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# BEST Project

Bellmon Estimation Studies  
for Title II (USAID-BEST)



## **USAID OFFICE OF FOOD FOR PEACE** **LIBERIA: THE ROLE OF MARKETS IN** **FOOD SECURITY, PRE-EBOLA CRISIS**

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**Front cover:** (Left) Some Liberians believe that country rice possesses superior nutritional benefits over imported rice, possibly due to the traditional milling that leaves part of the bran on the rice grain, as seen in this photo. Nimba County, Liberia, July 2014. (Right) The Tappita market opens every Wednesday and sells a wide variety of goods – rice, cassava, vegetables, oils, fish, bush meat, snails, plantains, and non-food items such as lapa (fabric), charcoal, hygiene products, and shoes. This woman is a small-scale trader at the market, selling small quantities of vegetables. Nimba County, Liberia, July 2014.

**Back cover:** The PTP refugee camp in Tchien District runs an agricultural site for small groups of Ivorian refugees to plant their own foods. This woman participates in the program, and she can freely sell her goods outside of the camp if she so wishes. Grand Gedeh County, Liberia, July 2014.

Photos by Fintrac Inc.

# PREFACE

During the months of June-August 2014, the Bellmon Estimation Studies for Title II (USAID-BEST) team undertook a study of the current state of agricultural markets in Liberia to inform anticipated USAID development food assistance programming.

USAID-BEST conducted field work in Liberia over the period July 13-30, 2014, when the Ebola outbreak had been ongoing for several months but at relatively low levels. As of July 27, near the completion of field work, the Liberian Ministry of Health and Social Welfare reported 329 cases of Ebola with 156 deaths. Immediately thereafter, the Ebola outbreak began escalating substantially in Liberia. As of October 2, the Ministry reports the total caseload reached 3,921 with 2,116 fatalities.

Research findings were drafted in August and early September, and were not updated to reflect any changes in market and food security conditions due to the Ebola crisis that may have occurred during that time. Therefore, the food security situation presented in this analysis may no longer accurately reflect the current environment, especially in regards to the availability and affordability of foods across the country, due in part to reductions in household purchasing power and intermittent restrictions on movement of people and goods. Nonetheless, the role of markets in food security and the basic characteristics of consumption, production, and marketing of staple foods prior to the 2014 Ebola crisis remain relevant.

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# ACRONYMS AND NOTES

AfT	Agenda for Transformation
BEST	Bellmon Estimation Studies for Title II
CARI	Central Agricultural Research Institute
CFSAM	Crop and Food Security Assessment Mission
CFSNS	Comprehensive Food Security and Nutrition Survey
CKO	crude kernel oil
CPO	crude palm oil
DHS	Demographic and Health Survey
DRR	Disaster Risk Reduction
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organization
FCS	Food Consumption Score
FED	Food and Enterprise Development Program
FFE	Food for Education
FFP	Food for Peace
FTF	Feed the Future
FY	Fiscal Year
GDP	Gross Domestic Product
GoL	Government of Liberia
ha	hectares
HANDS	Health, Agriculture and Nutrition Development for Sustainability
HH	household
IFPRI	International Food Policy Research Institute
kcal	kilocalories
kg	kilograms
kl	kiloliters
km	kilometers
LAUNCH	Liberian Agricultural Upgrading, Nutrition and Child Health
LISGIS	Liberia Institute of Statistics and Geo-Information Service
LRD	Liberian Dollar
MCHN	Maternal and Child Health Nutrition
mm	millimeters
MMT	Million Metric Tons
MoA	Ministry of Agriculture
MoCI	Ministry of Commerce and Industry
MoHSW	Ministry of Health and Social Welfare
MT	Metric Tons
NGO	Non-Governmental Organization
RVO	refined vegetable oil
sq. m.	square meters
U2s	Children under two years of age
U5s	Children under five years of age
UNICEF	United Nations Children's Fund
US\$	United States Dollar
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USG	United States Government
VAM	Vulnerability Analysis and Mapping
WASH	Water, Sanitation, and Hygiene
WFP	World Food Programme
YSP	yellow split peas

**Exchange Rate: US\$1 = LRD 91 as of August 2014**





# THE ROLE OF MARKETS IN FOOD SECURITY, PRE-EBOLA CRISIS

At this small neighborhood market, traders sell rice, pulses, dried peppers, and other foods. Liberians, particularly in urban areas, visit markets frequently and often purchase just what they need for their meals that day. Monrovia, Liberia, July 2014.

Photo by Fintrac Inc.

