groups. In addition, USAID/FFP has also partnered with the World Food Program (WFP) to locally and regionally purchase food for distribution to populations directly and indirectly affected by Ebola, as well as in support of school feeding to help households meet their children’s food needs while incentivizing school attendance. USAID/FFP also provided in-kind ready-to-use therapeutic food to UNICEF to help restart screening and treatment service for children with severe acute malnutrition. In total, USAID/FFP has invested approximately US\$65 million to address the primary and secondary impacts of Ebola in Liberia.

2. BACKGROUND

2.1 POLITICAL LANDSCAPE

In David Lamb’s 1980 classic, “The Africans,” written just prior to Liberia’s civil war, he characterized Liberia as a politically stable and economically progressive country relative to the troubled neighboring countries of that era. For 150 years, Liberia was dominated politically and economically by a minority group of freed slaves known as Americo-Liberians. In 1980, Samuel Doe’s coup d’état ended the Americo-Liberian reign, and after Doe’s own ousting by Charles Taylor in 1990, the country spiraled downward, resulting in civil unrest leading to mass displacement, the deaths of over a quarter million people, and economic collapse. With the signing of the Accra Peace Agreement between warring factions on August 18, 2003, Liberia’s nearly 14 years of civil war came to an end. Building upon the legacy of former Liberian President Tubman’s “Open Door, Integration, and Unification” policy of the 1960s, President Ellen Johnson Sirleaf, a former Minister of Finance in the 1970s, became Africa’s first female president in 2006. She continues to rebuild the country through a reform agenda that relies on foreign investment and the reconstruction of social institutions and transportation services. She was re-elected in 2011 and will complete her second term in 2017.

Liberia has enjoyed stability and growth over the past decade, but the political and economic situations remain tenuous. Some staff in Sirleaf’s administration face corruption charges, and the capacity of government ministries remains low. Many Liberians continue to struggle economically and blame the government for failure to create more jobs and provide better education, roads, health care, electricity, and water in major towns, especially Monrovia. The proliferation of mining and plantation land concessions granted to large companies has sparked complaints among local communities that they are being pushed off their land. Although the U.N. peacekeeping mission — United Nations Mission in Liberia — was supposed to reduce its military presence in 2014 and transfer the burden of security to the state, the drawdown was suspended due to the Ebola epidemic. President Sirleaf admitted that her government could have done more in the early stages of the Ebola epidemic and avoided critical mistakes such as the heavy-handed security crackdown that led to the death of a teenager and fueled mistrust of the government. The poor performance of the president’s Unity Party in the December 2014 Senate elections may have reflected the electorate’s frustration with her handling of the Ebola epidemic and general economic situation. Nearly a third of voters nationwide supported the Congress for Democratic Change (CDC), led by former footballer and presidential candidate George Weah, though CDC only gained two Senate seats out of a total of 15 (VOA News 2015). Due to the ongoing Ebola epidemic during the election period, voter turnout was quite low.

2.2 SOCIOECONOMIC LANDSCAPE

The Liberian economy faltered considerably due to the Ebola epidemic in 2014. The epidemic negatively affected economic growth, investment, and access to social services, which reduced growth to an estimated 1.8% in 2014, though the economy had been projected to grow by 6.8% (African Development Bank 2015 and Toweh 2014). The agriculture, services, and mining sectors were significantly impacted by the epidemic. Food prices rose considerably as a result of roadblocks, border closures, travel restrictions, and a reduction in imports. By August 2014, the price of imported rice had risen by 18% in just one month (World Bank 2015). Residents of Lofa County faced food price increases between 25%–79%. The fiscal impact has also been substantial due to a reduction in tax revenue and the costs to fight Ebola (Ibid). Prior to this shock, Liberia enjoyed a prolonged economic rebound since the war ended due to the resurgence of extractive and export crop industries. However, high unemployment in urban areas and poor road access and agricultural yields in rural areas had kept most Liberians in poverty. The

economy grew 8.1% in 2013, largely because of iron ore exports from Accelor-Mittal concessions and Firestone's rubber production from its plantations and purchases from smallholders. Public sector reforms are underway, and a newly formed Liberia Revenue Authority seeks to increase tax collection (African Development Bank Group 2014). The country has poor infrastructure, including poor primary/feeder roads and a limited electrical grid that pose a significant constraint to growth, but any recent visitor to Liberia is struck by recently completed and ongoing road construction around Monrovia, Buchanan, Tubmanburg, and Nimba County. A hydropower station built in 1966 but destroyed by Taylor's rebels was in the process of being refurbished when the Ebola epidemic struck. Given such delays, it is anticipated to become operational by December 2016. New investments in gold, iron ore, and other mines and in large plantations of oil palm and timber were delayed due to Ebola. Gross domestic product (GDP) growth for 2015 is expected to be only 0.5% and 4.8% in 2016 as investments and planned construction projects come back on line (World Bank 2015 and Food and Agriculture Organization of the United Nations [FAO] 2015).

Agricultural production constitutes the most important livelihood for the average Liberian, involving 67% of the population (WFP 2013). The sector contributes 26% of GDP, primarily from exports of rubber, palm oil, cocoa, sugar cane, and coffee, but most of the country's food supply is met by imports due to low overall productivity and limited road access (Ibid). A comprehensive food security study by WFP in 2012 found that food-insecure households in the lowest wealth quintile rely on informal and unstable income sources such as charcoal production, mining, rubber tapping, casual labor, and farm production (Ibid). More than a quarter of the country's population resides in the greater Monrovia metropolitan area, where many people face high unemployment, poor sanitation conditions, limited electricity, and high levels of crime. Despite these challenges, the majority in Monrovia are food secure (Ibid).

Table 1. Selected Economic and Poverty Indicators for Liberia

Indicator ¹	
Population	
Total (million)	4.19
Rural population (% of total)	51.4
Population density (per sq km)	43.5
Economy	
GDP per capita	\$275.70
Consumer price index	187.7
Poverty	
Age dependency ratio (% of working age population)	85.5
Population below poverty line (% of population earning < US\$1.25/day) (World Bank)	83
Human Development	
Human Development Index ²	0.388
Gender-Related Development Index ²	0.658
Mobile subscribers (per 100 people)	57.1
Internet users (per 100 people)	3.8
Agriculture	
Food production index	125.4
Agriculture value added per worker	699.9
Cereal yield (kg/ha)	1210.3
Education^{3,4}	
Literacy rate (adult female)	47.9
Literacy rate (adult male)	71.4
Literacy rate (female youth 15–24 years)	64.2
Literacy rate (male youth 15–24 years)	79.0
Net primary school enrollment	23.0
Net primary school completion rate ⁵	4.0
Net secondary school enrollment (% female)	12.5
Net secondary school enrollment (% male)	21.7
Net secondary school enrollment (female as % of male)	57.6
Life Expectancy, Fertility, and Mortality⁶	
Life expectancy at birth (female)	61.2
Life expectancy at birth (male)	59.3
Total fertility rate (children per woman)	4.7
Under-5 mortality rate (per 1,000 live births)	94
Infant mortality rate (per 1,000 live births)	54
Neonatal mortality rate (per 1,000 live births)	26
HIV Prevalence⁷	
Female (15–49 years)	2.0
Male (15–49 years)	1.7

¹ Source is the World Bank's online database except where noted.

² U.N. Development Programme. Accessed on June 10, 2014. "Liberia Human Development Report." Available at <http://hdr.undp.org/en/countries/profiles/> (Liberia).

³ 2013 DHS

⁴ UNICEF 2013

⁵ UNICEF 2013

⁶ 2013 DHS data for fertility and mortality statistics

⁷ 2013 DHS

Maternal Health⁸	
Maternal mortality rate ⁹	1,072
Median age at first marriage (for women 25–49 years)	18.8
Median age at first birth (for women 25–49 years)	18.9
% of women 15–19 years who have begun childbearing by age 19 ¹⁰	38.0
Food Security Indicators	
Global Hunger Index ¹¹	17.9
% of households who are food insecure or moderately food insecure ¹²	49.4
Proportion undernourished in total population (%) (2012) ¹³	28.6
Dietary Diversity Indicators	
% of dietary energy supply from cereals, roots, and tubers (2009) ⁵	69.0
Average supply of protein from an animal source (grams/capita/day) (2009) ⁵	6.0
Water and Sanitation	
Improved sanitation facilities (% of population with access)	16.8
Improved water source (% of population with access)	74.6
Malnutrition¹⁴	
Stunting prevalence (children under 5)	31.6
Wasting prevalence (children under 5)	6.0

2.3 HEALTH

Key health challenges. Since the end of the civil war, Liberia has made notable achievements on several health and nutrition indicators, including impressive progress toward Millennium Development Goal 4¹⁵ related to decreasing child mortality, as well as advances with new health infrastructure and human resource development. However, the overall health and nutrition situation in the country remains extremely poor, with high rates of illness and malnutrition among children under 5, high rates of fertility and teenage pregnancy, and exceedingly high rates of neonatal and maternal mortality. In addition, Liberia faces significant challenges due to communicable diseases, particularly malaria, diarrhea, and acute respiratory infections. Most notably, when the 2014–15 Ebola outbreak engulfed Liberia, it caused a public health emergency that pushed the health system to the brink of collapse, as it infected health workers or left them too frightened to see patients, required strict quarantine measures, and paralyzed the provision of health services (GOL 2015). In the wake of Ebola, the GOL, and partners such as the U.S. Government and WHO have committed to rebuilding health sector capacity and constructing a more effective and resilient system. The long-term implications of the Ebola outbreak are yet unknown.

Mortality. Immediately prior to the Ebola crisis, the 2013 Demographic and Health Survey (DHS) had reported impressive progress in reducing under-5 mortality rates, compared to previous DHS surveys. The infant mortality rate is 54 per 1,000 live births and under-5 mortality is 94 per 1,000 live births. Particular challenges for Liberia include a very high neonatal mortality rate at 26 per 1,000 live births, and a tragically high maternal mortality rate of 1,072 maternal deaths per 100,000 live births, which did not improve from the previous DHS (Liberia Institute of Statistics & Geo-Information Services [LISGIS] et

⁸ 2013 DHS

⁹ 2013 DHS

¹⁰ UNICEF 2014

¹¹ International Food Policy Research Institute (IFPRI). 2013. *Global Hunger Index*. Washington, DC: IFPRI.

¹² 2013 CFSNS

¹³ FAO. Accessed on June 10, 2014. FAOSTAT. <http://faostat3.fao.org/faostat-gateway/go/to/download/D/FS/E>.

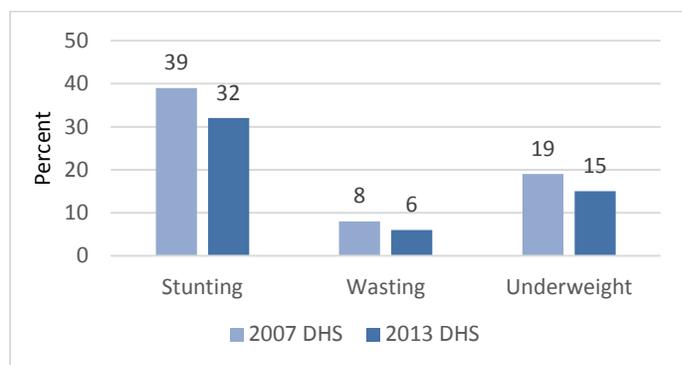
¹⁴ 2013 DHS

¹⁵ Millennium Development Goal 4: Reduce under-5 child mortality by two thirds by 2015.

al. 2014). A World Bank analysis published in July 2015 estimated that Ebola caused grave repercussions for maternal and child mortality rates due to disruptions in health services and that higher mortality rates in the future are likely due to the loss of health workers who contracted Ebola. These calculations found that probable increases in mortality included 20% for infant mortality rates, 28% for child mortality, and 111% for maternal mortality, which would erase Liberia’s maternal health gains of the past 15 years (Evans et al. 2015). It is important to note that these calculations are based on estimated maximum increases and employ World Bank data as mortality baselines rather than DHS data¹⁶ (Ibid). Also, estimates are built on the assumption that health workers lost to Ebola are not replaced, which emphasizes the critical importance of assuring that life-saving preventive and curative MCHN services are available in the short and long term.

Child nutritional status. Despite some improvement, the nutritional status of Liberian children (as shown in Figure 1) remains a serious risk to children’s growth and development, as well as the long-term development of the country. Stunting, which indicates chronic malnutrition over a long period, affects one-third of Liberian children under 5,¹⁷ placing the country in the WHO’s “high” stunting classification for prevalence above 30% (LISGIS et al. 2014). Most of Liberia’s 15 counties fall in the range of 25–35% stunting prevalence, but River Gee is a clear outlier with 43% stunting. Wasting, an indicator of acute malnutrition, is 6% nationally, falling into WHO’s “medium” category, with higher prevalence around 9% in several food insecure counties, such as Bomi, Grand Bassa, and River Cess.

Figure 1. Trends in Child Nutritional Status in Liberia (%)



Women’s health and nutrition. Regarding women’s health vulnerability, 7% of Liberian women have a body mass index (BMI) of less than 18.5 indicating thinness, although it reaches 15% in young women aged 15–19 (LISGIS et al. 2014). While national HIV prevalence for adults age 15–49 is low (1.9%), women bear a heavier burden of HIV, as women 15–24 years of age have three times the HIV prevalence of men in the same age group (1.4% versus 0.5% for men) (Ibid). Most concerning is the significantly higher HIV prevalence of 5.3% among pregnant women 15–24 years. Nearly 40% of Liberian adolescents have already begun childbearing before age 18, which puts them and their children at a higher risk of malnutrition and adverse pregnancy outcomes in addition to HIV (Ibid). Liberia’s elevated total fertility rate of 4.7 children per woman is even higher for rural women, with 6.1 children per woman (Ibid). Through a series of high-level initiatives, such as the Accelerated Action Plan for Reducing Maternal

¹⁶ The World Bank data used the Human Development Indicators 2015 (<http://datacatalog.worldbank.org/>). As an example, the maternal mortality data showed 630 per 100,000 live births with an expected increase of 111% to 1,347 per 100,000 live births. In contrast, the maternal mortality ratio from the 2013 DHS was 1,097 per 100,000 live births.

¹⁷ Height-for-age z-score < -2 standard deviations (SD).

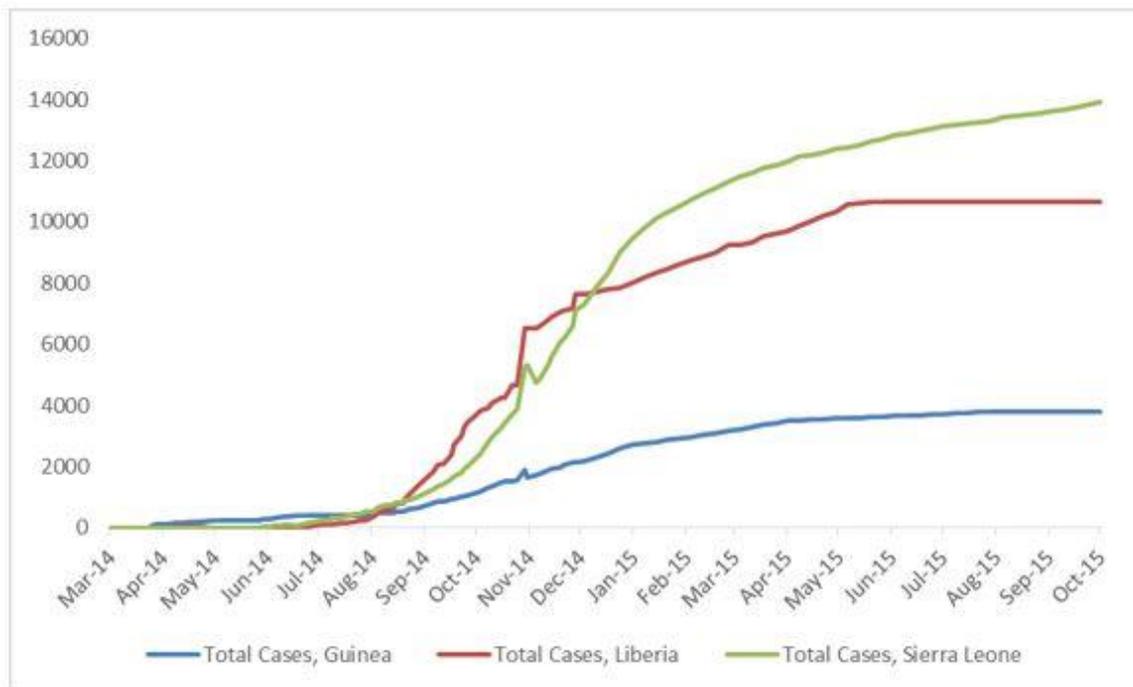
Mortality, the government has committed to improving access to and the quality of key interventions; however, as is noted above, maternal mortality remains alarmingly high.

Access to health care. Liberians have seen dramatic improvements in recent years regarding the rebuilding of health infrastructure, with an estimated 69% of the population living within 5 km of health services in 2010, after 95% of health facilities were destroyed during the civil war (GOL 2011). Still, severe constraints to health care remain regarding access, quality, and staff capacity. The 2014 Ebola epidemic paralyzed the delivery of routine health services, as public sector outpatient visits fell by 61% (GOL 2015). Many facilities were closed, non-Ebola supplies were minimal, and people feared contracting Ebola in health facilities where sick people are taken. Services for women and children were particularly affected, with estimated declines of 43% for antenatal care, 38% for facility births, 45% for measles vaccinations, and 53% for diphtheria-tetanus-pertussis vaccinations between August and December 2014, as compared to the previous year (GOL 2015). Health facilities are now fully operational but observing enhanced infection control precautions, such as using mid-upper arm circumference (MUAC) tape only for one patient and discarding it. Even before Ebola, health services were constrained by a severe shortage of some cadres of health care workers, such as doctors and trained midwives, although the country graduates an adequate supply of nurses (GOL 2011).

Water, sanitation, and hygiene. Contributing to and exacerbating poor health is Liberia's dire situation with sanitation infrastructure and limited access to water. Regarding improved sanitation, few rural households (4%) and only 22% of urban households have unshared access to an improved latrine or toilet, making open defecation a common reality (LISGIS et al. 2014). Roughly half of rural households have access to an improved water source, while 86% of urban households have access (Ibid). A weak water and sanitation environment added to the hazardous situation during the Ebola crisis and continues to increase the risks of disease transmission.

Ebola. The Ebola outbreak, which originated in Guinea along Liberia's northern border, quickly engulfed Guinea, Sierra Leone, and Liberia, infecting nearly 28,388 people in the three countries between March 2014 and September 2015, as shown in Figure 2. Cases spiked out of control for nearly 6 months, and as mentioned, more than 10,666 Liberians were infected, while 4,808 Liberian men, women, and children lost their lives to Ebola. With roughly 30 times the rate of infection as the general public, 378 Liberian health workers were infected and 192 perished (WHO 2015). President Sirleaf acknowledged that Ebola had overwhelmed the country and that international public health assistance was imperative. Through the heroic efforts of Liberians and health workers from around the world, Ebola was nearly contained approximately 15 months after its explosion. However, its effects can be felt throughout the health system: the loss of health workers due to Ebola or fear of exposure, an outbreak of measles in 2015 due to halting of routine vaccinations months earlier, and an overall derailing of progress with all non-Ebola health programs (WHO 2015b). Also, a high percentage of Ebola survivors report a range of disturbing symptoms including joint pain, headaches, memory loss, anorexia, blindness, hearing loss, and internal bleeding (Ebola Deeply 2015). These symptoms, referred to as post-Ebola syndrome, may jeopardize the future food security of survivors and their families, and create an additional burden on the health system. Additionally, an estimated 5,900 children lost one or both parents to Ebola, requiring long-term assistance from relatives, the government, or nongovernmental organizations (NGOs) to access housing, school fees, medical care, and emotional support to overcome the devastating loss (Collins 2015).

Figure 2. Total Suspected, Probable, and Confirmed Cases of Ebola Virus Disease in Guinea, Liberia, and Sierra Leone, March 25, 2014–September 27, 2015*



* By date of WHO Situation Report, n=28,388

Source: U.S. Centers for Disease Control and Prevention. “2014 Ebola Outbreak in West Africa—Reported Cases Graphs.”

Health and nutrition policy environment. In transitioning from an emergency recovery to a development agenda, Liberia has aggressively targeted deficiencies in its health, nutrition, and sanitation sectors through the development of key policies, including the National Health and Social Welfare Policy and Plan (NHSWP) for 2011–2021, which lays out the framework for the government’s engagement in infrastructure, human resources, basic services, and financial resources. Policies related to community health, infant and young child feeding, and water and sanitation target a multisectoral response through integrating health and nutrition services with water and sanitation support, agriculture promotion, and social services. The MOHSW has a nascent Nutrition Department and in 2014 joined the Scaling Up Nutrition (SUN) Movement. However, the Ebola crisis dramatically stalled Liberia’s planned engagement in non-Ebola health and nutrition issues through mid-2015, including participation in SUN. The Investment Plan for Building a Resilient Health System 2015–2021 is the government’s blueprint for rebuilding and strengthening its health sector through human resource development, improved infrastructure, and comprehensive Ebola surveillance. Although spending on health skyrocketed in 2014 to combat Ebola, in 2013 national spending on health was about US \$191 million, translating into 4% of GDP and \$44 per person (WHO 2013). At that time, 13% of the 2013 national budget was invested in health, a figure considered high in comparison with other low-resource African countries, although international assistance provided nearly 60% of the total resources for health (Ibid).

2.4 LAND

Liberia has a total land area of 9.8 million hectares¹⁸ (ha), about half of which is covered by tropical forest and 47% of which is arable, comprising topographical uplands (41%) and lowlands (6%). Population

¹⁸ Liberia Country Pasture/Forage Resource Profiles.

density in Liberia is comparatively low at 43.5 persons per km², but this figure has doubled since 1991. This scenario will worsen over the next several decades given a population growth rate of 3.66%—the third highest globally. Land is a sensitive topic among many Liberians due to the impression that the government has granted large tracts of land to multinational companies for rubber, palm oil, timber, and mining concessions. Mining and agricultural concessions account for 29% and 10%, respectively, of the country’s total land area; another 29% has been granted for timber and other private use (Global Witness 2012). The demand for land by the private sector is increasing, with an additional 13% of total land area proposed for new concessions (Ibid). Golden Veroleum Liberia, a Singapore-based palm oil company, made headlines in late 2014 following accusations that it took advantage of individuals and local communities in Grand Cru and Sinoe counties during the Ebola outbreak to sign favorable land deals. Records show that the company signed an unprecedented number of land purchases amounting to 14,571 ha from July–October 2014, the height of the Ebola epidemic, since the company launched activities in 2012.¹⁹ Smallholder farmers are feeling the encroaching presence of private companies in Bomi, Grand Bassa, and River Cess counties particularly, due to their proximity to Monrovia, seaports, recent rehabilitation of primary roads and abundance of virgin forests, especially in River Cess. Few farmers have actual land titles due to the arduous and costly nature of securing land rights. Land rights have been plagued by confusion and misinformation, which have fueled land conflicts. Traditionally the government has not maintained a strong presence on land tenure oversight at the community level, rather, it has devolved this responsibility to local chiefs (USAID 2011). There has been increasing pressure to rectify this situation, especially to strengthen women’s right to own land.

Entering office in 2006, President Sirleaf recognized the importance of improving land rights and tenure for all Liberians and led passage of the Land Rights Policy in 2013. The policy describes how public and government land may be acquired, transferred, and protected; the manner in which private and customary land may be protected; and how individuals or communities may be equitably issued with deeds (GOL 2013). The policy seeks to correct longstanding problems related to legal land ownership, women’s ability to own land, and environmental protection, and to spur economic growth through land ownership. The Land Commission, an independent government agency, oversees the legal aspects and management of the land policy.

2.5 GENDER

Women face discrimination and violence in Liberian society. The literacy rate among women is nearly half that of men, and though primary school enrollment of boys and girls is nearly equal, girls are underrepresented in secondary school. Teenage pregnancy is a significant problem in Liberia, with a median age of first birth at 18.9 years and 19 years for first marriage (see Table 1). The Land Rights Policy strives to improve a woman’s right to own and inherit land, but customary law and cultural norms make it difficult to do so. Although women play a dominant role in agricultural production, few women are able to own land, access loans, or control the income they earn from their labor. Domestic violence and sexual abuse are rampant, the latter being a legacy of the atrocities committed against women by rebels during the prolonged civil war.

In 2009, Liberia drafted a National Gender Policy that aims to empower women and protect their rights in Liberian society. The Ministry of Gender is responsible for creating and strengthening structures, legal mechanisms, processes, and women’s representation in national development. The gender policy delineates 19 priority areas. The policy emphasizes the need to assist adolescent girls to ensure their rights and protection are safeguarded, reduce teenage pregnancy through health and education programs, and

¹⁹ <http://news.mongabay.com/2015/07/palm-oil-company-denies-capitalizing-on-ebola-to-advance-liberia-operations/>

prosecute violence perpetrated against all women through improved access to justice and elimination of discrimination in the courts. The Ministry of Gender advises the government on these matters and ensures that gender-responsive planning and mainstreaming are prioritized by the government, community groups, NGOs, religious, and cultural groups (GOL 2012).

2.6 ENVIRONMENT, CLIMATE, AND NATURAL DISASTERS

Liberia is roughly the size of Tennessee and comprises a flat coastal zone with a slightly elevated hinterland scarcely surpassing 500 meters at its highest point. Compared to other African countries, rainfall patterns, ecology, and natural hazards are fairly consistent throughout the country (Holt et al. 2011). A number of rivers emanate from the Guinean highlands cross Liberia to the Atlantic Ocean. There are numerous swamps and wetlands, which make up nearly 9% of the country’s total land mass. The country has a lengthy rainy season that runs from May to October, though this pattern has been increasingly inconsistent in recent years. Liberia enjoys enviable rainfall with levels of 2,500–5,000 mm per year throughout the country. Thus, the country’s food security challenges are not typically driven by climatic conditions.

Shifting cultivation and climate change are the most significant environmental threats in Liberia. Due to the availability of land and forests, farmers tend to shift cultivation to new plots annually to increase production rather than implement conservation or improved agricultural techniques on their land. This practice, as well as charcoal production, commercial logging, and palm oil plantations, contributes to deforestation. In 2008, Liberia’s Environmental Protection Agency (EPA) prepared a National Adaptation Program for Action (NAPA) to address manifestations of climate change such as coastal erosion, erratic rainfall patterns, flooding, and temperature increases. The EPA has 35 environmental evaluators in Liberia who are responsible for environmental impact assessments, enforcement of environmental policy, and environmental protection. These evaluators are also part of the country’s National Disaster Relief Commission, housed in the Ministry of Internal Affairs, which is responsible for disaster preparedness and response. The Liberian government does not currently have a comprehensive early warning system to track proxy food security indicators such as rainfall, market prices, and MUAC or weight-for-age for children under 5. However, in the wake of increased food insecurity due to Ebola, a Food Security and Monitoring Surveillance System has been proposed by the National Food Security Cluster. This system would support County Statistics and Information Management Offices to “collect, manage, and disseminate statistical and spatial information” within their own county and feed information into a national database to conduct monitoring and early warning about deteriorating situations (LISGIS 2015).

2.7 EDUCATION

Liberia has a young population, with 75% under the age of 35 and a median age of 18 (USAID 2009). Many people never attended school due to the war and its aftermath, hampering young people’s ability to find work and flourish in society. Despite overall economic improvements, Liberia’s educational system remains extremely weak due to a lack of school infrastructure, qualified teachers, educational materials, and investment from the Ministry of Education (MOE). As a result, many Liberians who do finish school lack basic literacy and numeracy skills. Currently, 60% of teachers have no formal training, and the MOE estimates that 16,000–17,000 teachers must be trained to ensure that demand for free primary education can be provided (Walker 2009).

Literacy rates in Liberia are low: Only 47.9% of women and 71.4% of men are literate (LISGIS et al. 2014). Younger women, however, tend to be more literate: 69% of women age 15–19 are literate compared with only 23% of women age 45–49 (Ibid). While primary school is meant to be free in Liberia, many schools impose fees in order to pay teachers, purchase basic materials, and make repairs. Also,

youth who were unable to attend primary school during the civil war are too old for their current grade level (Walker 2009). In 2011, the Education Reform Act provided free basic education through grade 9 (Education Development Center 2012). For secondary school enrollment, the net is 22% among males and 13% among females (UNICEF 2013). The median number of school years completed is 3.9–6.7 years for males age 15–24 years and 3.5–4 years for females of the same age group. At all levels of schooling, many parents must send children away to access the appropriate grade level, another barrier hindering them from continuing their education (UNICEF 2012). It is common for parents to start children in school later so that they will not need to be sent away from home at a young age (Ibid).

The ability to read and use numbers increases the likelihood that vulnerable rural households will use new agricultural techniques, adopt optimal maternal and child health and nutrition practices, and become leaders in their communities. FFP participants interviewed for this desk review noted that illiteracy is a problem and said more must be done to address it. Literacy levels remain poor a decade after the war because many children missed the opportunity to go to school and there are few schools and teachers in remote rural areas. Moreover, teachers are poorly paid, students lack educational materials, and teaching quality is often substandard. Recently, schools were closed for nearly 1 year to reduce transmission of Ebola. The Adult Literacy Division of the MOE launched an effort in recent years to increase literacy skills among the adult population. USAID-funded activities such as the Advancing Youth Project and the Liberia Teacher Training Project aim to rectify these problems by supporting the MOE to rebuild this sector, which is crucial to Liberia's recovery and development. The World Bank recently partnered with the MOE to provide grants to schools to improve their infrastructure. To access these funds, school authorities and communities must produce a school improvement plan.

Agricultural and health field agents working on recent FFP programs felt that high rates of illiteracy in the communities they served made it difficult for beneficiaries to comprehend new messages. For example, ACIDI/VOCA uses the Farming as a Business methodology to show farmers how incremental improvements in their planting practices can increase yields and income. The training covers work planning, cash flow, record keeping, and budgeting, but this assumes farmers have sufficient literacy and numeracy capacity to benefit from these tools, a point that was also noted in the program's mid-term evaluation (Moneval Solutions Ltd. 2013). LAUNCH subsequently initiated an adult literacy component in 2014. In late 2013, the OICI HANDS Program's partner FAWE established Girls Empowerment Clubs for 920 participants across 30 schools in River Gee and Grand Gedeh. Female students meet with a mentor once per week to discuss issues pertinent to them, such as assertiveness skills, self-esteem, and teen pregnancy, through role playing and other exercises. The primary objective of these clubs is to keep girls in school, build their confidence, and help them avoid early pregnancy—a significant problem in Liberia that contributes to poverty. Mentors were respected members of the community who are trained by FAWE staff.

3. FOOD SECURITY CONTEXT IN LIBERIA

3.1 REGIONS AND POPULATIONS VULNERABLE TO FOOD INSECURITY

As mentioned, the predominant nutritional problem in Liberia is chronic malnutrition, which affects almost one-third of children under 5 (LISGIS et al. 2014). In addition to seasonal food deficits, frequently cited causal factors include: poor dietary diversity due to over-reliance on rice and cassava and sub-optimal infant and young child feeding (IYCF) practices (Yovsi 2010). Additionally, young children suffer from high prevalence of illness, especially diarrheal disease related to poor water, sanitation, and hygiene (WASH) practices and malaria, all of which degrade their nutritional status. In addition, extremely poor access to sanitation results in open defecation, creating the conditions for environmental enteropathy (frequent contamination with fecal bacteria that damages the intestines, impedes absorption of nutrients, and contributes to malnutrition) (Humphrey 2009).

Significant disparities in food insecurity can be found throughout Liberia, with some disparities in malnutrition prevalence as well. Most Monrovia are considered food secure compared to those in rural areas (WFP 2013). According to a recent food security study conducted by WFP and other partners, the most food insecure counties were Grand Kru (33%), River Gee (32%), Grand Cape Mount (30%), and Bomi (29%), where market activity was most affected by border closures and roadblocks during the Ebola epidemic (WFP 2015).

Table 2. Stunting and Food Insecurity by County

County (by prevalence of chronic malnutrition)	% of children <5 stunted (-2SD)	% of households with severe and moderate food insecurity
1 River Gee	43%	32%
2 Grand Bassa	38%	15%
3 Nimba	37%	10%
4 River Cess	35%	22%
5 Bong	35%	10%
6 Bomi	33%	29%
7 Maryland	33%	25%
8 Sinoe	32%	23%
9 Grand Gedeh	31%	15%
10 Grand Kru	31%	33%
11 Margibi	31%	28%
12 Grand Cape Mount	29%	30%
13 Lofa	29%	11%
14 Montserrado	27%	14%
15 Gbarpolu	25%	26%
16 Monrovia	N/A	8%

Sources: 2013 DHS for stunting and the Emergency Food Security Assessment prepared by WFP et al. 2015 for food insecurity.

Household characteristics are an important determinant of food insecurity. Broadly, rural Liberian households are poorer and have lower food diversity than urban denizens. Severely food insecure households lack food stocks of key staples such as cassava and rice, livestock, and proper hygiene conditions and have limited food consumption. They are highly reliant on credit, hunting, gathering, and casual labor for survival. Household heads tend to be illiterate with limited to no education (WFP 2015). Ebola worsened food security for the most vulnerable households due to the temporary closure of markets, inability to harvest crops collectively, and the decrease in job opportunities, especially for casual labor. This event depleted household assets and food stocks and compromised their livelihoods. A recent

food security study revealed that 16% of Liberian households had reduced the number of daily meals compared to the pre-Ebola period. This was particularly true for severely food insecure households, of whom 22% had reduced their meals (Ibid).

Food insecurity has surged in some areas since the Ebola epidemic. Bomi, Grand Kru, and River Cess were some of the most food insecure counties in 2012, and the situation worsened in 2015. Grand Cape Mount and Margibi counties have become more food insecure largely due to poor market access caused by the epidemic. Households in these counties have experienced a decrease in income of greater than 50%, with the exception of Margibi. Though Monrovia had the most number of Ebola cases and shows the lowest number of severely food insecure households (8%), 28% of the population lives here, so this represents a sizable number of vulnerable households (Ibid).

3.2 FOOD AVAILABILITY AND ACCESS

Agriculture is the foundation of Liberia’s economy and the key to food security and poverty reduction. It is the primary livelihood source for two-thirds (67%) (WFP 2013) of the population, who are engaged in smallholder staple and cash crop production (rubber, palm oil, cocoa, sugar cane, and coffee). A total of 71% of farming households grow rice and 40% grow cassava (GOL 2011a). But Liberia imports 50–60% of its staple food requirements, making it vulnerable to global food price volatility (WFP 2010).

Increasing agricultural production is a priority of the GOL. The country has the potential to return to pre-war production levels of 128.9 kg/capita/year in 1979 compared to 107.4 kg in 2011 (FAOSTAT). Increasing food production is vital since Liberia’s population is expected to double by 2040. In 2003, Liberia adopted the Comprehensive African Agricultural Development Program (CAADP), which commits the country’s government to investing more in the agriculture sector. The Liberia Agriculture Sector Investment Program (LASIP) outlines how the investments are to increase national output, focusing on food and nutrition, competitive value chains and market linkages, institutional development, and water and land management.

3.2.1 FOOD AVAILABILITY

Land Availability and Access

Liberian farmers have an average of 1.3 ha of land per household, but land holdings for smallholders vary by region (GOL, WFP et al. 2006). Average farm sizes range from a high of 2.18 ha in Lofa county—Liberia’s breadbasket—to roughly 0.8 ha in Bomi, River Gee, and Grand Kru. Population density is highest in Monrovia and the surrounding Montserrado County, as well as in Nimba, Margibi, and Maryland counties. Southeastern counties such as Grand Gedeh, Sinoe, and River Gee are more sparsely populated and have poor road infrastructure, fewer jobs near mining concessions, and heavy forest cover.

Land ownership is governed by statutory and customary law. Inconsistencies in these laws have resulted in several types of land holding arrangements with different associated levels of tenure security. These range from deed holders with a comparatively higher degree of tenure security to squatters with no security. The three main types of land ownership are state or public ownership, individual proprietorship, and ownership based on customary/tribal rights. Most land falls under customary ownership in which traditional chiefs are custodians of the land. The recently passed Land Rights Policy seeks to improve smallholder farmers’ ability to own land and assist them in registering land at the county level.

Production Systems, Levels, and Trends

Agricultural output in Liberia is derived from three types of farms: traditional, commercial, and concession. Traditional smallholder farms produce staple foods (primarily rice and cassava) and limited

export crops, which include coffee, cocoa, rubber, and oil palm. Commercial farms are mainly owned and operated by Liberians and produce fruits, coffee, oil palm, cocoa, poultry, and pigs. Foreign-owned concession plantations mostly produce rubber and palm oil (GOL 2007). Before 2000, timber constituted 50–60% of total exports, but during the war, the United Nations banned timber exports because proceeds financed various rebel armies (LASIP 2010). Timber and rubber constitute the two largest exports, approximately US \$100 million and \$70 million, respectively, per annum of estimated exports in 2012 of \$774 million (Ibid).

Farm production varies throughout the country, but forest-based farming predominates. In the central part of the country, farmers grow tree crops, rice, and cassava, while vegetables and other food crops are grown on a smaller scale. The northern region—where the majority of the rice is grown—is traditionally Liberia’s breadbasket, while populations in the coastal belt rely on fishing and production of various food and tree crops as primary livelihoods (LASIP 2010).

Since the end of hostilities, food production has increased, but smallholder yields remain low. Rice, Liberia’s staple food, is grown by 71% of farm families (LASIP 2010). A crop survey completed in 2012 revealed that Nimba, Bong, and Lofa counties collectively produced 60% of the rice grown in Liberia (LISGIS 2012). Though agricultural production has nearly quadrupled since 2005, farmers’ yields average 1,206 kg/ha for paddy rice production on an average farm size of one ha (LISGIS 2012)—only one quarter of the yield rate of the rest of the world. Cassava ranks as the second most important smallholder crop, with average yields of 6–10 metric tons (MT) per ha. A range of vegetable crops are also grown such as chili pepper, bitter ball, groundnuts, cabbage, and onions.

Table 3. National Agricultural Production (in MT)

Crop	2009	2010	2011	2012	2013
Cassava	495,300	493,000	489,270	485,190	491,810
Cocoa (beans)	4,600	6,700	11,700	12,000	8,400
Coffee (green)	1,800	600	652	700	680
Oil (palm fruit)	174,000	174,000	174,000	176,000	176,000
Rice (paddy unmilled)	293,000	296,090	290,650	297,190	238,000
Rubber (natural)	59,500	62,100	63,000	63,000	63,000
Sweet potatoes	19,963	20,000	22,000	23,000	23,200
Taro (cocoyam)	26,724	25,500	27,000	27,500	27,500
Vegetables (fresh)	62,983	82,500	84,300	85,000	88,095

Source: Agricultural Crop Survey 2012 by LISGIS and FAOSTAT database, accessible at <http://faostat3.fao.org>.

The Ebola outbreak worsened short-term food security due to a decrease in agricultural production and increased food prices for domestic and imported food supplies. The rice harvest, which usually occurs between August and October, corresponded to the height of the epidemic in 2014. Difficulty in hiring casual laborers in major paddy rice production areas such as Lofa and Margibi and in bringing product to rice mills and the market due to road blocks contributed to losses as high as 25% (WFP 2015). The government estimated a 12% drop in rice production compared to 2013 (FAO 2015). As previously noted, food prices rose dramatically due to road closures and a decrease in imports. Nonetheless, less than a quarter of traders surveyed nationwide by the Famine Early Warning Systems Network (FEWS NET) via SMS in both April and November 2015 reported reduced market functioning, while up to 67% of traders in Grand Gedeh recently reported a decline in market supplies (FEWSNET April, November 2015 and January 2016). In the November 2015 survey, 59% of respondents reported that agricultural activities were normal and on time (FEWS NET 2016). Though there have been marked improvements since 2014,

it does not appear that agricultural production levels and commodity markets returned to normal by the end of 2015, following the end of the epidemic.

Subsistence farmers have poor agronomic practices and limited access to improved inputs and modern tools. Farmers maintain soil fertility by shifting cultivation from one location to another using a slash-and-burn technique. The most significant constraints related to improving agricultural production include weak land tenure systems, limited access to markets, poor planting practices, and substandard post-harvest handling and storage. Many development projects, including the current FFP programs, collaborate with the Center for Agricultural Research Institute (CARI) in Gbargna in Bong County. The institute undertakes research and multiplication of improved seed varieties such as rice seed (NERICA) and cassava (e.g., CARI GARI, a new cassava variety high in vitamin A and beta carotene, and other varieties resistant to cassava mosaic disease). In addition, there has been a significant emphasis on improving cassava production by the government and by a variety of donors, including through the current FFP and Feed the Future programs.

Land tenure. Rural farmers rarely possess appropriate documentation to prove and protect claims to land due to the cost and complexity of pursuing formal documentation of rights. Further, there is a lack of transparency and clarity around statutory claims (Landesa 2014). Historically, the state considered Liberians claiming land under customary tenure to be “occupants” or even “squatters,” with negative implications for their claims to land (Unruh 2009). During the field assessment in May–June 2014, it was observed that women play a vital role in food and nutritional security but have less access to productive assets such as land and land titles, agricultural extension services, and finance. To address this issue and many others relating to improving land tenure for all, the government set up the Land Commission in 2010 to advocate and reform land policy and laws. Appendix 2 provides a broader analysis about land in Liberia.

Agricultural practices. Limited literacy and poor farming techniques among farmers contribute to low food production and high post-harvest losses. Few farmers use improved inputs, rotate crops, intercrop, perform integrated biological pest control practices, plant drought-resistant crop varieties, apply erosion control measures, or effectively manage water and soil. Liberian farmers do not reap optimal agricultural yields despite the near omnipresence of fertile soils, water sources, and sufficient rainfall. Farmers have had the luxury of shifting cultivation to new plots annually, due to the relative availability of land and sparse population in rural areas. If farmers introduced conservation practices, they could remain in the same plots, thereby reducing deforestation, while working to improve yields. Apart from agricultural extension provided by NGOs, government agricultural extension services are practically non-existent. Ministry of Agriculture and Food Security (MOAFS) representatives informed the assessment team that one extension officer is supposed to be posted per district, but in many cases these posts are vacant due to lack of funding. Where extension officers exist, they often lack transport to make field visits. Further, many farmers are illiterate, which makes adoption of new practices difficult and can lead to improper use of synthetic fertilizers and pesticides, posing serious health risks to farmers and consumers of their products. Though significant production gains have been achieved to date and cassava is an important food in the Liberian diet, it is both poor in nutrient value and low in economic value if it is not processed. Further, a comprehensive cassava value chain analysis estimates that supply outstrips demand (Global South Group 2013).