## 1.1. INTRODUCTION

As the Bellmon Amendment requires that US food assistance avoids harming local markets in recipient countries, this report examines the primary staple food markets in Liberia to better enable US government representatives to make an informed Bellmon determination prior to a potential Food for Peace Title II program in Liberia.

To inform the analysis, USAID-BEST conducted desk research; interviewed key government, commercial, donor, and International/Non-Governmental Organization (I/NGO) stakeholders; visited local markets, and interviewed market actors across the country during a July 2014 field visit. Based on this information, USAID-BEST concludes that as of late July 2014, markets in Liberia are relatively competitive and well integrated, and current food aid volumes do not negatively affect local markets.

The structure of the analysis begins with a discussion of the factors underlying the structural food deficit in Liberia, including constraints to food availability, access, utilization, and stability. This analysis describes in detail individual commodity markets. Understanding the norms and trends in the consumption, production, processing, and marketing of staple foods is particularly important for USAID and its implementing partners because these patterns have implications for potential

programming, including the feasibility and appropriateness of direct food aid distribution, local donor procurement, cash transfers and food vouchers.

## 1.2. STRUCTURAL FOOD DEFICITS

Although Liberia suffers from a structural food deficit at the national level, a functional and relatively competitive marketing system mitigates the impact of limited domestic food production. Yet, as the following paragraphs detail, issues around availability, access, utilization, and stability continue to hinder greater household (HH) food security throughout the year.

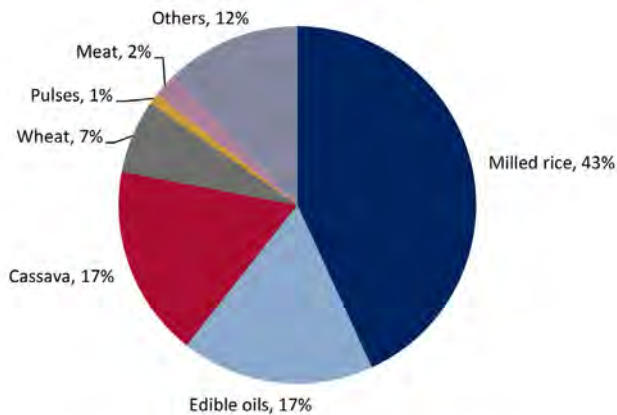
A basic understanding of the Liberian diet is required to fully comprehend the constraints to improved food and nutrition security presented later in this chapter. Therefore, this section first provides a cursory description of the foods integral to HH diets due to their important role as staple foods, protein sources, or distributed food aid commodities (later analyzed at greater depth in 1.3. Commodity Markets), and then moves to examine in length the contributing factors that prevent Liberians from achieving sustained food security.

### 1.2.1. Local Diets

Liberians eat three meals a day when possible, but many rural HHs only eat two daily meals because of economic constraints. **Rice** is the primary staple and Liberians consider this food the

backbone of their diets. Consequently, most people associate the availability of and access to rice essential to their food security. Besides rice, families consume cassava, edible oils, vegetables, pulses, meat, and wheat products. However, limited financial access from poverty means that foods other than rice account for a significantly smaller share of the total caloric contribution, as the following pie chart illustrates.

**Figure 1. Diet Composition (% Calorie Contribution), 2011**



Source: Created by USAID-BEST using data from FAOSTAT, accessed May 2014.

Rice consumption is estimated at roughly 90 kilograms (kg) per person per year.<sup>1</sup> HHs consume rice daily for lunch and dinner when they can and generally supplement this starch with a sauce or gravy<sup>2</sup> of vegetables cooked using bouillon cubes, or with fish and/or bush meat. Liberians do not strongly prefer local or imported rice.

In times when people cannot purchase sufficient rice because of availability or cost, they turn to **cassava** as an alternate, less expensive starch. Per capita consumption of fresh cassava is estimated at 129 kg per person per year<sup>3</sup> (39 kg of cereal equivalent based on the Food and Agriculture Organization (FAO) calorie content).<sup>4</sup> As illustrated above, cassava contributes, on average, 17 percent of total calories consumed.<sup>5</sup> Though low- and high-income HHs consume this food, only poorer segments of the population who cannot readily access rice because of reduced HH rice stocks or high market prices tend to make cassava their main staple. HHs tend to consume cassava in various forms early in the morning as a breakfast food. HHs turn cassava into a thick paste (*fufu*) that they combine with vegetable sauces; both children and adults also consume cassava as flour (*gari*) in porridges. Preferences for different preparations of cassava vary by location; for example,

1 FAOSTAT, 2014, Food Balance Sheets, <http://faostat3.fao.org/faostat-gateway/go/to/download/FB/CC/E>, accessed July 2014.

2 Sometimes also referred to as “soup.”

3 FAOSTAT, 2014, Food Balance Sheets, <http://faostat3.fao.org/faostat-gateway/go/to/download/FB/CC/E>, accessed July 2014.

4 FAO, October 2006, *Cassava Assessing Handbook*.

5 FAOSTAT, 2014, Food Balance Sheets, <http://faostat3.fao.org/faostat-gateway/go/to/download/FB/CC/E>, accessed July 2014.

consumers in Nimba County reportedly prefer cassava prepared as a food called GB while those in Cape Mount prefer *gari*.<sup>6</sup>

**Edible oils** are also central to the diet, and contribute up to 17 percent of the total caloric contribution and 24-25 percent of energy consumption, therefore reaching levels that meet WHO recommended values.<sup>7</sup> Consumption is approximately 17 kg per person per year.<sup>8</sup>

Liberians use different types of edible oils, but most commonly prefer a thick and bright red crude palm oil (CPO) obtained from indigenous *Dura* trees, known locally as country oil. Consumers in Liberia and around the region highly regard country oil for its unique flavor and source of nutrition (e.g., vitamin A).<sup>9</sup> Although imported refined vegetable oil (RVO) has become increasingly available in markets around the country, the higher cost of RVO and the preference for country oil in many traditional dishes means that low-income HHs tend to purchase imported RVO only in small amounts. In addition, HHs add country oil to stews and sauces. For frying and deep frying, Liberians prefer to use RVO. Liberians consume mostly imported RVO of palm oil blends because of the lower price compared to other imported RVO available in markets.

**Pulses**, commonly referred to as “beans,” do not represent a major component of the Liberian diet. Beans only represent about one percent of the total caloric contribution, and per capita consumption is insignificant at an estimated 2 kg per person per year.<sup>10</sup> HHs consume small amounts of beans as a side dish often in soups or sauces accompanying rice. Many varieties of imported and locally grown beans are available in Liberia, such as pinto beans, dark red beans, fava beans, crowder peas, black-eyed peas, yellow peas, red lentils, yellow lentils, and mung beans. Though HHs appreciate freshness because they believe it speeds cooking time, HHs appear to have no preference for a particular variety in terms of taste.

**Fish**, an important source of protein, is widely available. HHs most frequently consume fish by adding it to dishes that complement rice. Per capita consumption has fallen from 4.6 kg in 2005 to 2.5 kg per person annually.<sup>11</sup> Fish accounted for less than 0.2 percent of calories consumed in 2011. However, field work in July 2014 indicates that per capita consumption of fish could be higher than FAO estimates as market visits revealed fish as the most commonly available animal protein product. Given that the livestock sector in Liberia is small, and that fish is

6 DAI, May 2012, *Food and Enterprise Development (FED) Program for Liberia: Cassava Value Chain Assessment*.

7 WHO/FAO recommends total fat consumption between 15-30 percent of dietary energy intake. Developing countries in Africa usually do not achieve this goal.

8 FAOSTAT, 2014, Food Balance Sheets, <http://faostat3.fao.org/faostat-gateway/go/to/download/FB/CC/E>, accessed July 2014.

9 FAO, 1994, *Experts' recommendations on fats and oils in human nutrition*.

10 FAOSTAT, 2014, Food Balance Sheets, <http://faostat3.fao.org/faostat-gateway/go/to/download/FB/CC/E> 2014, accessed July 2014

11 FAO, 2007, Fishery country profile - Liberia.; FAOSTAT, 2014, Food Balance Sheets, <http://faostat3.fao.org/faostat-gateway/go/to/download/FB/CC/E> 2014, accessed July 2014



relatively less expensive, fish consumption remains key for poor HHs.<sup>12</sup>

In general, HHs eat some form of **vegetables** at least once per day, though in small amounts.<sup>13</sup> Liberians commonly use cassava greens, potato greens, bitterball (small African eggplants), okra, peppers, onions, carrots, potatoes, eddo (taro root), and tomatoes in stews and/or sauces. While HHs often grow vegetables themselves in small gardens, onions are regularly imported from Europe, and carrots, peppers, bitterball, and potatoes from Guinea.

Peanuts, plantains, and maize offer important sources of calories, but HHs eat these foods primarily as snacks during their respective harvest months and do not consider these items essential to a main meal.