Both FFP grantees in Liberia employed interventions to support smallholders in Bong, Grand Gedeh, Nimba, and River Gee counties to improve agricultural practices for increased yields of key food crops such as cassava, rice, and vegetables (pepper, okra, and garden eggplants). Implementers hired agricultural extension agents who work closely with a lead farmer selected by the community to impart

key messages to individuals and farmer groups. In some cases they have used MCHN activities such as Care Groups to integrate programmatic messages related to farm production and improved nutrition through dietary diversity.

Labor availability. Smallholder farmers, development program implementers, and government officials all cited the lack of labor and increasing urbanization as significant constraints to increasing agricultural production. The median age of farmers in rural areas is rising, and interviewees noted a shortage of labor in the rural areas due to migration of young people to urban areas and growing demand for labor in the mining and cash crop plantation sectors. Others also referred to a general disinterest in farming among young people due to its relatively low profitability, high risk, and associated hard physical labor. Part of this societal trend is a legacy of the civil war, in which many young men had been child soldiers and did not take part in farming with their families at an early age. Demobilization programs in the recovery period focused on small and medium enterprise development and small grants to start businesses. Many young men used these funds to buy motorcycle taxis to serve urban markets as their business of choice.

Post-harvest losses. Other factors affecting the profitability and marketing of agricultural produce are the significant post-harvest losses caused by pests, humidity, and the lack of good storage and processing facilities for farmers. Annually, Liberian farmers lose up to half of their harvest due to poor storage conditions and preservation methods, a factor that contributes to the country’s insufficient food supply. Many farmers interviewed for this desk review said that pests were a major problem, including birds for rice production, groundhogs (“grass cutters”) for root and vegetable crops, and a variety of insects—including locusts—for all crops. The high likelihood of post-harvest loss is a disincentive for farmers to grow more food than necessary to feed their families. In rural areas, farmers use traditional granaries to store rice and cassava, which are prone to pest infestation- and humidity-related losses of up to 25% (GOL, WFP et al. 2006). Farmers may lose 45% of their vegetable production due to poor handling, limited road infrastructure, and lack of cold storage (Ibid). Further, bulk storage facilities are lacking, which would allow farmer groups and cooperatives to store large amounts of produce for longer periods after the harvest and give them greater bargaining power with traders. As a result, Liberia imports large amounts of food from neighboring countries to meet household consumption requirements, despite the general availability of land, sufficient rainfall, and fertile soil in the country.

Smallholder training led by FFP implementers included methods to reduce post-harvest losses through timely harvest to lower insect infestation and improved handling and drying methods. One implementer worked with communities to build solar dryers to dry cassava for *gari* (dried cassava) production and other food crops. They also constructed improved storage facilities for grains and tubers with rat guards using locally available materials.

Road infrastructure. Poor road infrastructure in Liberia has significantly hindered the growth of the agricultural sector as it limits farmers’ ability to access more valuable markets and improved inputs to increase production. During the May–September rainy season, movement from rural areas is significantly curtailed due to heavy rainfall, especially in lowland swamp areas. As a result, smallholders tend to sell produce in local markets where prices are relatively lower. Lack of storage also prohibits farmers from gathering commodities to sell in bulk to external traders. Despite the government’s current initiative to rehabilitate main roadways and some key feeder roads in productive areas, more work is needed to improve road and bridge infrastructure in remote rural areas.

Given significant constraints related to the marketing of smallholder commodities, both FFP implementers rehabilitated feeder roads in high production zones. The nature of the work varied from limited spot repairs using manual labor, to more substantial road rehabilitation using a mix of heavy machinery and community labor.

Energy infrastructure. President Sirleaf inherited an electrical grid mostly destroyed by rebel forces. Before hostilities worsened in the 1980s, Liberia had installed capacity of 190 megawatts, primarily benefiting Monrovia (Liberia Electricity Corporation 2015). Formerly, Liberia’s primary power derived from hydropower at the Mount Coffee Hydropower Plant in Montserrado County, north of Monrovia. Ongoing rehabilitation of the plant was significantly delayed by the Ebola epidemic, but work is now back on track and slated to be completed by December 2016. Liberia Electricity Corporation received financial support from USAID and other donors to expand the grid outside of Monrovia using heavy oil generators. Liberia has some of the highest electricity costs in Africa at \$US0.43 per kilowatt hour (World Bank 2011). Energy access is quickly changing, as evident from a recent report that found that 16.4% of urban and 1.2% of rural households had electricity (2013 DHS). Though there is intermittent power in most of the major towns upcountry, the grid does not reach most rural households or the majority of residents in Monrovia.

Value chain constraints. According to a value chain analysis for rice in 2009, the weak business enabling environment and limited access to end markets constrain growth (Reynolds and Field 2009). Farmers view rice as a safety net crop, a perception that is reinforced by the government’s price control policies. Farmers are also dissuaded from growing more lowland rice, which has higher yields than the more common upland rice, because lowland varieties require more labor/inputs and technical expertise such as the removal of stumps and the creation of water control structures. In addition, many farmers tend to grow the same crops rather than diversify their production to profit from commodities in shorter supply. More profitable urban markets are challenging for farmers to access due to the fact that imported rice is cheaper and cleaner, with fewer foreign materials such as stones that make their product less competitive compared to imported rice. The cassava and vegetable production value chains face many of the same issues, though these products do not compete with imports. More smallholder produce could penetrate higher value markets in Monrovia, especially fresh vegetables, but poor road and storage conditions are significant hurdles. The government’s recent effort to rehabilitate national roads will reduce transport costs, though the country has a limited supply of trucks due to looting that occurred during the civil war. Storage facilities are limited, forcing farmers to either sell at the farm gate or to harvest crops such as cassava only when they are ready to consume or sell. Many farm households also maintain traditional granaries to store agricultural commodities, and efforts have been undertaken by various NGOs to improve post-harvest storage. Some companies that buy cassava, oil palm, and rubber (such as AGRO) are able to rent warehouse space at market centers (Burruss and Cooley 2012). Few farmers are able to profit from value-added products such as *gari* and milled rice due to a lack of equipment, technical know-how, and financing. The high cost of power and the limited grid are also problematic for rice milling and *gari* production, constraints identified in many value chain analyses.

ACDI/VOCA trained smallholder farmers in business skills development using its Farming as a Business program. Subjects include farm business planning, record keeping, bulk marketing, profit and loss analysis, and creating linkages among market actors. The training enabled smallholder farmers to improve their crop and planting practices and connect to input dealers and buyers in local markets. Other efforts included the installation of rice mills in collaboration with DAI-FED, a Feed the Future-supported activity. Mills were constructed in remote areas with high rice production that had formerly lacked milling capacity.

Financing. Farmers have difficulties accessing credit to invest in their farms. When asked how they were able to secure funds to farm, 53% of all rural households reported obtaining credit from friends or relatives or through *susu* clubs, also known as rotating savings schemes (GOL, WFP et. al. 2006). Agriculture accounted for only 5% of total commercial bank credit in 2008 (LASIP 2012). Through its new agricultural strategy, the Liberian government plans to promote financial inclusion and the

integration of microfinance by creating an enabling policy such as the Liberian Strategy for Financial Inclusion and Regulatory Environment, establishing a supporting infrastructure, and building sustainable microfinance providers (LASIP 2012). A new venture known as the Afriland First Bank plans to provide lending through an agricultural loan portfolio with a nationwide venture. To date, this special loan window has yet to be launched. Some credit unions have been supported by the U.N. Development Programme (UNDP) and the African Development Bank in a few counties and by the Bangladesh Rural Advancement Committee, a recently launched program to support agricultural input stores through a financing mechanism.

In the absence of formal credit facilities in rural areas, FFP implementers have helped project recipients launch rotating savings schemes such as village savings and loan associations or credit and savings groups. These community-based structures require members to contribute regularly and allow members to take loans as necessary. The groups have grown exponentially since inception and proved to be quite resilient throughout the 2014 Ebola crisis. With the depletion of household assets at the height of the Ebola epidemic, members relied upon loans from group savings.

Livestock

The livestock population in Liberia has increased slightly since the civil war, when stocks were decimated. As of 2012, nearly a quarter of agricultural households (21.7%) had livestock, including cattle, sheep, goats, pigs, and chicken (LISGIS 2012). The majority of livestock are held in Nimba County, with 41.8% and 63.7% of the nation's total stock of cattle and pigs, respectively (LISGIS 2012). There is also a significant discrepancy in livestock holdings between male- and female-headed households, with male-headed households holding 81.5% of total livestock and female-headed households holding only 18.5% of livestock (LISGIS 2012). Farmers receive practically no assistance from government extension officers to address animal disease, animal husbandry, forage, and productivity challenges. Local breeds are reasonably well adapted to local conditions, but the productivity of local breeds is poor due to a lack of nutritious animal feed (GOL 2007). Primary diseases found among cattle include trypanosomiasis, parasites, brucellosis, cattle contagious peri-pneumonia, foot-and-mouth disease, anthrax (bacterial and symptomatic), pastoralosis hemorrhagic septicemia, piroplasmosis, anaplasmosis, babesiosis, and theileriosis (GOL 2007). It is quite difficult to secure animal vaccines in rural areas, and paravets are in short supply, apart from initiatives led by NGOs. Monrovia lacks a sanitary abattoir; butchering of meat in rural areas is rudimentary, and the cold chain for storage is inadequate. Due to the shortage of meat, Liberia imports this commodity from neighboring countries, with some estimates reporting up to 137 trucks of live animals crossing the border each week (GOL 2007). This trade is largely informal, and though fees are paid at various checkpoints, traders do not fully pay associated import taxes.

Table 4. National Livestock Production (head)

Species	2009	2010	2011	2012	Average (2009–2012)
Cattle	8,370	10,650	7,000	10,440	9,115
Sheep	43,470	48,450	47,200	46,680	46,450
Goats	75,330	96,750	100,000	96,400	92,120
Pigs	68,000	64,990	65,200	61,210	64,850
Chickens	774,960	800,780	951,260	924,700	862,925

Source: Agricultural Crop Survey 2012, LISGIS

Fishing and Aquaculture

As in other formerly productive sectors, fishing and aquaculture resources are vastly underutilized and inefficient compared to the pre-war period. Liberia’s total annual production of 10,000–15,000 MT of fish is far shy of the 180,000 MT maximum sustainable yield that could be harvested on the continental shelf. The waters off Liberia’s coast are abundant with high-value fish such as tuna, bonito, marlin, and crustaceans, and are accessible via a 570-km coastline. The extensive continental shelf (34 km width), which stretches 200 nautical miles off-shore, provides ample fishing grounds (GOL 2007). Commercial and artisanal fishermen ply the high seas for fish but also compete with foreign trawlers for high-value fish and crustaceans. No recent production data are available, but artisanal fishing brings in about 7,700 MT of catch annually at 10 landing sites, while eight commercial operators had a collective catch of 4,123 MT in 2005 (GOL 2007). About 33,120 people participate in the fish value chain; 60% are women and 40% are foreigners from various West African countries, especially the Fanti tribe from Ghana, who are concentrated in Buchanan.

Fishermen face a variety of challenges. Both high-seas fishermen and fish pond farmers lack sufficient methods to preserve fish. They rarely have access to ice, which would enable them to sell fish more broadly; poor roads also are a constraint. Fishing communities tend to preserve fish through smoking or salting for preservation, though these methods are neither sanitary nor environmentally sound, due to the amount of charcoal used in traditional kilns. Fishermen also lack equipment and technical capacity to fish more productively. Fresh, dried, and processed fish are in great demand, as they are an important part of the traditional cuisine and provide essential nutrients that are important for infant and maternal nutrition. Despite its potential benefit for women and children’s diets, less than half of mothers reported their children had consumed fish, meat, poultry, or eggs at the time of the 2013 DHS, indicating the need for promotion (LISGIS et al. 2014).

In the 1970s, the Peace Corps worked with local communities to build and maintain fish farms to take advantage of Liberia’s 1,810 km of rivers, extensive swamplands, and heavy rainfall (GOL 2007). In the 1980s, there were as many as 450 fishponds and 3,600 fish farmers, but by the 1990s, most ponds were abandoned due to the war. The government estimates that there are now only 300 fish farmers nationwide (Bureau of National Fisheries [BNF] 2014). Starting in 2013, OICI and its technical partner WISHH began a collaboration with the BNF and local communities to improve aquaculture production in Grand Gedeh and River Gee counties (see Appendix 3).

Gender, Agricultural Production, and Asset Ownership

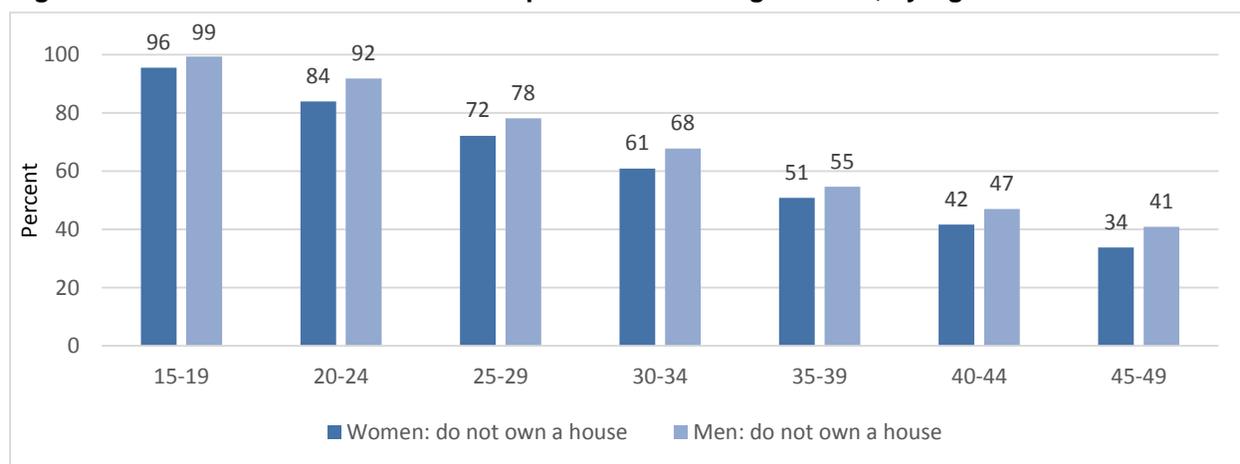
Women play a vital role in agricultural production, marketing, and food preparation for the household. They comprise roughly 60% of the rural agricultural labor force and carry out 80% of agricultural activities throughout the planting season (FAO/WFP 2006). For cassava production in particular, a recent value chain analysis showed that for both male- and female-headed households, women were responsible for land clearing, planting, harvesting, and marketing (Burruss and Cooley 2012). Despite the high level

of participation in agricultural activities, women received less than 40% of NGO assistance in agriculture-oriented programs (Ibid). Moreover, women have less access to productive inputs than men, including land, skills training, basic tools, and technology. Women’s workloads are also increased during less productive periods, when many men migrate to seek work in mines, plantations, and urban areas, leaving women to care for their families and farms.

Liberian women’s challenges to land ownership are a significant barrier to increased agricultural production. Most women are married in traditional ceremonies in which dowries are paid by the groom’s family, and they have limited claims to property. Many displaced widows who returned to their homes after the war could not reclaim land from their in-laws. Some estimate that up to one-third of Liberia’s population are disinherited women and children constrained by customary law (Murray 2009). The 2013 Land Rights Policy supported by President Sirleaf seeks to ensure that women can inherit land and to expand the amount of land under official title, especially for women. The Ministry of Gender recently set up a special county-level provision to allow women to register land and educate them about their rights under the land policy.

While there is limited information on actual asset ownership by men and women, the 2013–14 Liberia DHS survey does provide some useful insights in terms of reported asset ownership. More than 70% of women and men interviewed reported not owning a house. The majority of people 15–19 years reported not owning a house, while less than half of those who are 45–49 years reported not owning a house.

Figure 3. Women and Men 15–49 Who Reported Not Owning a House, by Age



Source: 2013 DHS (LISGIS et al. 2014)

Cereal Availability, Agricultural Trade, National Food Stocks, and Smallholder Marketing

Liberia continues to face food deficits due to inefficient farming systems and recovery from the civil war and, more recently, Ebola. Great gains have been achieved in the past decade, but rice production only covers a third of domestic consumption. Production of other key foodstuffs such as pulses, edible oil, maize, vegetables, and meat is also insufficient (WFP 2013). Given its enviable rainfall, land availability, fertile soils, and water sources, Liberia should produce sufficient food to meet national demand and surpass neighboring countries.

Table 5. Liberia’s Commodity Supply

2010–2014 Average	Rice*	Cassava	Refined/Unrefined Veg/Palm Oil	Pulses	Wheat/Flour
Imports	239,393	0	21,142	1,141	37,634
Exports	6,415 (2013 only)	0	20,000	0	4,719
Production	278,418	510,452	42,700	3,732	0
Total Supply	511,396	510,452	43,842	4,873	32,915

* Converted to milled rice equivalent (60%); 2014 data for rice, wheat is unavailable.

Source: FAOSTAT and BEST 2014

A cross-border market study from 2007 identified Guinea as Liberia’s largest regional trading partner, especially for dried peppers, sesame seeds, groundnuts, and goats (WFP 2007). Liberia exports palm oil, kola nuts, cocoa, and coffee. For areas bordering Côte d’Ivoire in the southeast, Liberians buy basic commodities such as rice. Most of the rest of the imported rice, other cereals, and edible oil come from China, the United States, India, Malaysia, and Thailand. The Liberian government has a fixed-price scheme for imported rice that is adjusted based on prevailing world market prices. Customs assesses a fee of US\$0.25 per bag of imported rice deposited to a rice price stabilization fund overseen by the Ministry of Finance. The Ministry of Commerce and Trade maintains a 2-month strategic reserve of about 700,000 bags of rice, which is held by the largest private sector rice importer, Sinkor Company (Ibid).

Value chain analyses for rice and cassava reveal that smallholder marketing tends to be localized and fragmented. Smallholder products are sold primarily based on their proximity to markets, and transport is the most significant constraint. Smallholders rarely sell products or buy inputs in bulk. In some cases, market traders buy from producers if they are in an area accessible by road. For products bound for Monrovia, market agents will consolidate consignments and negotiate prices with producers (Burrus and Cooley 2012). For cassava, Duala and Gobachop/Red Light markets in Monrovia are the largest wholesale receiving markets, supplied through market agents or farmer deliveries. Most locally produced rice is milled at the household with a mortar or at simple rice mills if one is near farming households (Wailes 2012). The bulk of rice production is consumed by households or sold in upcountry markets closest to production areas, especially Lofa County.

Liberia’s heavy dependence on imported food was significantly affected by the Ebola epidemic due to a disruption in the supply chain and reduction in purchasing power resulting from decreased employment opportunities. The majority of Liberian traders surveyed by FEWS NET in November 2015 reported that markets were open and functioning normally, though this was not the case in some upcountry markets, such as Grand Gedeh, and neighboring Sierra Leone, which was equally affected by the epidemic (FEWS NET 2015). Rice imports decreased in 2014, but import quantities returned to normal in 2015. International rice prices are currently stable and with domestic rice harvests expected to be adequate in late 2015, commodity prices should return to normal.

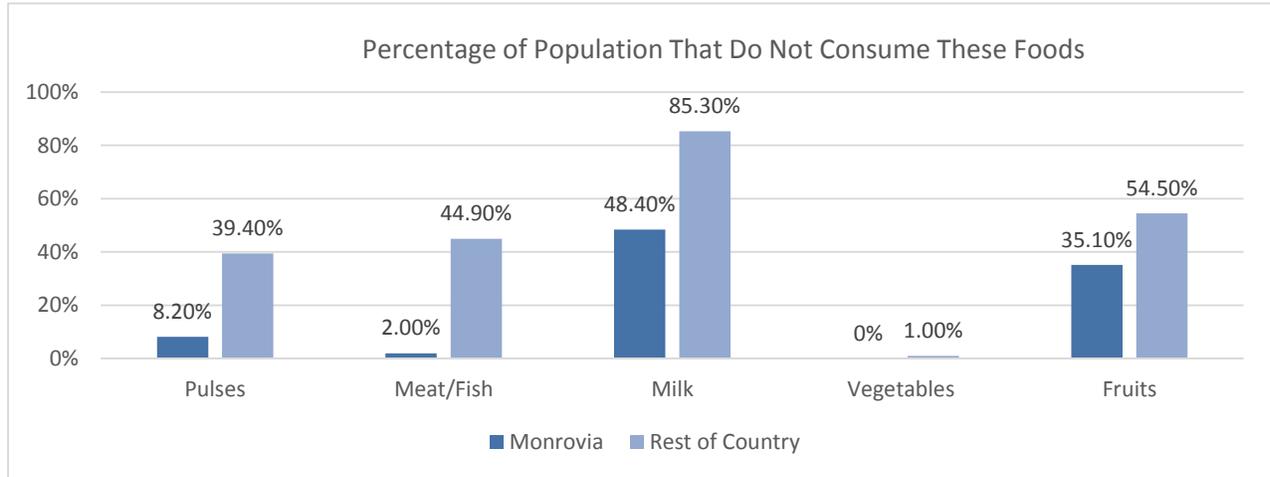
3.2.2 FOOD ACCESS

Food Consumption and Poverty

The diets of the poorest Liberians are based predominantly on low-cost starches such as rice and cassava, with little contribution from more expensive foods such as animal-source foods, vegetables, or fruit. Dietary diversity (the number of food groups on which the diet is based) is a marker of the effect of poverty on the adequacy of the diet. Dietary diversity is poor in rural Liberia and contributes to household food insecurity. Whereas only 2.4% of Monrovia residents have a diet lacking in diverse food groups such as fruits, vegetables, dairy, pulses, meat, or fish, 41% of the national population outside the capital was

found to have poor dietary diversity during a 2012 survey (WFP 2013). The lowest dietary diversity score was noted in River Cess, where 60% of households had a diet composed of mostly starches (WFP 2013). Other counties with poor dietary diversity included Bomi, Bong, Grand Kru, River Gee, and Maryland. For rural households, access to a variety of foods is problematic (due to poor road conditions in many rural areas), contributing, along with poverty, to low dietary diversity scores.

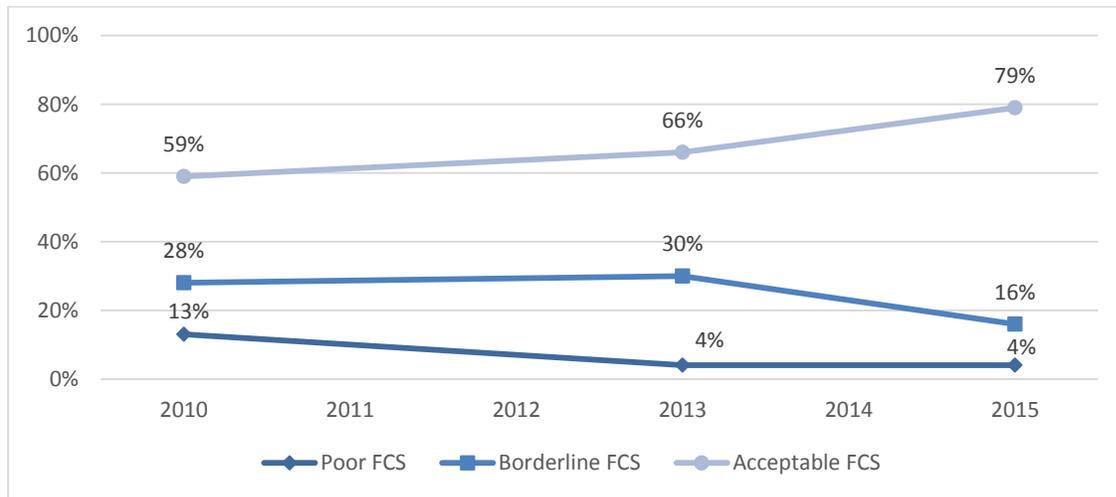
Figure 4. Protein and Vitamin-Rich Food Consumption—Monrovia vs. the Rest of the Country



Source: WFP 2013

Food consumption scores have been improving in Liberia over the last decade, but the medium- to long-term impact of Ebola is inconclusive. Similarly, though the epidemic had a significant short-term impact on employment, food prices, and market access, the long-term impact on household food access and dietary diversity is inconclusive.

Figure 5. Food Consumption Score Trends



Source: WFP 2010, 2013, 2015

Food Purchase

Liberian households depend on markets to purchase food. Monrovia has the best market access and selection in the country while some people in remote areas lack transport and must walk up to 9 hours to reach the closest market. Agricultural producers depend on markets to sell their produce and purchase

food and non-food items. Other livelihood groups such as petty traders, salaried workers, skilled and contract laborers, palm oil sellers, rubber tappers, charcoal producers, hunters, and fishermen have a greater dependence on markets to access food, thus any disruption to the marketing system has a swift impact on food security for these groups (WFP 2013). During the civil war, most markets did not function, and the few remaining active markets were controlled by rebel factions. Market activity and especially trade volumes have not yet recovered to pre-war levels. In late 2014, many markets throughout Liberia closed due to the Ebola epidemic, though things have now returned to normal. Given a drop in agricultural production during the 2014–2015 season, vulnerable households became increasingly dependent on the market to buy food. A recent post-Ebola survey reports that a quarter of Liberian households devote over 65% of their income to food expenditures (WFP 2015).

The variety and frequency of food available in markets throughout the country reflect a number of factors. Foremost, purchasing power and population density determine the quantities and diversity of imported items, fresh foods, and dried goods available in markets. Specific agricultural zones dictate the volume of certain goods at markets. For example, major rice-producing zones, such as Lofa, will have more “country rice” available, while locally produced cassava, plantains, and palm oil are ubiquitous. Road access largely dictates whether areas have a market and the means for goods and buyers to reach those markets. In southeast Liberia, there are fewer markets and those few that exist have a smaller range of products for sale than other areas. Bomi is one example of this because its markets do not have a diverse range of products despite proximity to Monrovia, access to a good road, and proximity to the Sierra Leonean border, which would presumably provide access to more food. During a site visit for this desk review, the survey team learned that agricultural production in Bomi is low due to the presence of mines and plantations. Given the lack of local food production, traders buy most of their produce and dried goods in Monrovia for resale in Tubmanburg, the county’s largest terminal market. Bomi has some of the worst food security indicators in the country, including low dietary diversity and household income, which may be attributed to the lack of agricultural production, limited selection in the markets, and high cost of food due to transport costs.

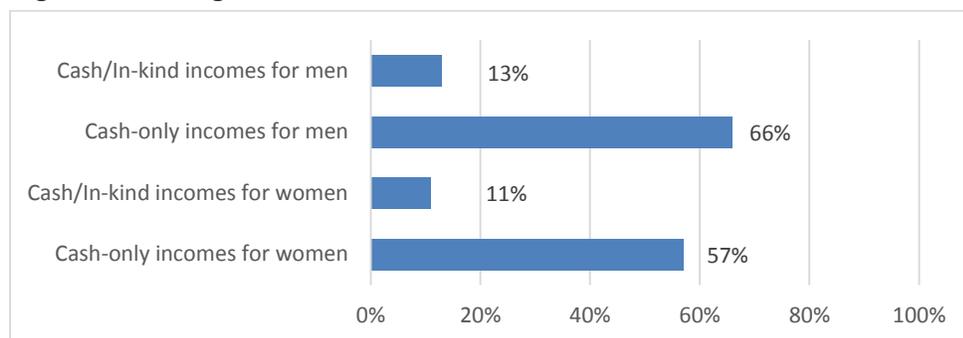
Price data trends indicate that markets with access to good roads are well integrated. Market prices in Monrovia—where 28% of the population resides—are the lowest in Liberia, due to its proximity to the port for imports and its role as a terminal market for fresh and dried goods (FEWS NET 2014a). Following harvest, productive agricultural zones had lower prices for rice, cassava, and other items typical of the zone, such as fresh or dried bush meat. Prices fluctuate substantially during the rainy season, when fewer trucks operate due to the road conditions and poorly maintained vehicles break down, resulting in spoiled produce and delays. As a result, prices rise dramatically during this period, especially in Grand Gedeh, River Gee, Sinoe, Grand Kru, and Maryland, where the road network is in bad condition. Food insecurity tends to rise during the rainy season because most households deplete their rice stocks by May, the start of the rainy season, and must rely on market purchases of imported rice until the harvest in October (FEWS NET 2014b). In late 2014, average inflation rose to 13% as a result of Ebola’s impact on the importation of imported foodstuffs, especially rice. Rice prices registered increases in all markets in late 2014. The Liberian dollar depreciated significantly in May–June 2014 which affected infrastructure projects and the various ministries’ ability to function (Front Page Africa 2014). The currency took another significant dip in late 2014 before returning to pre-Ebola rates in early 2015.

Gender and Food Access

Liberian women tend to have a say in household expenditure decisions but have less access to cash income than men. Some women can access cash income by selling agricultural products at markets. However, poor road conditions, especially during the rainy season, make it difficult to access these markets (World Bank 2010). In addition, 64% of women said the wife mainly makes decisions about

purchases for household daily needs and cooking; 62% of men felt that the wife should control such decisions (2007 DHS).

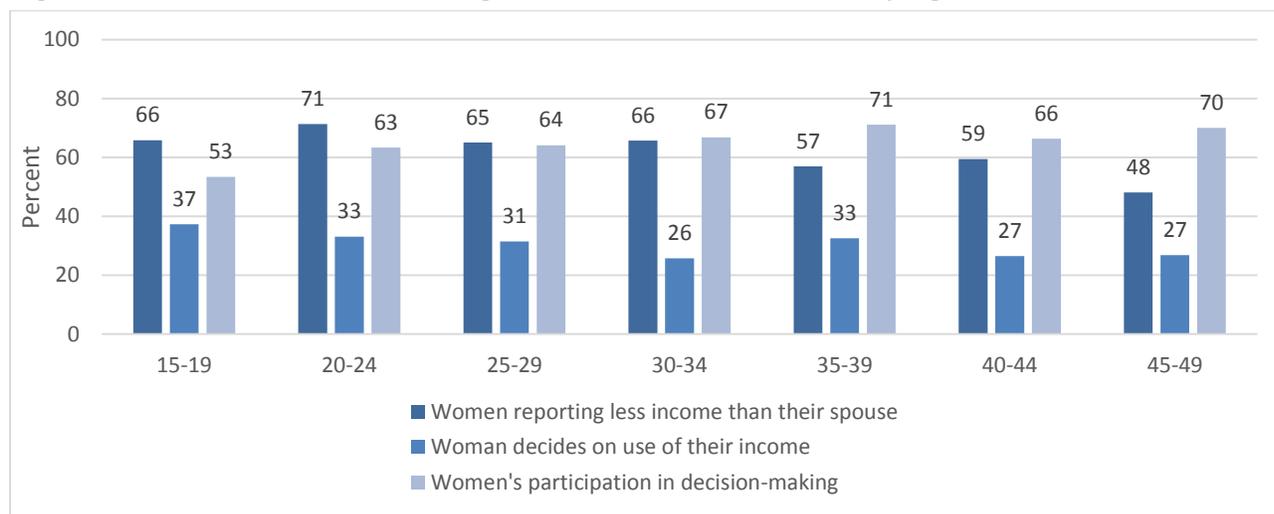
Figure 6. Earnings for Liberian Men and Women



Source: DHS 2013

Regarding control of women’s income, 54% of married women reported they jointly control their earned income with their husbands (see Figure 7). Nationally, 62% of women reported that they earn less than their husbands (2013 DHS). In addition, less than a third of women nationally reported being able to decide on how to use their income by themselves. However, more than 50% of women reported participating in household decisions (their health, important household purchases, and visiting relatives); nonetheless this is lower than men’s participation in household decisions.

Figure 7. Income and Decision-Making Indicators for Women 15–49, by Age



Source: 2013 DHS (LISGIS et al. 2014)

Specific gender roles in agricultural activities limit women’s access to cash crops, reducing their ability to generate cash income. Women provide only 39% of labor for cash crop production, compared to 61% of labor provided by men in this sector. Cash crops, particularly tree crops, tend to be organized through institutional arrangements, such as plantations, which men traditionally dominate (World Bank 2010). In addition, women have limited training in finance, business skills, and value-added technologies, which reduces their ability to access and succeed in market activities. High levels of illiteracy can make it challenging to provide training to women through conventional programs. Radio messages in local languages about market information can improve equity. However, radio ownership among female-

headed households is only 15%, compared to 36% in male-headed households (World Bank 2010). This may be due, in part, to women’s limited ability to earn cash income to buy manufactured goods.

Coping Capacities and Strategies of Populations Vulnerable to Food Insecurity

Apart from Ebola’s devastating effects on families struck by the virus, most of the population was affected by increasing food prices over the past year (WFP 2015). Grand Bassa, Grand Cape Mount, Bomi, and Gbarpolu counties faced the brunt of this shock, according to a recent study by WFP (Ibid). The most common shocks households face are sickness of a family member, increasing food prices, death of a household member, or reduced income due to loss of employment (Ibid). Liberians use various coping mechanisms when facing shocks to food security, such as:

- Limiting portion size at meal times (32% of respondents)
- Relying on less preferred foods (29%)
- Reducing the number of meals eaten in a day (22%)
- Purchasing food on credit (16%)
- Restricting adults’ food so that children can eat (15%)

To determine coping measures’ relative impact on the household, WFP used the Reduced Coping Strategy Index (CSI), which assigns weighted averages to the above strategies based on severity (WFP 2013). If households have a high CSI score, this indicates that they use this strategy relatively often and/or have a severe impact on food security.

Higher poverty rates in rural areas contribute to increasing migration to urban areas as a coping mechanism. However, domestic migrants are having a harder time sending remittances back to families in rural areas. A total of 22% of households with family members in Monrovia or abroad reported that they received nothing from their urban relatives (WFP 2013). Nonetheless, half of poor households receive some remittances of food and money from family members who live abroad or in Monrovia.

A more stratified study of coping mechanisms related to the Ebola virus in Grand Gedeh and River Gee identified many similar findings. Most households (93%) surveyed noted that the extreme rise in food prices caused by market and road closures led them to rely on less expensive food sources such as cassava and increased hunting and gathering (OICI 2015). The majority were also forced to reduce the frequency and size of their daily meals. This region is also noted for a heavy reliance on agricultural production to satisfy household food needs, but 92% noted that it was harder to meet these needs since the onset of Ebola. Many were forced to harvest immature crops, consume their seed stock, borrow from friends and family, or buy food on credit. They also sought alternative employment opportunities such as washing clothes, selling items, and pursuing casual labor on farms and construction sites.

3.2.3 KEY POLICIES, STRATEGIES, AND PROGRAMS RELATED TO FOOD AVAILABILITY AND ACCESS

The U.S. Government’s 5-year development strategy is outlined in the Country Development Cooperation Strategy (CDCS) 2013–2017 for Liberia, which aims to strengthen Liberian institutions to improve inclusive economic growth and reduce poverty. USAID interventions over 2013–2017 will simultaneously sustain hard-won development progress in the post-war era and improve access to critical goods and services. The CDCS focuses on counties that are highly populated and encompass Liberia’s development corridors that include Bong, Grand Bassa, Lofa, Margibi, Montserrado, and Nimba (USAID/Liberia 2013). The results framework for the CDCS has four development objectives (DOs):

- DO-1: More effective, accountable, and inclusive governance
- DO-2: Sustained, market-driven economic growth to reduce poverty
- DO-3: Improved health status of Liberians
- DO-4: Better educated Liberians

The Liberian government has a range of policies pertaining to improved food security. The Agenda for Transformation represents its overarching development strategy and replaces the Lift Liberia strategy (2008–2011), President Sirleaf’s first transitional development policy. The new policy articulates a long-term vision to achieve structural economic transformation, prosperity, and inclusive growth by 2030. The West African Agricultural Productivity Project (WAAPP) funded by the African Development Bank is helping the MOAFS improve its agricultural extension outreach. Currently, there are few government agricultural extension agents in rural areas. While NGOs have traditionally filled this gap, their agents cannot continue this critical support to farmers after donor-supported projects end.

Table 6. Summary of Key Policies, Strategies, and Programs Related to Food Availability and Access

Government of Liberia	U.S. Government	Other
<p>Strategy/Policies:</p> <ul style="list-style-type: none"> • Liberia Agriculture Sector Investment Plan (2010): Agriculture policy aligned with CAADP to encourage public-private partnerships (PPP) for export crops and government emphasis on smallholder farmer growth and development • National Food Security and Nutrition Strategy (2008): Cross-sectoral strategy to address food security and nutrition, including creation of a technical committee and food security/nutrition monitoring mechanism • Agenda for Transformation (2013): Comprehensive multisectoral poverty reduction strategy that replaces Lift Liberia strategy 2008–11) • National Gender Policy (2009): Promotes gender-equitable socioeconomic development; empowers girls and women; increases gender mainstreaming; and strengthens structures, processes, and mechanisms <p>Programs Managed by MOAFS:</p> <ul style="list-style-type: none"> • Agriculture Sector Rehabilitation Project (ASRP): An \$18.3 million project for improving agricultural infrastructure, production, and post-harvest technologies for lowland rice cultivation, funded by a grant from the African Development Bank from 2010 to 2015; the project supports 3,800 farmers in Grand Gedeh, Grand Kru, Maryland, and River Gee. • Smallholder Tree Crop Revitalization Support Project (STCRSP-IFAD): A \$24.9 million project funded by a loan from International Fund for Agricultural Development (IFAD) from 2012–2017 for cocoa, coffee, feeder road rehabilitation, and capacity strengthening in Lofa County only 	<p>Strategy:</p> <ul style="list-style-type: none"> • Country Development Cooperation Strategy (2013–2017) • Food Security Country Framework (2009–14) <p>Projects:</p> <ul style="list-style-type: none"> • Food & Enterprise Development (FED): A Feed the Future program managed by DAI in Lofa, Bong, Grand Bassa, Nimba, Margibi, and Montserrado to bolster the rice, cassava, and goat value chains and enterprise development • Advancing Youth Project: A 2011–16 project that provides improved access to quality education services, social and leadership development, and livelihoods for out-of-school youth age 15–35 • Rural Road Rehabilitation Program is rehabilitating rural roads to enable up to 100,000 people in Lofa, Nimba, Grand Bassa, and Bong to access to markets. The 5-year project, implemented by CDM Smith, will rehabilitate up to 500 km of farm-to-market roads to connect agricultural production areas to commercial centers and to connect people to hospitals, schools, and communities. <p>USDA Food for Progress:</p> <ul style="list-style-type: none"> • A 3-year program managed by Land O’ Lakes in Bong, Nimba, and Lofa to promote commercial goat production, 	<p>United Nations:</p> <ul style="list-style-type: none"> • Various U.N. agencies in Liberia under the “One U.N.” banner are focusing on strengthening the agricultural sector from 2013 to 2017. Emphasis will be on increasing smallholder productivity, livestock, fisheries, incomes (especially for women), post-harvest handling, market linkages, and value addition. <p>Sweden:</p> <ul style="list-style-type: none"> • GROW: The project strengthens capacity of entrepreneurs in agricultural value chains (e.g., millers, transporters, input suppliers, and seed multipliers), using the Making Markets Work for the Poor approach. The 5-year project began in Sept. 2014 and is managed by Adam Smith Int’l. Projected value chains include vegetable production, rubber, oil palm, and poultry. <p>World Bank:</p> <ul style="list-style-type: none"> • Country Partnership Strategy (2014–19): Supports key elements of the Agenda for Transformation, except for health, (covered through the Health Pool Fund) • Supports the WAAPP and STCRSP projects at the MOAFS • Liberia Reconstruction Trust Fund: A joint fund managed by the World Bank with funds from the Department for International Development, Irish Aid, and others to rehabilitate roads, build water infrastructure, etc. <p>WFP:</p> <ul style="list-style-type: none"> • Protracted Relief & Recovery Operation (PRRO): General food

<ul style="list-style-type: none"> • STCRSP-IDA: A \$23.1 million grant/loan from International Development Association from 2013–2017 to promote cocoa, coffee, oil palm, and rubber production; capacity strengthening; post-harvest handling technologies; and value addition in Nimba, Grand Gedeh, Grand Bassa, Bong, Margibi, and Montserrado • West African Agricultural Productivity Project (WAAPP-Liberia): A \$14.6 million grant from Japanese Trust fund and loan from IDA from 2012–2017 to support infrastructure, capacity strengthening for cassava/rice, and regional integration of these value chains in Grand Gedeh, Sinoe, Bomi, Bong, Gbarpolu, Maryland, and River Gee • Enhancing Resilience to Climate Change by Mainstreaming Adaptation Concerns into the Agriculture Sector (Global Environment Facility [GEF]-UNDP): A \$2.58 million grant from GEF and UNDP from 2012–16 to strengthen adaptive capacity to reduce risks to climate-induced economic losses, diversify livelihoods and incomes of project households through agriculture production, and enhance capacity for climate risk management in Grand Gedeh and Bong • Smallholder Productivity Enhancement & Commercialization Enhancement Project: A \$54.4 million grant (IDA) and loan from 2013–18 to improve agricultural infrastructure, capacity of MOAFS, research and agriculture training institutions, production, and post-harvest technologies in 12 counties 	<p>strengthen the meat value chain in Monrovia, improve meat safety, improve the animal health extension system, and raise awareness of food safety; the project ended in Dec. 2014.</p>	<p>distribution, food for assets, and school feeding to 38,000 Ivoirian refugees and 22,000 members of surrounding communities.</p> <ul style="list-style-type: none"> • Country programming: Forthcoming MCHN program in 6 food-insecure counties that will provide 40% of food needs using the preventing malnutrition in children under 2 approach; forthcoming school feeding program will continue a recently closed program that included some local purchases of rice; food aid program or prevention of mother-to-child transmission of HIV and ARV program for up to 5,000 clients <p>Mary's Meals:</p> <ul style="list-style-type: none"> • Private Scottish NGO provides meals twice per day to 128,000 students at 410 schools in Grand Cape Mount, Bomi, and Montserrado; Bong county was added in Sept. 2014. NGO imports 330 MT of rice, peas, and corn-soy blend (CSB) per month. <p>Irish Aid:</p> <ul style="list-style-type: none"> • Support to CONCERN in Grand Bassa for a livelihoods, health, and WASH program until late 2015. <p>GIZ:</p> <ul style="list-style-type: none"> • PPP Fund for cooperation with countries in Mano River Union, including Liberia (2011–2015): The project provides funds to implement specific development partnerships with the private sector.
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3.3 FOOD UTILIZATION AND HEALTH

3.3.1 TRENDS IN CHILD NUTRITIONAL STATUS

The nutritional status of Liberian children is improving but remains a serious risk to their growth and development, as well as the long-term development of the country. Figure 8 shows the prevalence of stunting, underweight, and wasting among children by age. According to the 2013 Liberia DHS, nearly one-third (32%) of children under 5 were stunted, a manifestation of chronic malnutrition due to long-term poor dietary intake in combination with illness (LISGIS et al. 2014). While WHO classifies this level of stunting as high, it has improved significantly from 39% prevalence in the DHS in 2007.²⁰ Stunting is pervasive throughout Liberia, without dramatic regional variation.²¹ The five counties with highest levels of stunting and severe stunting are presented in Table 7.