People in both urban and rural areas regularly consume and have a strong preference for **bush meat**, or wild game, such as deer, monkey, chimpanzee, anteater, large birds, groundhog, bush hog, snake, and bush rat. Dried bush meat, preserved with oil and salt, is most commonly sold on markets, though some vendors also sell fresh meat. Liberians either consume bush meat as part of a main meal or as a snack similar to beef jerky. Snails are also common, though more abundant during the rainy season, and are usually added to soups or stews. Insects are sometimes a snack food.

Finally, the consumption of **wheat** is among the highest in the West African region despite the lack of local wheat production and limited domestic milling. Per capita consumption is around 17 kg per person per year, but the demand base is mostly urban for flour-based products, which are all locally manufactured, such as breads, muffins, and fritters. Urbanites consume these wheat flour products on average four days a week.<sup>14</sup> Most HHs are familiar with **bulgur wheat** due to humanitarian and development agencies distributing this product as food aid. Bulgur wheat is usually mixed with rice in order to stretch rice dishes, boiled with oil and pulses in a sauce, or ground and cooked with oil and beans.

### 1.2.2. Food Availability

Liberia is nearly self-sufficient in cassava, fish, and country oil. However, the country depends on international markets to supply more than 1/2 of its rice requirements and to meet demand for other crops such as beans and vegetables. Given this strong dependence on international markets, the spatial distribution of food availability in Liberia is often contingent upon the ability to move goods upcountry from Monrovia and between surplus and deficit areas. In no particular order, this section analyzes the main factors that affect food availability throughout Liberia.

12 FAO, 2007, *Fishery country profile - Liberia*.

13 WFP, December 2013, *Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013*.

14 Ibid.

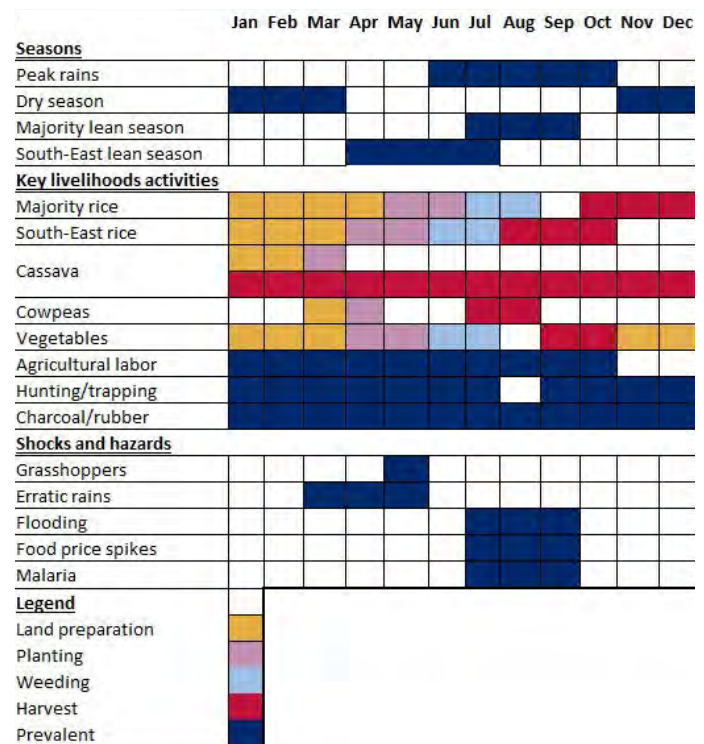


Photo by Fintrac Inc.

Households often use benniseed (sesame seeds), onion powder, okra powder, beans, and bouillon cubes as flavoring in their dishes. As seen here at a market in Ganta, these ingredients typically sell in small enough quantities that low-income consumers can afford to purchase these additional ingredients. Nimba County, Liberia, July 2014.

**Seasonality.** Rice harvests in the majority of the country take place from October to December, except the South-East where it occurs August-October (see seasonal calendar below). HHs rely on their own rice production, but this volume typically only lasts three-five months after harvest. As HH stocks diminish, families must purchase imported rice on the market to supplement, and eventually replace, domestic country rice until the next harvest season.

Figure 2. Agricultural Seasonal Calendar



Source: Created by USAID-BEST using information from WFP, FAO, and GoL.



Photo by Fintrac Inc.

A slash and burn shifting cultivation system characterizes upland rice production and takes place around felled tree stumps, which can make farming activities onerous. Given that the fallow period between planting needs to be between 7-10 years, land requirements for this system are relatively large. Nimba County, Liberia, July 2014.

Since farmers can harvest cassava year round, HHs often use this crop as a safety net during the lean months for rice (July to September for the majority of country). Although not depicted in the seasonal calendar, domestic country oil production occurs year round but peaks in September-March.