²⁰ The 2013 DHS uses the updated WHO reference population of well-nourished children (WHO Multicentre Growth Reference Study Group 2006), while previous studies used the National Center for Health Statistics Reference Population.

²¹ These data do not align completely with the anthropometric data found in the Comprehensive Food Security and Nutrition Survey conducted in 2012. This can cause confusion when working to recommend geographic targeting for nutrition programming, depending on which source is used. For anthropometric data in this report, information from the larger and more recent DHS is considered for this analysis.

Table 7. Counties with Highest Levels of Stunting* and Severe Stunting**

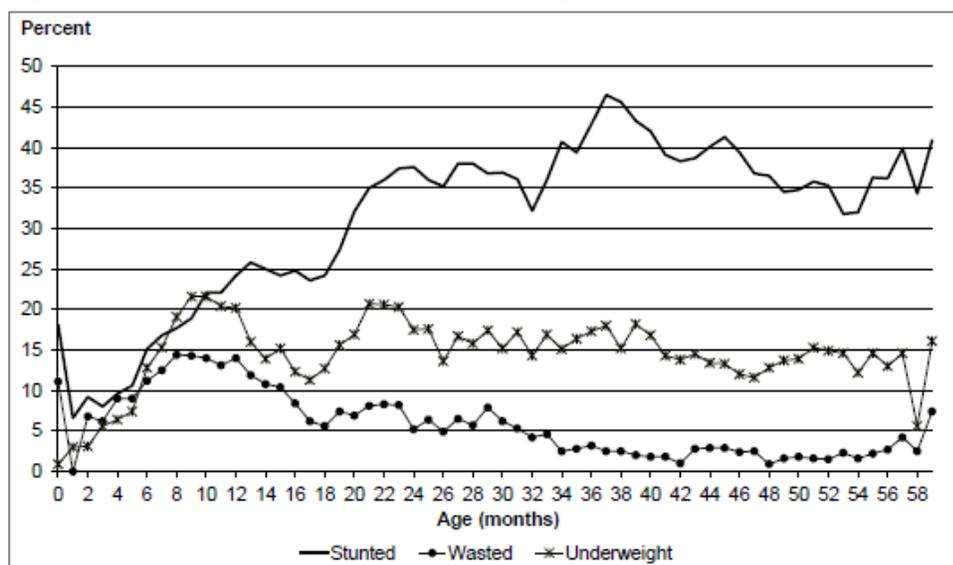
Counties with Highest Prevalence of Stunting			Counties with Highest Prevalence of Severe Stunting		
Rank	County	% stunted (children under 5 below -2 SD)	Rank	County	% severely stunted (children under 5 below -3 SD)
1	River Gee	43	1	River Gee	21
2	Grand Bassa	38	2	Nimba	19
3	Nimba	37	3	Grand Bassa	18
4	River Cess	35	4	Maryland	16
5	Bong	35	5	River Cess	16

* 35% or more of children under 5 below -2 standard deviations (SD).
Source: 2013 DHS

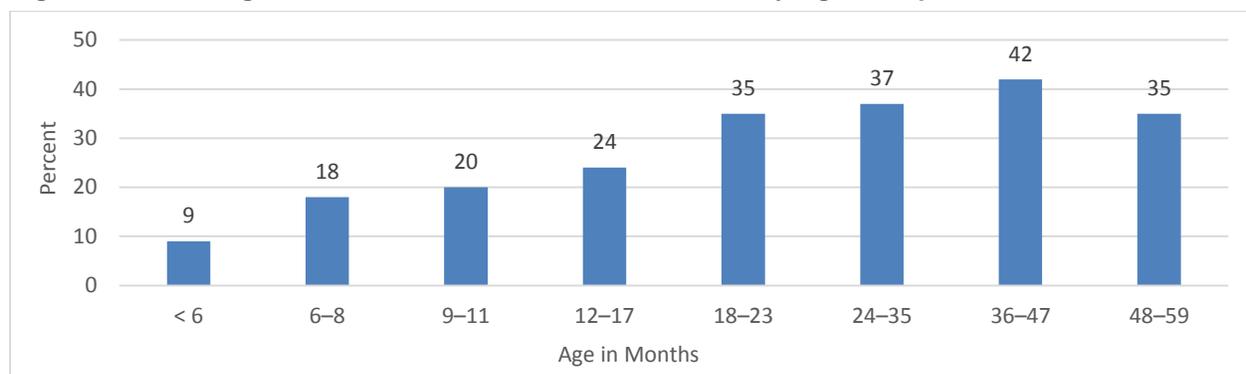
** Over 15% of children under 5 below -3 SD

As shown in Figure 9, stunting begins early and persists during childhood; 9% of Liberian infants are already stunted by 6 months. Significant growth faltering increases steadily through age 2 and then rises sharply to peak at 42% between 3–4 years (LISGIS et al. 2014). Therefore, efforts by the GOL and its partners necessarily focus on strategies to prevent growth faltering and chronic malnutrition when they begin during the first 2 years of life, as well as the preconception and pregnancy periods (Ibid). Given that in Liberia, longer birth intervals are linked to lower prevalence of chronic malnutrition, promotion of child spacing through improved access to family planning is also crucial to addressing child malnutrition (Ibid).

Figure 8. Nutritional Status of Children by Age in Liberia



Source: 2013 DHS

Figure 9. Percentage of Children under 5 Who Are Stunted, by Age Group

Source: 2013 DHS

Continuing the trend of improvement in nutritional status, underweight affects 15% of Liberian children under 5, a decrease from 19% in the 2007 DHS. Highest prevalence is found in River Gee (25%), River Cess (21%), Nimba (21%), Grand Bassa (20%), and Bomi (20%). Underweight prevalence steadily increases for about the first year of life (similar to wasting) and then levels off, holding steady through age 5 years (LISGIS et al. 2014).

Additionally, 6% of children under 5 were identified as wasted, representing an acute situation of recent poor nutrition due to inadequate diet or illness. Nationally 2% of children have severe wasting, referred to as severe acute malnutrition, a dangerous condition that requires urgent treatment with medical care and specialized nutritional products. Wasting prevalence varies from 3% in Maryland to almost 9% in Bomi, Grand Bassa, and River Cess. The distribution pattern of wasting differs from the pattern of stunting; some counties have higher wasting but lower stunting (such as Bomi and Lofa). Vulnerability to wasting relates closely to age: 7% of infants under 6 months are wasted, but wasting increases sharply, peaking at 15% for children 6–8 months and remaining above 10% until 18 months of age. This is the period when breast milk alone can no longer meet children’s nutrient needs and nutrient-dense complementary foods and optimal feeding practices become critical for growth. Surveys during the past decade have consistently placed national prevalence of wasting in children under 5 at WHO’s “medium” or “alert” level, but the 2013 DHS reports alarming levels of wasting in children 6–18 months that fall into the “high” and “very high” category.

Despite preventive efforts, some children may become moderately or severely acutely malnourished and require community-level support for treatment. UNICEF supports Integrated Management of Acute Malnutrition through national-level capacity strengthening, development of protocols, and training of health staff and general community health volunteers (gCHVs) in targeted counties. MUAC is used to screen for moderate and severe acute malnutrition in children whose growth is faltering. Children identified as severely acutely malnourished with complications are referred to the county nutrition rehabilitation unit (a minority of counties have district-level referral points). Generally children who are severely acutely malnourished without complications are provided 1–2 weeks of take-home ready-to-use therapeutic food through the outpatient treatment program and scheduled for follow-up care and rations. However, challenges exist with monitoring and supporting children who live far from health facilities, particularly since, in some counties, the only available treatment is up to 100 km away. In the context of Ebola and resulting food security challenges, provision of specialized nutritional products has been facilitated by donors. However, challenges exist for the long-term availability of such products as the government and donors have been unable to purchase sufficient quantities to meet demand.

Looking at gender differences in malnutrition, Liberian boys have worse nutritional status than Liberian girls with regards to stunting (34% vs. 29%, respectively), underweight (17% vs. 13%, respectively), and wasting (6.4% to 5.6%, respectively). This distribution is found in most sub-Saharan African populations (Wamani 2007), related to the fact that boys in the earliest stage of growth are biologically more vulnerable to malnutrition than girls (Tanner 1989).

Recent FFP implementing partners have addressed stunting through a variety of strategies involving health, livelihoods, education, and other approaches. Specific MCHN activities include extensive social and behavior change (SBC) outreach to families with young children through gCHVs, leader mothers, trained traditional birth attendants, or other community agents. These efforts, including sharing messages, discussions, problem-solving, practical sessions, home visits, and other activities, focus on key MCHN practices related to adequate diets for young children and women (emphasizing breastfeeding), health services and home health behaviors, hygiene practices, and other caring practices. Training for facility health workers and use of other channels, such as radio, reinforce key messages. Additionally, efforts to prevent stunting include a package of health and nutrition interventions for all pregnant women, children 0–23 months of age, and caregivers of children under 2 years of age.

3.3.2 FACTORS THAT INFLUENCE CHILD HEALTH AND NUTRITIONAL STATUS

Low birth weight and mother’s nutritional status. The 1,000-day period from pregnancy to 2 years of age is crucial for linear growth and development, but 14% of Liberian infants reportedly begin life with low birth weight (below 2,500 g), indicating the inadequate nourishment of their mothers during pregnancy (UNICEF 2014). A mother’s nutritional status is a risk factor for stunting and wasting in her child, as 43% of children born to thin mothers (BMI <18.5) are stunted and 14% are wasted, compared to 31% stunting and 7% wasting for children whose mothers have a normal BMI (LISGIS et al. 2014).

Fertility and birth spacing. Frequent and closely spaced births, as well as early childbearing, are important contributors to poor child health and nutrition in the country. Inadequate birth spacing and frequent births are clear risk factors for chronic malnutrition in Liberia (LISGIS et al. 2014). Stunting is highest in children born less than 24 months after a previous birth (40%) and lower among firstborns, children born 24–47 months after a previous birth, or beyond 47 months (28%, 33% and 23%, respectively (Ibid). The high total fertility rate of 4.7 births per woman of childbearing age and closely spaced births likely reduce the time mothers have to provide optimum care to each young child. Given that rural women have an even higher total fertility rate of 6.1, their children are at greater risk of poor nutritional status. Early childbearing is a significant challenge for women in Liberia, given 38% of young women 15–19 years are currently pregnant or have at least one child, a notable increase from 32% in 2007 (Ibid). Babies born to adolescent mothers are at greatest risk of infant and under-5 mortality in Liberia, therefore requiring strategies to address their specific needs and vulnerabilities (UNICEF 2014).

Infant and young child feeding. Appropriate feeding practices in infancy are critical for ensuring adequate nutritional status throughout a child’s life. Breastfeeding in particular confers numerous nutritional, immunological, and developmental benefits to the child. Optimal practices include early initiation of breastfeeding within 1 hour of birth, exclusive breastfeeding throughout the child’s first 6 months of life, and continued breastfeeding through 23 months, along with nutritious complementary feeding beginning at 6 months. The previously noted steady rise in stunting until age 4 years suggests that poor IYCF practices, as well as repeated infections and illness, are major food security concerns in Liberia.

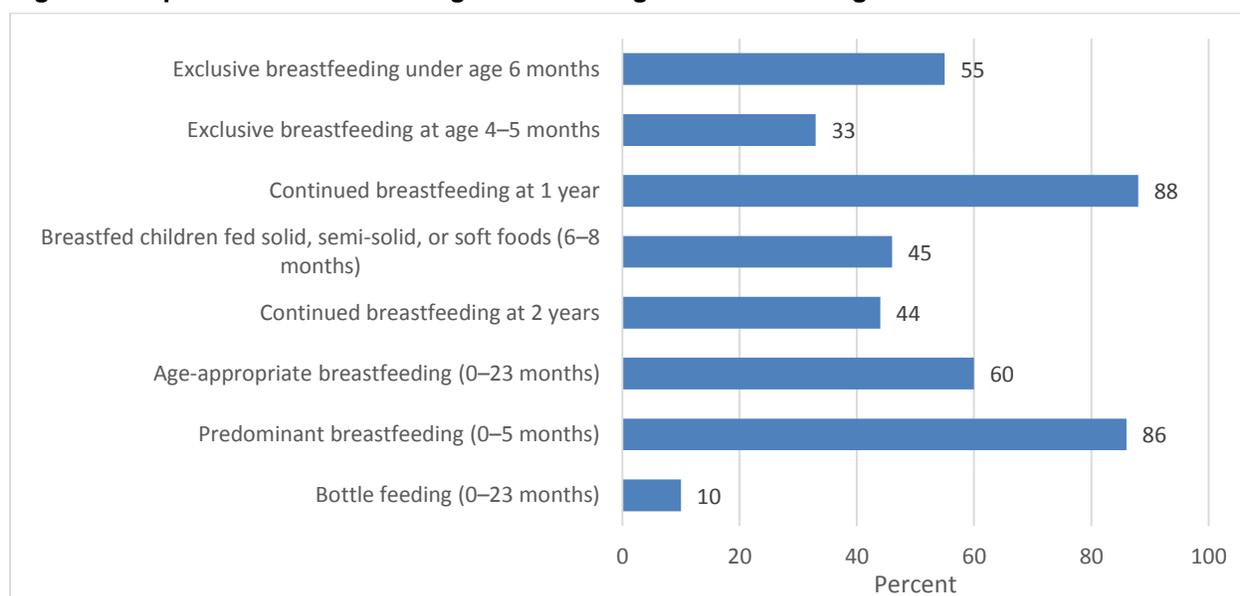
Although breastfeeding is nearly universal in Liberia, support is needed to achieve a range of optimal breastfeeding practices. According to the 2013 DHS, 61% of infants are put to the breast within the first

hour of life, and 10% of infants receive a pre-lacteal feed, with significant variation by county. Pre-lacteal feeds were uncommon in North West (7%) and North Central Liberia (4%) but common in the south, reaching 19% in Sinoe. A little more than half (55%) of children under 6 months are exclusively breastfed, largely due to the common practice of giving plain water before the recommended 6 months (LISGIS et al. 2014). Still, these recent findings represent an impressive increase over 29% exclusive breastfeeding found in the 2007 DHS. In the first month of life, 76% of infants are exclusively breastfed but just 33% remain exclusively breastfed by 4–5 months, a rapid and worrisome decline that requires attention (Ibid). The median duration of exclusive breastfeeding is 2.7 months nationally, considerably less than the recommended 6 months, and 17% of infants are bottle-fed before age 6 months (Ibid). The mean duration of breastfeeding reported was 19.6 months, with girls breastfeeding on average about 10 months longer than boys (Ibid). Although 85% of children 12–17 months are breastfeeding, this drops swiftly to about 50% at 18–23 months, when breast milk is still important to the child’s diet (Ibid).

Table 8. Child Health and Nutritional Status

	National	Greater Monrovia	North Western	South Central	South Eastern A	South Eastern B	North Central
Prevalence of Malnutrition in Children (2013 DHS)							
% of children under 5 who are stunted	31.6	27.0	29.0	29.4	32.6	34.1	34.5
% of children under 5 who are underweight	15.0	8.5	13.3	11.7	16.8	19.1	18.6
% of children 6–59 months who are wasted	6.0	5.5	5.9	6.6	7.1	4.2	5.5
Anemia and Micronutrient Nutrition of Children							
Anemia (Hb < 11 g/dL) (6–59 months) (2011 Micronutrient Survey)	59.1						
Received deworming treatment in the past 6 months (6–59 months) (2013 DHS)	56.1	66.4	66.4	62.3	46.0	47.4	49.1
Household salt sample adequately iodized salt (2011 Micronutrient Survey)	93.7						
Received vitamin A supplement in the past 6 months (6–59 months) (2013 DHS)	60.2	72.5	67.9	67.2	49.2	35.0	57.4
Child Nutrient-Rich Food Consumption (2013 DHS)							
% of children consuming iron-rich foods in the past 24 hours (youngest child 6–23 months, living with mother)	44.8	42.9	41.6	42.0	39.8	42.5	50.9
% of children consuming vitamin A-rich foods in the past 24 hours (youngest child 6–23 months, living with mother)	66.5	64.0	64.1	61.5	64.8	64.8	74.0
Infant and Young Child Feeding (2013 DHS)							
% of children 0–5.9 months exclusive breastfeeding	55.2						
Median duration (months) of exclusive breastfeeding**	2.7	*	3.4	(2.0)	(1.5)	2.8	3.8
% of breastfeeding children 6–8.9 months who consumed solid, semi-solid, or soft foods in the previous day	45.2						
% who were given any ORT (oral rehydration salts and/or recommended home fluids) during diarrheal episode	61.6	51.1	80.2	54.4	55.4	69.8	64.9
Complementary Feeding Practices among Youngest Breastfed and Non-Breastfed Children 6–23 Months in the Household (2013 DHS)							
Breastfed							
% with minimum diet diversity	9.4	14.5	6.5	11.6	8.5	10.5	8.1
% with minimum feeding frequency	31.2	44.2	25.6	35.5	17.9	34.4	30.6
% with minimum acceptable diet	4.5	10.0	4.3	6.6	2.9	1.9	3.4
Non-Breastfed							
% consuming at least 2 feedings of milk or dairy**	15.1	29.7	0.0	23.4	3.4	12.4	2.7
% with minimum diet diversity**	18.8	31.9	11.8	27.3	6.2	10.3	4.8
% with minimum feeding frequency**	26.0	35.9	11.5	29.6	14.9	18.4	27.7
% with minimum acceptable diet**	2.6	4.0	0.0	2.9	1.5	8.4	1.3
Illness Prevalence and Prevention (2013 DHS)							
% of children under 5 who had diarrhea in the 2 weeks preceding the survey	22.0	19.5	17.1	21.3	27.5	27.7	22.0
% of children under 5 who had a fever in the 2 weeks preceding the survey	28.6	26.4	36.1	28.4	31.1	36.7	23.7
% of children under 5 who slept under an insecticide-treated net the past night	38.1	28.3	51.2	33.8	27.3	23.1	44.2

* An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed. ** Due to the small number of cases, figures in parentheses are based on 25–49 unweighted cases, so therefore should be interpreted cautiously.

Figure 10. Optimal Infant and Young Child Feeding Practices among Liberian Children

Source: 2013 DHS

Timely initiation of breastfeeding in the first hour of life requires emphasis, as this is not practiced by up to one third of new mothers, and pre-lacteal feeds are common. It will be important for programs to determine whether early initiation of breastfeeding is supported for births at health facilities or at home with a traditional trained midwife so programs can tailor training and activities to specific challenges. Exclusive breastfeeding also requires promotion, given that feeding water by a bottle is common even in the first month of life. Specific support and counseling to resolve breastfeeding problems is needed at the community level, as well as higher-level medical support at health facilities to address mastitis and other complications associated with breastfeeding. Considering that almost half of children 18–23 months of age are no longer breastfeeding, continued breastfeeding requires support, along with efforts to promote child spacing to allow the first child to breastfeed to at least 23 months of age. It is valuable for project activities to foster community and family dialogue about the time and energy women need to breastfeed optimally and how family and community members can support breastfeeding to meet the needs of the child and mother.

Appropriate feeding of infants continues with the introduction of solid and semi-solid foods at 6 months, along with continued breastfeeding and sound complementary feeding practices thereafter (see Table 8 for complementary feeding practices for Liberian children 6–23 months). There are extreme difficulties with complementary feeding in Liberia, including both early and late introduction of complementary food. Only 45% of children 6–8 months are breastfed and consume solid or semi-solid food, as recommended, while nearly 40% consume only breast milk and water, creating a perilous situation for their growth and development during this critical stage (LISGIS et al. 2014).

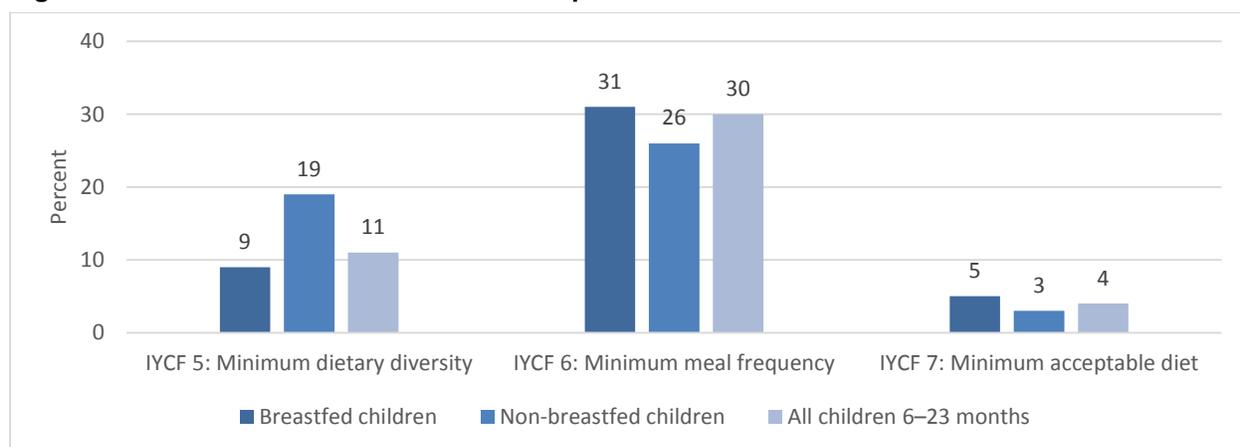
As shown in Figure 10, detailed data on complementary feeding practices from the 2013 DHS create an abysmal picture. Less than 5% of breastfed children 6–23 months²² were fed a minimally acceptable diet that encompasses both sufficient dietary diversity—assessed by consuming foods from three or more food

²² For detailed data on complementary feeding, the 2013 DHS reports on the feeding practices of the youngest child in the household age 6–23 months (in contrast to the 2007 DHS, which reported on all children in the household who were 6–23 months).

groups out of a total of seven food groups—and adequate frequency of feeding according to the child’s age. Only 1% of breastfed infants 6–8 months had a sufficiently diverse diet, and across all wealth quintiles, children’s diets were very poor.

Since half of all children 18–23 months of age are not breastfed, these children are of particular concern since they lack the protective qualities of breast milk and because alternative sources of protein, fat, calcium, vitamin A, and other nutrients often are inadequate (LISGIS et al. 2014). Barely 3% of non-breastfed children 6–23 months have a minimally acceptable diet, including at least two milk feedings, foods from at least four food groups (including milk), and being fed four or more times a day. All components of the minimum acceptable diet were problematic: Only 15% of non-breastfed children consumed two or more servings of milk or milk products, 19% consumed the minimum number of food groups, and 26% had adequate frequency of feeding.

Figure 11. IYCF Indicators on Minimum Acceptable Diet²³



Source: 2013 DHS

In 2009–2010, the MOHSW and UNICEF collaborated on a national qualitative study on IYCF practices and related beliefs, which provides a national level reference for further geographic-specific exploration. Specific challenges related to early introduction of water instead of exclusive breastfeeding to 6 months, late introduction of complementary food after 6 months, and infrequent feeding of children (often just twice per day, timed with adults’ mealtimes), along with extremely poor dietary diversity (Yovsi 2010). As determinants of malnutrition vary widely across counties and are likely to require varying social and behavior change communication (SBCC) strategies and coordination with other sectors, recent FFP partners have conducted community-based formative research to better understand the causes of malnutrition in their areas of intervention and tailor SBC activities given local needs. A review of past FFP programs found that it is essential to understand specific local constraints to and opportunities regarding key complementary feeding issues, such as food diversity, quantity, and quality, including nutritional density, which is often overlooked (Van Haeften 2013).

Several complementary feeding issues require attention, including early and late introduction of semi-solid or solid foods, which should begin at 6 months. Frequency of feeding also is a priority, given that the DHS and qualitative research indicate a current substandard maximum frequency of 2–3 feedings per day, usually on schedule with the rest of the family, without additional snacks (Yovsi 2010). Understanding portions appropriate for a child’s age also appear to be a challenge. Data indicate that

²³ For non-breastfed children age 6–23 months, the minimum acceptable diet includes two or more feedings of commercial infant formula; fresh, tinned, and powdered animal milk; or yogurt.

dietary diversity is inadequate for half of children 6–23 months of age. Experience from previous FFP programs in Liberia suggests that local foods, such as rice, sesame seeds, dried fish, eggs, greens, and red palm oil can be combined into high-nutrient, palatable dishes in that geographic context. LAUNCH promoted recipes that can be prepared in advance, with small amounts used as needed for frequent feeding. This approach addresses several challenges associated with complementary feeding, namely the need for adequate nutrient density, local availability of foods, and ease of preparation, as pre-made foods facilitate more frequent feeding. To provide a needed source of protein and micronutrients (particularly for children who are no longer breastfeeding), LAUNCH is supporting the production and consumption of eggs, given that eggs are easy to prepare and palatable to young children (Iannotti et al. 2014). Promotion of eggs and other viable protein sources (e.g., fresh, dried, or smoked fish) also presents an opportunity to collaborate with the livelihood sector.

Micronutrient status. In addition to other child feeding issues, micronutrient malnutrition is problematic in Liberia. Typical complementary foods in Liberia are low in iron, zinc and vitamin A, and other micronutrients, as well as protein and fat (LISGIS et al. 2007). Iron is necessary for cognitive development, immune function, and growth, but the 2013 DHS reports that only a fifth of children under age 2 had consumed food rich in iron; among children 6–8 months, it was even less common (see Table 9).²⁴ Inadequate intake of iron contributes to high levels of anemia, affecting nearly 60% of children 6–35 months (and 21% who have iron deficiency anemia, representing a severe public health concern (GOL et al. 2011b). Although anemia levels remain alarming, there has been improvement. For example, in children 6–35 months, anemia fell from 87% to 59% from 1999 to 2011 (GOL et al. 2011b). Highest levels of iron deficiency anemia (about 35%) were found among children 9–23 months, indicating this population requires additional emphasis (ibid). Periodic deworming can lead to better nutritional status, including lower prevalence of anemia, by reducing the number of helminths, which cause blood loss and poor absorption of nutrients. Only about half of children 6–59 months were dewormed in the preceding 6 months, indicating that this intervention requires support (LISGIS et al. 2014). Malaria, which also contributes to anemia, is endemic in Liberia, and was detected in nearly a third of children 6–59 months (GOL et al. 2011b).

Table 9. Key Indicators Related to Iron Deficiency

Indicator	Percentage
Children 6–35 months with anemia	59%
Iron deficiency anemia in children 6–35 months	21%
Iron deficiency anemia in children 9–23 months	35%
Youngest children in household 6–23 months who consumed iron-rich foods	20%
Youngest children in household 6–8 months who consumed iron-rich foods	15%
Children dewormed in preceding 6 months	56%
Malaria parasitemia detected in children 6–59 months	28%

Source: 2013 DHS for dietary data, 2011 Micronutrient Survey for anemia and malaria data

An adequate level of vitamin A is required for proper functioning of the immune system and the body's epithelial tissue. Prevalence of vitamin A deficiency among children 6–35 months fell sharply from 53% in 1999–2000 to 13% in 2011, according to the 1999–2000 and 2011 National Micronutrient Surveys. The improvement likely is related to expanded coverage of vitamin A supplementation. In 2013, 60% of

²⁴ This finding contrasts the 2007 DHS, which reported that 65% of children 6–23 months consumed iron. However, the 2013 DHS asked only about the youngest child 6–23 months, so the average age of children would tend to be younger and therefore the findings cannot be compared to 2007.

mothers of children 6–59 months reported that their children received vitamin A supplementation in the 6 months preceding the survey, up from the 43% coverage found in the 2007 DHS. Consumption of vitamin A-rich foods was highly related to age (see Table 10). For children 6–8 months, during introduction of complementary food, only a fifth of children consumed vitamin-A rich food, while it became nearly universal for children approaching age 2. Red palm oil is a good source of vitamin A; most Liberians usually consume unrefined oil, which has not been subjected to the high temperatures that would destroy the nutrient.

Table 10. Percentage of Children Whose Mothers Reported That Child Consumed Vitamin A-Rich Food in the Day or the Night Before the Survey

Age of Child	Percentage
Children 6–8 months	20%
Children 6–23 months	67%
Children 18–23 months	86%

Source: 2013 DHS

Iodine deficiency is associated with stunting and various cognitive and developmental impairments. However, iodine deficiency is not considered a major health problem in Liberia. Barely 4% of children 6–11 years were found to be iodine deficient in the 1999–2000 National Micronutrient Survey, the most recent data available.²⁵ The 2013 DHS found that virtually all (99%) salt has some iodine, and the 2011 Micronutrient Survey reported that 94% of the salt tested at that time was adequately iodized (LISGIS et al. 2014, GOL 2014). Current policy requires iodine fortification of imported salt.²⁶

The new Liberian Fortification Guidelines presumes that zinc deficiency affects 60% of the population, based on stunting prevalence and food consumption patterns (GOL 2014). Liberia has recently made impressive strides on fortification of imported products and targets eventual similar fortification of national products. In 2014, an official national logo was certified to promote the use of fortified foods (e.g., sugar and refined oil fortified with vitamin A; wheat flour fortified with iron, zinc, folic acid, vitamin B12, niacin, and thiamine; and salt fortified with iodine (already well-established). Although the rural poor in Liberia have limited consumption of sugar, refined cooking oil, and wheat flour due to poor physical and economic access to these commodities, increased use is likely with expected improvements in roads and market access, so awareness-raising is still needed. In addition to fortified staples, the GOL is currently working with UNICEF on pilot studies leading to the planned national rollout of micronutrient powders to be used for home fortification of complementary foods. Support for health center distribution will be needed, as well as promotion of optimal use of the micronutrient powders in complementary foods.

While Liberians have a tradition of feeding “special” infant and young child foods such as eddoes, sesame seeds, and dried fish, sufficient consumption of nutrient-dense foods such as animal-source foods is inadequate. Emphasis should be placed on children 6–11 months of age, who data show are at highest risk of anemia. Programs should work within existing GOL policies or collaborate with the GOL to pilot or conduct operations research on these strategies. To combat anemia, it is necessary to support and coordinate with existing services for malaria prevention/treatment (such as promotion of treated bednets and prompt treatment of fever with antimalarials) and provision of iron syrup, as well as periodic deworming to prevent blood loss through helminths.

²⁵ Full iodine analysis results from the 2011 Micronutrient Survey were not released.

²⁶ Virtually all salt in Liberia is imported.

Disease. Communicable diseases are a major threat in Liberia, with particular risk from the high prevalence of diarrheal disease, malaria, acute respiratory illness, and other diseases such as measles, schistosomiasis, tuberculosis, and cholera. The Ebola epidemic in 2014–2015 became an acute and dangerous threat that imposed a devastating burden on the overall health system as the government redirected the limited available funds, human resources, and scarce supplies to contain the virus. During 2014, vaccination campaigns were halted due to Ebola, resulting in 850 measles cases. In May 2015, Liberia held the first post-Ebola nationwide vaccination and deworming campaign, using special precautions to avoid cross-contamination of supplies (WHO 2015b). Rumors circulated that the vaccinations could transmit Ebola, demonstrating the need for food security partners to support awareness-raising by community health volunteers and positive relationships with health facilities in order to conquer remaining fears about Ebola transmission.

Endemic across the entire country, malaria is the nation's number one direct cause of morbidity and mortality, reportedly responsible for 40% of outpatient health consultations and 41% of inpatient deaths of children under 5 (GOL 2011). In the GOL's 2011 Malaria Incidence Survey, 28% of children under 5 were found to have malaria parasitemia, which, while extremely high, is a decline from 66% in 2005 (GOL 2005). Household ownership of mosquito nets—virtually all of which are insecticide-treated nets (ITNs)—increased from 50% in 2011 to 55% in 2012 (LISGIS et al. 2014). Nationally nearly 40% of children under 5 sleep under an ITN, but among households that owned an ITN, it was higher, at 63% of children under 5 (LISGIS et al. 2014). Children less than a year were most likely to sleep under an ITN (48%), while 37% of pregnant women reported doing so. In terms of seeking treatment for malaria symptoms, almost a third of caretakers (29%) reported that a child under 5 in the household had a fever in the 2 weeks before the survey, but only 24% of these children received appropriate artemisinin combination therapy (ACT) within 24 hours. Almost half of women took two or more doses of SP/Fansidar during a pregnancy in the previous 2 years (LISGIS et al. 2014). The National Malaria Strategic Plan (NMSP) 2010–2015 includes scale-up of ACT availability, expansion of indoor residual spraying, provision of long-lasting ITNs, improved malaria prevention and control during pregnancy, and widespread communication strategies for behavior change. USAID partners, including FFP partners, have been able to support and integrate with national approaches in their respective areas, supporting training of gCHVs and community referral to health services.

Diarrheal disease is also a primary contributor to illness, malnutrition, and under-5 mortality, with 22% of these children experiencing diarrhea in the 2 weeks before the 2013 DHS. The Liberian Dialogue 2015/03 estimated that improvements to the water supply could reduce diarrhea morbidity by 21%, while improved sanitation facilities could reduce diarrhea morbidity by 38% (Nyepon 2015). Water and sanitation infrastructure and personal hygiene practices that can prevent diarrheal disease (along with other communicable diseases such as Ebola) greatly need improvement in Liberia (see water, sanitation, and hygiene section below). When children have diarrhea, 62% of caretakers reported giving them the recommended rehydration fluid, such as an oral rehydration solution (ORS) or a similar home preparation (LISGIS et al. 2014). FFP implementing partners have worked at multiple levels to promote handwashing, food hygiene, care-seeking and treatment for diarrhea; support small infrastructure (tippy tap handwashing stations, construction of school latrines, and school water treatment systems); train community volunteers to identify cases, administer ORS, and make referrals; and strengthen health workers' capacity to manage cases. Among the many challenges facing the health sector as it attempts to prevent and treat disease, the critical shortage of higher-level health workers is a fundamental constraint that is being actively addressed by the GOL and partners such as WHO (GOL 2015). However, building the workforce will take time, as well as investment. Given the dearth of highly trained workers, in some cases task-shifting has been piloted (in this case, training lower-level cadres of health workers to perform specific tasks usually reserved for those with more formal training). Experience suggests that this effort

has been life-saving (e.g. cases where nurse-midwives were able to perform emergency caesarean sections after receiving an 18-month course), but further efforts are controversial due to safety concerns (U.N. Office for the Coordination of Humanitarian Affairs (OCHA) 2015).

Ebola. Infection prevention and control (IPC) is one of the major areas of concern in the aftermath of Ebola. A report looking at health workers infected with Ebola noted extreme gaps in IPC, including poor or no use of personal protective equipment, as well as other weak systems that could facilitate transmission (WHO 2015b). As IPC improved during the epidemic, health worker deaths declined as a proportion of all cases from 12% in July 2014 to a low of 1% in February 2015, showing that health worker infections are preventable. WHO is supporting the MOHSW to establish systems for continuous monitoring, supportive supervision, and improvement of IPC standards, but engagement by health programs in individual counties, districts, and facilities is key (WHO 2015b). USAID partners, including LAUNCH, have provided specialized support in their project implementation zones using WHO’s training packages for health care workers and facilities. FFP partners have relied heavily on strengthening the capacity of the government network of gCHVs, as well as trained traditional midwives and other types of volunteers or committees who support health improvements, such as Disaster Risk Management Committees (DRMCs). Despite the burden of increased needs on gCHVs due to Ebola and the likelihood of increased risk faced by a community health volunteer, increased turnover is not reported. Rather, after facing Ebola, community volunteers are reportedly more committed and DRMCs considered more important and credible. FFP partners noted that Ebola community alert systems are mobilized in their areas, but emphasis is needed to ensure that the Ebola surveillance system beyond the community will remain capable of responding to alerts.

In addition to the specific challenges posed by Ebola, stock-outs of medicines are reported as a major constraint to accessing quality services, along with the distance required to reach the health facility and the money needed to pay for treatment (LISGIS et al. 2008). Poor infrastructure, lack of equipment, and low health worker capacities are other challenges (GOL 2015). Additionally, UNICEF estimates that 92% of children under 5 do not have a birth certificate, which may limit their participation in health and social service programs, pose challenges for registering nutritional status accurately by age, and complicate Ebola surveillance efforts (UNICEF 2013). Identifying solutions to improve access to quality health services requires joint efforts with actors in various technical fields, in line with government strategies such as the Investment Plan for Building a Resilient Health System 2015–2021. Efforts could include input from livelihood activities (e.g., road rehabilitation) and SBC interventions (e.g., to increase awareness among women and men about the importance of seeking timely care for mothers and children). FFP projects have provided specific investments in health facilities, including equipment, and in limited circumstances have been able to pilot test community-based treatment of illness by highly trained gCHVs.

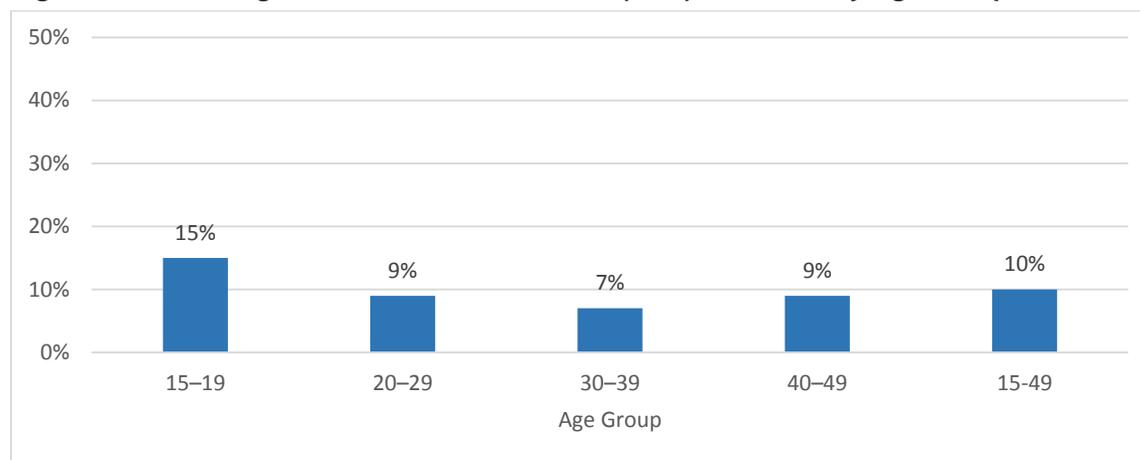
Trends in maternal health and women’s nutritional status. Women’s nutritional status is an important predictor of child malnutrition, as shown by higher stunting and wasting among the children of malnourished women. Few Liberian women (2%) have short stature but, as shown in Table 11, undernutrition²⁷ affects 7% of all Liberian women age 15–49 (a decrease from 10% in 2007), with higher prevalence (11%) in Bong and Gbarpolu and the lowest (3%) in Grand Cape Mount (LISGIS et al. 2014). Moreover, undernutrition among adolescent girls (15–19 years) is 15%, more than twice the national prevalence, placing them and their children at increased risk of malnutrition if a pregnancy occurs (see Figure 12). In contrast, the percentage of Liberian women who are overweight (BMI \geq 25) has increased from 21% in 2007 to 26% in 2013 (Ibid).

²⁷ Maternal undernutrition is defined as BMI $<$ 18.5. BMI is calculated by dividing weight in kilograms by height in meters squared (BMI = kg/m²).

Table 11. Women’s Health and Nutrition

Indicator	National	Greater Monrovia	North Western	South Central	South Eastern A	South Eastern B	North Central
% of women 15–49 who are undernourished	7.4	6.7	6.2	7.4	6.7	5.0	8.6
% of non-pregnant women 15–49 who are anemic	33.2						
% of women who took deworming medication during pregnancy of last birth	57.9	60.4	59.6	58.5	56.6	52.6	58.2
Among women with a live birth in the past 5 years, % who took iron tablets during the pregnancy of their last birth	96.5	99.3	97.3	98.2	92.8	88.9	96.6
Median number of months since preceding births (of women 15–49 years)	37.4	44.2	36.1	41.1	34.3	33.5	37.1
% of women 15–49 using any modern method of birth control	19.1	25.1	20.0	22.4	20.5	22.3	12.8
% of all women 15–49 with an unmet need for family planning	31.1	26.6	32.8	27.9	33.5	33.4	34.4
% of women 15–49 receiving antenatal care from a skilled provider (doctor, nurse, midwife, or physician’s assistant)	95.9	98.9	94.8	97.7	92.7	90.1	95.8
% of births delivered by a skilled provider	61.1	83.9	51.9	71.3	65.3	56.7	51.4
% of pregnant women who received any SP/Fansidar intermittent preventive treatment for malaria during antenatal care for live birth in last 2 years	64.8	67.0	66.0	67.4	47.9	59.5	66.1
% of pregnant women who slept under a treated bed net the previous night	37.1	30.5	45.2	35.2	30.6	24.1	40.5
% of births delivered in health facility in last 2 years	55.8	76.1	47.0	64.8	59.0	52.6	47.5

Note: All data from 2013 DHS, except for anemia data from 2011 Micronutrient Survey

Figure 12. Percentage of Women with BMI <18.5 (Thin) in Liberia, by Age Group

Source: LISGIS et al. 2014

Adequacy of women’s diets and micronutrients. According to the 2011 National Micronutrient Survey, anemia²⁸ affects 38% of pregnant women age 15–49, with 26% found to be iron deficient and 9% with

²⁸ The cutoff level for anemia in pregnant women is < 11.0g/dL.

iron deficiency anemia (GOL 2011).²⁹ Among non-pregnant women of reproductive age, 33% are anemic. Adolescents age 15–19 have dramatically higher prevalence of anemia (40%) and 20% are iron deficient, which is up to four times higher than found in older women, indicating that these younger women and their children are at increased risk for poor health outcomes (GOL 2011). Women’s dietary information, most recently available from the 2007 DHS, indicates that nearly 80% of women with a child under 3 years reported consuming iron-rich foods, while almost all women with a child under 3 years reported consuming foods rich in vitamin A (LISGIS et al. 2008). Recent data from 2013 found impressive improvements in prenatal care that affects women’s micronutrient status, although further progress is needed; 37% of women consumed at least 60 days of iron tablets or iron syrup (an increase from 21% in 2007), and 58% were dewormed during their last pregnancy (almost double the findings from 2007) (LISGIS et al. 2014).

Family planning. Improved access and use of family planning services are crucial aspects of improving maternal health, especially for younger couples. However, the 2013 Liberia DHS found that contraceptive use is only 20% among currently married women of childbearing age, an increase from 13% reported in the 2007 DHS. At 9%, both Grand Bassa and Nimba have rates of contraceptive use that are less than half the national rate. Notably, contraception use is much lower (13%) among married adolescents (age 15–19) than older married women, despite the fact that they face increased risks from a birth because their bodies are still maturing (LISGIS et al. 2014).

Nearly one-third of Liberian adolescents age 15–19 have already begun childbearing, which puts them and their children at a higher risk of malnutrition and adverse pregnancy outcomes (LISGIS et al. 2014). Given Liberia’s high fertility rate, its impact on maternal health and young child nutrition, and reported shortages of family planning products, the GOL requires support from partners to strengthen access to family planning services in areas where they are implementing programming. Effective referral systems are essential so that women can access family planning services through the government health system or other community-based distributors of family planning commodities. Increasing access to and knowledge and use of contraceptive methods can be emphasized through a multilayered SBC approach that targets audiences at multiple levels to provide men and women with information on family planning methods and improve linkages to services. Monitoring of key family planning indicators facilitates focused programming efforts and documentation of results. Since many gCHVs are male, trained traditional midwives are an important resource for women because they tend to be trusted older women with training from health facilities.

Antenatal and birth care. As noted, rates of both early childbearing and fertility in Liberia are high, spurring the alarmingly high maternal mortality rate of 1,072 maternal deaths per 100,000 live births, which failed to improve from 2007–2013 (LISGIS et al. 2014). Regarding antenatal care, virtually all women who gave birth in the previous 3 years (96%) reported seeking prenatal care at least once during their pregnancy (see Table 11 for additional detail by location), and 78% reported accessing at least four antenatal visits (the minimum recommended number). However, serious gaps remain in the quality of maternal care overall and particularly access to obstetrical emergency services (Ibid). Use of skilled birth attendants was 73% for urban women and 50% for rural women who gave birth in the previous 5 years, although data do not refer to access to emergency birth care since nationally most skilled birth attendants do not have the equipment or capacity to intervene in serious emergencies (Ibid). Liberia’s Accelerated Action Plan to Reduce Maternal and Newborn Mortality targets a 50% increase in skilled birth attendants, 24-hour access to quality basic and emergency obstetric and newborn care, and improved family planning

²⁹ Iron deficiency anemia is defined as being anemic (<11.0 g/dL) AND iron deficient according to serum ferritin concentration (<15 µg/L).

services, among other interventions (Harvard 2013). The loss of health workers due to Ebola is predicted to be devastating to Liberia’s efforts to overcome extremely high maternal and infant mortality (Evans et al. 2015). As noted, due to the shortage of highly trained health staff with specific skills in obstetrics, some task-shifting has been employed to train nurse midwives on life-saving techniques, such as caesarean sections (OCHA 2015).

Given the prevalence of early pregnancy in Liberia and the additional health risks facing adolescent mothers and their children, a special emphasis is needed to meet the health needs of adolescent girls and boys and prevent malnutrition in their children. FFP development food assistance programs may be well-placed to promote adequate preconception nutrition and delaying first pregnancy until the adolescent’s body is ready for childbearing. Well-designed formative research can help to understand and address the barriers that adolescents face in accessing family planning services and acquiring the knowledge and skills to adopt related healthier behaviors.

Water, sanitation, and hygiene. Improved WASH access and behaviors remain exceedingly problematic across Liberia, confounding efforts to address acute and chronic malnutrition. The health and nutrition implications of WASH deficits are exacerbated by the country’s lengthy rainy season (May– October) and endemic waterborne diseases (e.g., cholera).

Safe WASH access and behaviors are essential to prevent fecal-oral disease transmission and the long-term consequences of repeated diarrheal infections on children’s physical and cognitive development (e.g., environmental enteropathy and stunting) (Humphrey 2009). An estimated 3,000 Liberians, including 1,800 children, die from diarrheal diseases each year, and roughly US\$17.5 million (2% of GDP) is lost to health care costs and productivity losses from inadequate WASH access (World Bank 2012).

During public health emergencies, such as Ebola, WASH access and optimal hygiene practices are critical to minimize disease transmission. Partners should also refer to the FFP technical reference³⁰ chapters for a review of the evidence base surrounding WASH and health and nutrition outcomes.

Access to improved water and sanitation is markedly lower in rural areas, with approximately half (57%) of rural Liberians accessing improved drinking water sources and virtually none (5%) accessing improved sanitation. Notably, when GOL standards for water point functionality and access are accounted for, access levels drop to 40% (GOL 2011c, GOL 2014b). A county-by-county breakdown of water point coverage and needs, as of 2011, can be found in the GOL’s Liberia Waterpoint Atlas.³¹

Among rural Liberians who have access to improved drinking water, virtually all (96%) rely on hand-dug wells with hand pumps, indicating that the vast majority of drinking water must be carried and stored in the household. Despite this, few Liberians (15%) report appropriately treating their water (e.g. boiling, chlorination), making it likely that water is contaminated before consumption (LISGIS et al. 2014). Due to the lack of basic infrastructure in Liberia, the time burden of collecting and transporting water is significant, particularly for women and children, and makes it more difficult to engage in other productive activities for the household.

³⁰ USAID/FFP (2015). Technical References for FFP Development Food Assistance Projects, available at: <https://www.usaid.gov/sites/default/files/documents/1866/Technical%20References%20for%20FFP%20Development%20Projects%204-23-15%20%282%29.pdf>.

³¹ The Liberia Waterpoint Atlas (GOL 2011) is available at: http://wash-liberia.org/wp-content/blogs.dir/6/files/sites/6/2013/01/Final_Review_Version_-_Waterpoint_Atlas_Investment_Plan_x.pdf.

Access to improved, unshared sanitation is extremely limited for both the rural (5%) and urban (26%) population, with the majority of rural families (71%) practicing open defecation (LISGIS et al. 2014). In counties with the lowest sanitation levels—River Cess, Bomi, Cape Mount Grand, and Grand Kru—over 90% of households do not have access to an improved latrine (Comprehensive Food Security and Nutrition Survey [CFSNS] 2013). As the 2013 CFSNS points out, these counties are also the most food insecure, based on the percentage of resources spent on food, combined with a consumption score based on dietary diversity and frequency of consumption of key food groups.³² The GOL has strongly endorsed the community-led total sanitation (CLTS) model as a means to improve rural sanitation access and hygiene behaviors throughout the country and has issued a number of policy and technical documents to support NGOs in this approach (GOL 2012). The methodology relies on community-led processes and a network of “natural leaders” to motivate community members to construct latrines and eliminate open defecation. Additionally, partners support the GOL in its rollout of CLTS, in line with key government guidance for implementing the approach, such as the Water, Sanitation, and Hygiene Sector Strategic Plan 2012–2017 and Guidelines for CLTS Implementation in Liberia (2012). Access to WASH in schools is also viewed as a priority by the GOL for the dual purpose of reducing absenteeism for girls during menstruation and for reinforcing hygiene messages disseminated during the Ebola crisis.

Ongoing reform in Liberia’s WASH sector since 2007 has included a number of public commitments and GOL strategy and planning documents. Notably, the Water, Sanitation, and Hygiene Sector Strategic Plan 2012–2017 emphasizes the need for improving WASH access to help reduce poverty, increase productivity, and achieve economic gains. The plan also breaks down the institutional responsibilities and strategies for Liberia’s implementation of the Sanitation and Water for All WASH Compact.³³ Monitoring of WASH indicators at the county, district, and community levels has traditionally been weak, but the National Water, Sanitation, and Hygiene Promotion Committee has recently assumed a proactive role. Under this initiative, NGOs assist with the collection and regular reporting of data to the national committee, which strengthens the quality of data and ability to then target specific needs (GOL 2014b).

Table 12. Water, Sanitation, and Hygiene Key Indicators for Liberia and Selected Counties

Indicator	Total	Urban	Rural	Bong	Grand Bassa	River Cess
Improved water source (% population)	73% (40%*)	86%	57%	32%*	33%*	36%*
Use of hand pump/protected dug well (% population)	65%	73%	55%	N/A		
Population per functional, in-use water point (1)	552	N/A	N/A	730 (Rank: 1 of 15 counties)	727 (Rank 2/15)	504 (Rank 7/15)
Water points functional and in use (%) (1)	60%			55% (of 824)	51% (of 559)	51% (of 206)
Improved sanitation access (% population)	17%	26%	5%	N/A		
No sanitation access/no toilet/open defecation (%)	45%	25%	71%	N/A		
Prevalence of household handwashing stations (% HH)	2%	N/A				
Use of appropriate point of use/household water treatment (% population)	15%	19%	10%	N/A		
Diarrhea prevalence (children < 5 yrs in preceding 2 weeks)	22%	20%	24%	29% (4/15)	30% (3/15)	32% (2/15)
GOL budget allocated to WASH (% total) (2013/14)	0.4% (\$2.53M) **	N/A				

Sources: Data from 2013 DHS, unless noted; * from Waterpoint Atlas 2011; ** from WASH Sector Performance Report 2013 GOL 2014b

³² The 2013 CFSNS defined the food insecure as those who spend more than 60% of family resources on food and have poor or borderline food consumption, plus those that spend 40–60% of resources on food and have poor food consumption.

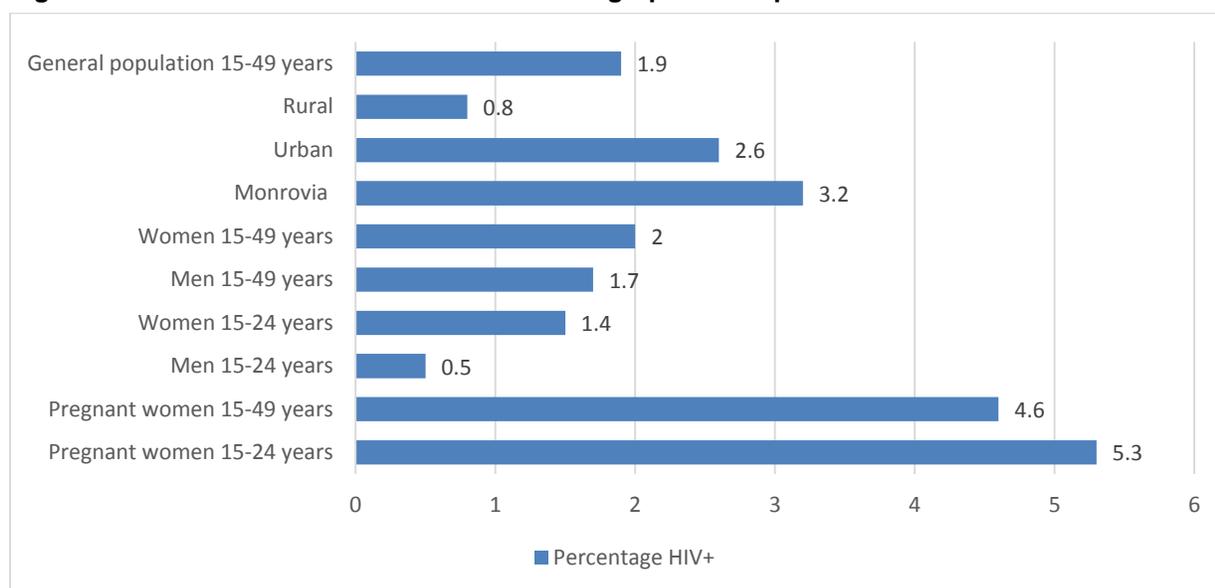
³³ The Liberia WASH Compact is available at http://sanitationandwaterforall.org/report_card/liberia/.

Gender and nutrition. Liberian women play a fundamental role in supporting nutrition and food security for their families. They are the principal meal preparers and caregivers for their children and are primarily responsible for acquiring and/or producing food. The combination of early childbearing, high fertility levels, and women's lack of control over resources and limited decision-making adversely affect the food security and nutrition of Liberian women and their children. In other countries, in-depth studies of DHS data suggest that women's greater control over household decisions, including use of resources, is associated with better nutritional status for women (Kishor 2005). Liberian men are particularly involved in making decisions on borrowing money, and to a lesser extent, control access to health care and women's visits to family and friends (LISGIS et al. 2014). Notably, only 15% of married women in Liberia report that their husbands mainly control how their income is spent (down from 23% in 2007), while younger women reported having greater control of their income compared to their older peers (LISGIS et al 2014).

Violence at home undermines women's empowerment and reinforces their lack of control over resources and decision-making. The 2007 DHS, the most recent DHS data on this issue, reports that nearly half (45%) of women in Liberia say they have experienced domestic violence in their lifetime, and 29% report such violence in the previous year (LISGIS et al. 2008). An in-depth study of data from the 2007 DHS showed an association between Liberian mothers' reports of domestic violence and increased incidence of stunting and underweight in their children (Sobkoviak et al. 2012). This suggests that the high prevalence of domestic violence in Liberia impairs children's nutritional status and ultimately contributes to poor household food security. FFP development food assistance programs have addressed this issue through activities that empower women to make decisions on food purchases, seek health care, and invest in agriculture and other livelihoods to support food security. But additional efforts that engage men more actively to enable women to have greater decision-making authority and control over resources and their fertility are essential for further progress.

An additional challenge for women's nutrition stems from Liberia's high rate of adolescent pregnancy, which, at 111 births per 1,000 women age 15–19, is among the highest in the world (World Bank 2015). Adolescent mothers and their infants are at greater risk of poor nutrition outcomes and due to their age and life stage, these mothers typically fall at the lowest end of the social and gender hierarchy (LISGIS et al. 2014). At their time of greatest need in terms of young child nutrition and care, they often have the least decision-making power and the least access to resources to ensure optimal health, nutrition, and growth in their children. Adolescents may benefit from extra nutritional counseling during pregnancy and assistance with exclusive breastfeeding and complementary feeding, as well as other factors related to their nutritional status and that of their child, including communication skills for healthy relationships, parenting and child care skills, and involvement in savings groups and other livelihood activities to improve their food security.

HIV. As shown in Figure 13, overall HIV prevalence in Liberia is low, affecting less than 2% of the general population age 15–49, with rural areas considerably lower than urban areas, including Monrovia (LISGIS et al. 2014). Liberia's most-at-risk populations for HIV include commercial sex workers and those who migrate for work, but women's prevalence is higher than men for all age groups. Most concerning is the significantly higher HIV prevalence of 4.6% among pregnant women 15–49 years, which is highest (5.3%) among pregnant women 15–24 years.

Figure 13. Prevalence of HIV for Selected Demographic Groups in Liberia

Source: 2013 DHS

Roughly two-thirds of both men and women express awareness that condom use and limiting sexual intercourse to one partner can prevent transmission of HIV. However, only a minority use condoms, and barely 21% of women and 24% of men with more than one sexual partner reported using a condom during their last sexual encounter (LISGIS et al. 2014). Although HIV has not been a central focus of FFP development food assistance programs in Liberia, programming has assessed and responded to the particular risk factors associated with their targeted beneficiaries, such as increased risk due to working in mines and commerce corridors, so that HIV education, testing, and prevention of maternal-to-child transmission information are incorporated where appropriate. The dramatically higher prevalence in pregnancy indicates a need for MCHN programming to support and harmonize with HIV prevention, treatment, and support interventions, including norms and guidelines on prevention of mother-to-child transmission of HIV.

3.3.3 KEY POLICIES, STRATEGIES, AND PROGRAMS RELATED TO FOOD UTILIZATION AND HEALTH

Liberia has taken coordinated steps to address pervasive nutrition and health problems through policies and strategies such as the National Health and Social Welfare Policy and Plan (NHSWP) for 2011–2021. Several community health policies, the draft National IYCF Policy, and the WASH Sector Strategic Plan 2012–2017 target a multisectoral response through integrating health and nutrition services with water and sanitation support, agriculture promotion, and social services. As mentioned, the GOL is committed to promoting CLTS to reduce open defecation, as detailed in the Guidelines for CLTS Implementation in Liberia (2012).

The formation of a Nutrition Department in the MOHSW and Liberia's new membership in the SUN Movement present opportunities for new development food assistance programs to support this effort in their areas of field implementation. The National Nutrition Policy (2008) operationalizes the nutrition priorities defined in the National Health Policy and Plan (2007-2011), while defining the high-impact, low-cost interventions to be implemented at scale, the nutritionally vulnerable groups that should be reached, and the financial and logistical parameters for implementation. The National Nutrition Policy and related guidance have adopted the Essential Nutrition Actions (ENA) developed by USAID and its

partners as proven interventions to reduce child malnutrition centered on the 1,000 day window of opportunity (see ENA box) (Guyon and Quinn 2011). USAID partners, including FFP partners, are important stakeholders in the rollout of ENA, particularly through support for gCHVs and trained traditional midwives in their target areas.

Essential Nutrition Actions

1. Promotion of optimal nutrition for women
2. Promotion of adequate intake of iron and folic acid and prevention and control of anemia for women and children
3. Promotion of adequate intake of iodine by all members of the household
4. Promotion of optimal breastfeeding during the first 6 months
5. Promotion of optimal complementary feeding starting at 6 months, with continued breastfeeding to 2 years of age and beyond
6. Promotion of optimal nutritional care of sick and severely malnourished children
7. Prevention of vitamin A deficiency in women and children

The draft 2014 National IYCF Strategy provides the platform for Liberia’s strategic actions at the national, county, and community levels, emphasizing community-focused health approaches such as mother groups, peer support, and other outreach activities as optimal (GOL 2014a). Although health sector capacity is low, the government’s strategies focus available training and resources on gCHVs and designate health staff to support community-level activities. FFP implementing partners and other USAID partners have previous successful experiences with Care Groups in Liberia, relying on gCHVs to form and support the groups of lead mothers in coordination with project staff and local health facility staff. The draft National IYCF Strategy describes such approaches as an essential link to facility-level services. All community health activities should continue the best practice of supporting and contributing to GOL health strategies and models, as well as innovating on such models when possible and appropriate. In addition to engaging at the community, district, and county levels, it is valuable for FFP development programs to document and share their approaches with national groups looking at models for scale-up of community health interventions.

Developed prior to the Ebola outbreak, USAID/Liberia’s CDCS includes “Improved Health Status of Liberians” as one of its four development objectives, with intermediate results related to utilization of quality health services, health system decentralization, financial sustainability of health services, and access to safe water. The strategy focuses both on meeting the immediate and critical need for health services, as well as longer-term investment in strengthening the capacity of the health system. The U.S. Government supports Liberian health systems strengthening on a large scale through the USAID-funded Collaborative Support for Health Project 2015–2020, focused on multifaceted national level capacity strengthening, as well as specific focus in the counties of Bong, Nimba, and Lofa. Program approaches support the GOL’s Investment Plan for Building a Resilient Health System 2015–2021, including workforce development, infrastructure, and surveillance and early warning systems to prevent and confront the threat of Ebola in the context of a comprehensive health care system (GOL 2015). This important document, which harmonizes with the National Health Policy and Plan and numerous donor plans, presents opportunities to synergize with these activities, including supporting community approaches that complement facility-based services, such as mechanisms for community feedback on the quality and availability of health services (MOHSW 2011).

FFP projects have been active participants in national and county committees and working groups related to nutrition, food security, and health (including Ebola). These groups foster linkages to government and other nongovernmental partners. Priority groups include:

- The National Nutrition Collaborative Committee

- The National Nutrition Working Group
- The Food Security Cluster, led by MOAFS
- The National Disaster Consortium, led by the Ministry of Internal Affairs
- The Infectious Disease Surveillance and Referral System, led by MOHSW
- The WASH Consortium, led by the Ministry of Public Works
- The Social Protection Network, led by the Ministry of Gender and Social Protection
- County-level Health Management Team Partners Groups
- County Development Committees

Table 13. Summary of Key Policies, Strategies, and Programs Related to Food Utilization and Health

Government of Liberia	U.S. Government ³⁴	Other
<ul style="list-style-type: none"> • National Health and Social Welfare Policy, 2011–2021 • The National Health and Social Welfare Decentralization Policy • The Essential Package of Health Services • Revised National Community Health Services Strategic Policy, 2011 • National Community Health Services Roadmap, 2013 • Essential Package of Health and Social Welfare Services, 2011 • National Health Communication Strategy, 2011 • Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013 • Water, Sanitation, and Hygiene Sector Strategic Plan 2012–2017 • Guidelines for Community-Led Total Sanitation Implementation, 2012 • National Guidelines for Hygiene Promotion, 2013 • National Nutrition Policy, 2008 • National Infant and Young Child Feeding Strategy and Action Plan 2014–2018 (draft in progress) • Communication Strategy on Water, Sanitation, and Hygiene for Diarrhea and Cholera Prevention, 2012 • Investment Plan for Building a Resilient Health System 2015–2021 	<ul style="list-style-type: none"> • Global Health Initiative Liberia Strategy, 2011 • USAID Multi-Sectoral Nutrition Strategy, 2014 • Advancing Community-Based Services for Health (USAID project) 2014–2019 • The Collaborative Support for Health 2015–2020 (USAID project) 	<ul style="list-style-type: none"> • Scaling Up Nutrition • UNICEF Liberia Country Program • WFP Liberia Strategic Plan, 2014–2017

3.4 CONCLUSION

Liberia’s road to recovery since the end of the civil war was hampered by the Ebola epidemic. Food insecurity continues to prevail, and much of the population struggles to make ends meet on a daily basis. In terms of improving livelihoods, much needs to be done to overcome constraints to agricultural production, income diversification, equal opportunities for women, rural infrastructure, various value chains, and legal land access. That being said, the country is endowed with plentiful rainfall, good soils, natural resources, and recent legislation that will ideally help poor rural households and, especially for women and widows, secure land rights. Literacy levels remain poor a decade after the war because many children missed the opportunity to go to school. There are few schools and teachers in remote rural areas, in addition to meager teacher salaries, lack of access to educational materials, and poor teaching quality at the schools (See Section 2.7).

The health sector was significantly stretched by the Ebola epidemic, exposing significant weaknesses within Liberia’s health infrastructure. Since stunted children have a greater risk of morbidity and mortality, decreased schooling, and decreased earnings later in life, pervasive stunting in Liberia has dire

³⁴ In addition to FFP programs, which also address food utilization and health.

consequences for the development of affected children, their communities, and the country overall (Black 2013). The dire water and sanitation situation in Liberia further contributes to poor child nutritional status and also presents dangerous risks to human health, including the transmission of Ebola. Surveys and qualitative research point to challenges regarding infant and young child feeding, particularly related to giving water to breastfeeding infants under 6 months, both early and late introduction of complementary foods, infrequent feeding of children, and extremely low dietary diversity with a dearth of protein sources (LISGIS et al. 2014, Yovsi 2010). However, Liberia’s nutrition policies are well-aligned with international evidence concerning key developmental windows of greatest nutritional vulnerability for children during the 1,000 days between pregnancy and the child’s second birthday.

FFP interventions to date have been instrumental in building community-based efforts to improve agricultural production, disaster risk reduction, literacy, and water sanitation. Partners invested in the resiliency of their communities before Ebola by fostering dialogue about community mobilization, training organized groups and volunteers, investing in basic infrastructure, and supporting linkages to the health system. Following the onset of Ebola, these structures proved vital in the fight to contain and prevent further transmission of Ebola through SBC approaches. As the causes of malnutrition are multifaceted, the greatest potential to improve the nutritional status of children comes through integrated programming that addresses its various determinants for individual families and entire communities. This multisectoral approach to addressing malnutrition is supported by the Liberian government in the draft National IYCF Strategy in Liberia, as well as USAID/Liberia’s 2014 Multi-Sectoral Nutrition Strategy and the CDCS. As FFP development food assistance programs are designed to prevent malnutrition with integrated programming, these programs are well-positioned to embrace these strategies. At the community level, successful interventions must engage village chiefs, value chain actors, community health committee members, gCHVs, and representatives from other sectors, such as education and WASH, to guarantee a coordinated, multi-pronged approach to addressing food insecurity and chronic malnutrition.

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APPENDIX 2. LAND RIGHTS AND CONCESSIONS IN LIBERIA

Introduction

Land tenure is a primary concern voiced by Liberian farmers, thus many perceive improving access to land title as a priority. This issue became more prominent in recent years with an end to the conflict and renewed interest by international companies to acquire land for mineral rights or agricultural business enterprises such as palm oil, rubber, and others that require large tracts of land for production. The government has been accused of giving away land rights to these corporations at an alarming rate. Land rights affect women in particular since many have been disenfranchised and impoverished due to their inability to claim land from their deceased husbands' relatives. The significant death toll following the prolonged civil war made this problem particularly acute. To rectify land issues and longstanding problems related to women's lack of land tenure, the government issued the Land Rights Policy, which provides legislative backing for poor rural households to secure land rights. The Ministry of Gender will be an important partner in educating women about their rights and helping them navigate the land titling process.

Liberia's land challenges are rooted in the country's founding. In 1821, American President James Monroe enlisted the support of Dr. Eli Ayres and Lt. Robert Stockton to explore the possibility of resettling freed American slaves in West Africa under the auspices of the American Colonization Society (ACS), initially founded in 1816 (Johnson Sirleaf 2009). When they finally set foot on Cape Montserrado in December 1821, they held the Bassa chief, King Peter, at gunpoint, forcing him to sell them land for US\$300 worth of goods. This marked the first land "transaction" in Liberia and opened the way for a new group of settlers calling themselves "Americo-Liberians". Due to the United States' reluctance to establish a formal colony in Africa, the Americo-Liberians declared independence in 1847. Beginning in 1824, land acquired by the ACS from indigenous peoples became "public" land then allocated to citizens as private deeded land (Land Commission 2013). Historically, the Liberian government has treated all land that is not deeded as public.

Evolution of Land Rights in Liberia

Prior to the Land Rights Policy in 2013, Liberia had a number of laws that governed land ownership. The Hinterland Law passed in 1949 allowed communities to register land. In 1956, the Aborigine Law provided local communities land use rights. Guidelines that govern the sale of land were codified in 1973 under the Public Lands Law (USAID 2011). In 2006, the Liberian government passed the National Forestry Reform Law, which aimed to bring greater transparency, accountability, and empowerment for civil society to decide how communal forests would be managed in the future (Ibid). The Forest Development Authority (FDA), an agency created in 1976, was tasked with managing implementation of the new law. The authority had been largely defunct during the prolonged civil war and lacked the staffing and budget to undertake most of its objectives. In 2009, the Liberian government passed the Community Rights Law (CRL), which provides guidance on establishing community forests if such rights pre-existed on a customary basis (USAID 2011). Nonetheless, the CRL does not grant land title/ownership of forests, a responsibility governed by the Land Rights Policy. The Ministry of Lands, Mines, and Energy also has some jurisdiction regarding the allocation of land concessions for mineral and commercial exploitation. At the county level, the Ministry of Internal Affairs has county land commissioners that address land administration.

President Sirleaf convened an independent body in 2010 called the Land Commission to address issues related to government, public, private, and customary land holdings, culminating in the Land Rights Policy in 2013 (Land Commission 2013). The Land Rights Policy takes the place of the Public Lands Law (1973). For government and public land, the policy delineates the mechanism by which the government transfers and acquires land via eminent domain. Critically, the commission established a new category called “customary land” that essentially formalized traditional practices extant throughout Liberia concerning land. Rather than address former land disputes, the policy provides a framework for dealing with land issues moving forward. It will allow communities to establish a legal entity to claim land and receive a deed issued by the government. The commission adhered to guiding principles to ensure that in the future, land rights will be handled in a more equitable manner with greater clarity for individuals and communities seeking to secure land rights. The commission also recognized that uncontested land rights can be a driver for economic development and protect the environment.

Despite the existence of prior land legislation, land rights have been plagued by confusion and misinformation, which have fueled land conflicts. Traditionally the government has not maintained a strong presence on land tenure oversight at the community level; rather, it has devolved this responsibility to local chiefs (USAID 2011). Some local communities believe they have been disenfranchised from decision-making concerning land, a longstanding issue that may have partly contributed to the prolonged civil war. The difficulty in obtaining legal land rights has also served as a deterrent to smallholder farmers from investing in long-term strategies to improve agricultural production and environmental management. In practice, there are five primary types of land holding:

- **Deed holders** (or holders of other documents): High degree of tenure security
- **Customary occupation without a deed**: Relative security within the customary domain
- **Renter**: Individuals who lease land but have lower security
- **“Strangers” or “borrowers” of land**: Individuals who are not from a local area and do not rent but are allowed temporary and insecure access to land and must supply a token amount of crop produce to the owner to acknowledge that the land is owned by another
- **Squatters**: Individuals who can be evicted at any time if discovered by the owner, though they may attempt to claim land by planting tree crops and through forms of adverse possession (Ministry of Agriculture 2007)

Land Concession History

Liberia has a fraught history pertaining to land concessions. The first land concession was granted to Firestone Tire and Rubber Company in 1926. Liberia proved to have perfect growing conditions for rubber and promised to be an alternative production supply from Firestone’s existing operation in Asia. The firm negotiated an option to lease up to 1 million acres (10% of the country’s arable land) until 2025 for 6 cents per acre and 1% of the tax value of exported rubber (Johnson Sirleaf 2009). At the height of production in the 1960s, Firestone employed 20,000 workers at the factory and plantation. Over the years, Firestone has held sway with various Liberian governments, but the company also been accused of flouting workers’ rights and child labor laws. Until recently, Firestone only exported raw material and did not produce tires or other value-added products in Liberia. During the prolonged civil war, the plantations were abandoned by Firestone and rubber trees were tapped improperly by surrounding communities and Charles Taylor’s forces. In a similar fashion, logging continued unabated and proceeds were used to finance the war.

In an effort to increase foreign direct investment, President Sirleaf has actively courted international companies to set up operations in Liberia. Exact figures are difficult to obtain from the government, but

an independent group estimated that nearly 29% of all land in Liberia has been allocated for mining concessions (Global Witness 2012). The group estimated that agriculture concessions amounted to 10% of the total land area, primarily for the palm oil industry. The government has promised at least 520,000 ha of land to the top four palm oil companies (Al-Jazeera 2015). The growth in land concessions has drawn ire from local communities who claim to be losing access to land they have been farming for generations. Many observers believe that issues related to the loss of land from land concessions and lack of land rights for rural households pose significant threats to peace in Liberia. Though farmers may have been using such land for some time, the government claims that it is public land and that it has the right to exercise eminent domain when granting concessions to foreign companies. Nonetheless, representatives from the Land Commission acknowledged that in the past there has not been enough effort to consult with local people and respect customary land holdings.

Figure A2-1. Current Land Concessions in Liberia



The most controversial land concession in the past year concerns Golden Veroleum Liberia (GVL), a palm oil company with plantations in Sinoe and Nimba counties. In 2010, the Singapore-based company started its operations in Sinoe County by buying land in this remote region. Records show that the company bought large tracts of land at the height of the Ebola crisis between August and October 2014.³⁵ The company currently holds 220,000 ha (Al-Jazeera 2015). There was an international outcry that the company sought to take advantage of the crisis to buy land cheaper. The company contended that this expansion had been planned before the epidemic and that 70% of land activity (and ostensibly acquisition) had occurred prior to August 2014 (GVL 2015). In May 2015, a protest in Butaw, Sinoe

³⁵ Available at: <http://news.mongabay.com/2015/07/palm-oil-company-denies-capitalizing-on-ebola-to-advance-liberia-operations/>

County, where the company operates, turned violent. Protesters argued that since the company launched, land has become scarce and few new jobs have been created (Al-Jazeera 2015). Protesters beat many of the workers, took foreign workers hostage, looted property, and caused nearly US \$1 million worth of damage.

Arcelor Mittal has one of the largest land concessions in Liberia to mine iron ore in Northern Nimba County. The company has an outstanding dispute over the Western Nimba Nature Reserve, a community forest overseen by the Gba community, an organization supported by the Land Rights and Community Forestry Program project roughly 5 years ago.

USAID Interventions

Over the years, the USAID Liberia Mission has launched a variety of interventions to improve management of land and forests. From 2007–11, Tetra Tech and ARD managed the Land Rights and Community Forestry Program, an intervention that sought to improve the legal and policy environment for community forestry programs and generate environmentally friendly income for communities from surrounding forests. Among other accomplishments, the project placed five community forests comprising 10,000 ha of biologically sensitive land under improved community management with improved agricultural and forestry practices. The project also brokered the co-management of the East Nimba Nature Reserve between the Forest Development Authority and local communities. One of the most significant impacts of this intervention has been to give local communities a voice in national policy on how community forests are managed.

In 2011, USAID awarded the Land Conflict Resolution Project Task Order to Tetra Tech. The 3-year intervention supported the Liberian government's effort to formalize existing informal methods of land dispute resolution and national policy. The program enhanced the capacity of newly created Land Coordination Centers (LCCs) in Lofa and Nimba counties on a pilot basis. The project helped to create monitoring and evaluation and quality control mechanisms and improved coordination with the national office. It also emphasized the formalization of individuals and systems already involved with dispute resolution, e.g., traditional authorities, county officials, NGOs, and the formal court system. In 2012, the project was expanded to Margibi, Bong, and Maryland counties. USAID also added a number of communications/awareness, stakeholder engagement, and training/capacity-strengthening activities.

Other Donors

In 2014, Norway signed an agreement with Liberia to halt the destruction of Liberia's rainforest through a \$150 million initiative (Global Witness 2014). The deal plans to end new logging contracts, increase the capacity of local communities to manage their forests, and protect forest areas. Liberia's remaining forests are vital to the climate change equation given that the country possesses nearly half of the remaining Upper Guinean forest, which transects all of its neighboring countries. Additionally, nearly a third of Liberians live in the country's forests and depend upon them for their livelihoods. Under the agreement, Liberia pledges to:

- Place a moratorium on new logging contracts and review logging concessions that are illegal or not performing.
- Increase financial, technical, and legal support for communities wishing to manage their forests, including practical training and research into new sustainable forest economies.
- Conserve 30% or more of Liberia's forests as protected areas.
- Respect the rights of rural landowners, including those who own their land under customary law, and ensure that decisions are made only with their free, prior, and informed consent.

APPENDIX 3. AQUACULTURE

Background

Liberia's numerous waterways, ample rainfall, and swamps offer the perfect environment for aquaculture. The first fish ponds were constructed in Liberia from earthen ponds in the 1950s as an initiative launched by the Liberian government's Central Agriculture Experimental Station in Bong County. Early ponds focused on the breeding of carp, Nile tilapia and catfish (Bureau of National Fisheries [BNF] 2014). The World Bank and European Union financed infrastructure and technical assistance to install new ponds to produce carp, tilapia, and catfish in Lofa, Nimba, and Grand Gedeh counties in the 1970s and 1980s (Ibid). The Peace Corps also provided volunteers to advise in the construction and management of community fish ponds. The government estimates that before the war, 1,704 ponds were installed in 160 rural communities (Ibid). Though aquaculture began to thrive during this period, the civil war and its ensuing population displacement brought the sector to a grinding halt. As a result, many ponds and hatcheries were abandoned, and rehabilitation efforts have only recently begun.

Aquaculture Production in Liberia

Though Liberia is blessed with excellent conditions for small-scale aquaculture, very few fish farms or hatcheries exist. The government estimated in 2014 that there were only 300 fish farmers in Liberia overseeing 1,125 ponds (113.9 hectares) (BNF 2014). Most farmers produce tilapia and catfish and annual production is roughly 40 MT. Although BNF predicts that aquaculture has the potential to produce 15,000 MT of fish annually by 2030, a myriad of challenges must be overcome. At present there are government-run (BNF) hatcheries in Klay, Bomi County and Zwedru, Grand Gedeh County. A third site in Tassah, Bong County has not been maintained and no longer produces fingerlings for outgrowers. There are no private sector hatcheries functioning in Liberia at the moment.

The Liberian government and development partners have a renewed interest in restoring government hatcheries and rehabilitating ponds dormant for the past 25 years. The most substantial technical assistance to this sector occurred between 2010 and 2013 through a World Bank-funded initiative managed by a French aquaculture consulting firm called Association Pisciculture et Développement Rural en Afrique (APDRA). During this period, APDRA provided technical assistance to 143 fish farmers in Bong, Nimba, and Lofa on 30 ha of ponds (BNF 2014). The firm introduced an innovative system that integrated fish farming and rice production using the indigenous African arowana fish, as well as catfish and tilapia (Ibid). Proper management of fish ponds using fertilized livestock waste as feed allowed participating farmers to produce 3 MT/ha/year (Ibid). Another significant aquaculture intervention has been undertaken since 2013 in Grand Gedeh and River Gee counties through the support of a FFP project, HANDS. The HANDS team rehabilitated the Duoyee Town Hatchery in Zwedru, Grand Gedeh, the largest BNF hatchery in Liberia, which was originally constructed by the European Union in the 1980s. The team constructed a fish processing shed at the hatchery to gut, clean, sort out males and females, and package fish for transport and composting for organic fish feed (OICI 2015). HANDS installed a solar dryer for fish preservation and trained workers and government staff on its use. Trainings targeted to 108 farmers introduced pond and feed record keeping, ways to determine the sex of tilapia, fish transportation methods, general pond maintenance, composting, processing local fish feed, and cooking demonstrations.

Institutions and Policy Framework for Aquaculture

The BNF, under the MOAFS, oversees aquaculture in Liberia in addition to marine, research, statistics and biology. The BNF receives support from the West Africa Regional Fisheries Program and has local and international staff and experts who support its administrative and technical work.

The impetus to rehabilitate aquaculture sites in Liberia arose from the 2009 Food and Agriculture Policy and Strategy, which aims to improve food and nutrition security, competitiveness, market linkages, and capacity strengthening. Interventions under this policy are meant to promote competition and market access by using public investment to improve market infrastructure and services and private sector development (LASIP 2010). The strategy included a provision to develop an aquaculture recovery plan and establish a National Fisheries Commission and a national fisheries management and development fund (BNF 2014). Among other things, the policy seeks an:

“Aquaculture sector developed in an orderly manner through good sector governance, established by supporting legal and institutional frameworks, an enabling aquaculture business environment, and highly trained, knowledgeable and skilled workers and farmers, meeting national fish demand deficits and for export to foreign remunerative markets for foreign exchange.” (BNF 2014)

Despite this ambitious goal, the BNF recognizes the significant constraints extant in rebuilding the aquaculture sector. Apart from addressing the production constraints of a technically demanding undertaking such as fish farming, the BNF requires support within the ministry to secure sufficient budget to strengthen internal capacity and cooperation with other government ministries. According to sources engaged in the aquaculture sector in Liberia, BNF is severely underfunded. For this reason, BNF has sought partnerships with farmer organizations, donors, and NGOs to promote the development of aquaculture. To build an enabling environment to allow aquaculture to flourish, the BNF proposes a number of interventions:

- Provide financial services and incentives for promotion of smallholder aquaculture as a business.
- Identify areas of high potential aquaculture zones, where land-based aquaculture can be a permitted land use and is ecologically sustainable.
- Ensure the availability and access to inputs, including fish seed and feed as well as credit.
- Improve access to markets for fish products by maintaining standards and market data and by improvement of road transport networks.
- Establish aquaculture research and technology development capability for the growth of the sector.
- Support cost-effective aquaculture extension services to fish farmers in collaboration with the private sector and farmer/industry organizations.
- Strengthen capacity of private and public sector institutions to produce and disseminate good quality information on aquaculture for facilitation of sound decision-making.
- Institutionalize a collaborative service between BNF and the Veterinary Service to launch a National Aquatic Health Capacity Development Program to cope with outbreaks of serious infectious diseases among aquatic animals to protect such animals and facilitate trade in aquatic animals along with their products and byproducts, both nationally and internationally.
- Promote the safety and quality of the farmed fish products by ensuring the application of safety and control mechanisms such as the statutory hazard analysis critical control point methodology.
- Target women and youth to become active in aquaculture activities for promotion of the sector

Lessons Learned

Lessons that emerged from FFP-supported aquaculture activities include:

1. Inland sites far from the coast should be selected to maximize profit of farmed fish to avoid competition with ocean fish sales.
2. Technical assistance to aspiring fish farmers is critical. Many abandoned sites were poorly chosen to begin with. Most did not properly account for annual changes in water flow during the rainy and dry seasons.
3. Implementers should identify qualified aquaculture specialists to oversee interventions and draw from expertise in Liberia.
4. Be clear about the objective of the intervention. Since pond harvests take place every 6 months and returns are infrequent, most aquaculture farmers will use proceeds to supplement a main source of income. A more profitable operation would require at least six ponds to ensure a monthly rotation of stocking and harvests. If the primary objective is to increase dietary diversity, this may be accomplished with one fishpond if land and a perpetual water source are available.
5. Fish ponds will not proliferate in Liberia unless there are functioning hatcheries. This could be managed more sustainably and profitably by the private sector. Implementers should build an enabling environment for financial services and incentives to promote smallholder aquaculture as a business.
6. To increase fish production quantity and quality, implementers and aspiring fish farmers should recognize that it takes time and investment to realize optimal fish growth and harvest cycles.
7. For intensive fish farming, good quality fish feed is required but it is lacking in Liberia. Aspiring fish farmers should be trained how to produce their own high-quality nutritious feed.
8. A standard, rigid harvest and restocking schedule at the hatchery should be implemented from the beginning. Such a schedule enforced consistently by qualified technicians will ensure that two ponds are harvested each month once fish reach their scheduled maturity time and are restocked with the best quality fingerlings available. If the largest fish are harvested, the ponds cannot be strategically restocked because the smaller fish remain, which will affect production and the harvest schedule in the long run.
9. NGOs seeking to bolster the aquaculture sector should collaborate to avoid duplication and maximize impact.