**Agricultural productivity.** Due to the predominance of traditional farming practices, the absence of mechanization, and low levels of public sector support, Liberia has the lowest rice yields in West Africa. Over the last 10 years, growth rates for yield increases have also been slower than other countries in the region. This combination of low productivity and low growth rates results in limited marketable surpluses of local rice and lagging farm income.

The slow productivity growth of rice has contributed to a high level of import dependency, which makes the country especially vulnerable to increases in international commodity prices for its main staple crop. Liberia relies on imports to supply 1/2-2/3 of national rice consumption, compared with neighboring Sierra Leone and Guinea which import roughly 1/5 of national consumption. This high level of import dependency is much less pronounced for other major crops where the country is nearly self-sufficient (cassava), or where imports comprise roughly 1/4-1/3 of national consumption (edible oil).

**Land availability.** Land availability is not a significant constraint. Total arable land area is estimated at 4.6 million hectares (ha) while planted area totals only several hundred thousand hectares.<sup>15</sup> As a result of this relative availability of land, significant investments currently underway would expand new planted area for tree crops, notably oil palm, by as much as 800,000 ha. However, lack of clarity over land ownership reduces investment incentives for both commercial and staple crop agricultural development.

**Infrastructure.** Roads along main transportation corridors

<sup>15</sup> GoL, 2007, *Comprehensive Assessment of the Agriculture Sector in Liberia (CAAS-Lib): Synthesis Report*.

have significantly improved in recent years, allowing for more efficient and regular transportation to large urban markets outside of Monrovia. Field work conducted during light rains of the summer months indicated that food availability was relatively good in these markets while trucking and transportation services were functioning relatively effectively. In more remote areas, however, transportation to and from markets becomes restricted during periods of heavy rainfall during June- October as rural roads can become impassable. This situation can affect both traders serving more remote areas and HHs attempting to access markets to sell and buy goods.

**Animal protein.** Although traders across markets sell dried fish in abundance, sources for animal protein still remains limited. The conflict destroyed the livestock sector and the industry has not fully rehabilitated. Moreover, overhunting during the war led to a decline in the availability of bush meat that has continued because of population growth, deforestation, and unsustainable hunting practices.<sup>16</sup>

### 1.2.3. Food Access

Liberian HHs rely heavily on the market for their basic food needs. Rural HHs purchase 74 percent of their food and urban HHs 94 percent,<sup>17</sup> which means purchasing power greatly influences food security. With 75 percent of rural HHs and 48 percent of urban HHs below the poverty line,<sup>18</sup> poverty represents the main obstacle to food access. Additionally, HHs report experiencing shocks that constrain their ability to purchase and access food, such as sickness or death in the HH, loss of employment/reduction in income, or high food prices.<sup>19</sup> Other factors detailed below that contribute to current poverty levels include: low incomes and unemployment, limited education, and high expenditure on food.

**Low income.** Limited employment opportunities and access to a consistent income source restrict HH ability to purchase goods, especially food. The World Bank estimates that under and unemployment affects 20 percent of the population;<sup>20</sup> further, a Liberian Labor Force Survey indicates that of those employed, 68 percent work in the informal sector.<sup>21</sup> Across all income strata, the majority of Liberians derive their income from low-

<sup>16</sup> Covey, Ryan, and W. Scott McGraw. "Monkeys in a West African Bushmeat Market: Implications for Cercopithecoid Conservation in Eastern Liberia." *Tropical Conservation Science* 1st ser. 7 (2014): 115-25. Mongabay.com Open Access Journal. 2014. Web. Hoyt, R. April 2004. "Wild meat harvest and trade in Liberia: managing biodiversity, economic and social impacts." Available at <http://www.eldis.org/vfile/upload/11/document/0708/DOC16500.pdf>

<sup>17</sup> WFP, October 2010, *Comprehensive Food Security and Nutrition Survey 2010*.

<sup>18</sup> The latest official poverty numbers are from 2008, and though they do not reflect changes over the past 6 years rural and urban poverty remain high throughout Liberia. GoL, April 2013, *Agenda for Transformation: Steps Toward Liberia RISING 2030*.

<sup>19</sup> WFP, December 2013, *Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013*.

<sup>20</sup> World Bank, 2012, *Poverty and the Policy Response to the Economic Crisis in Liberia*.

<sup>21</sup> GoL, April 2013, *Agenda for Transformation: Steps Toward Liberia RISING 2030*.

paying jobs.<sup>22</sup> In rural areas, commonly available opportunities in farming, hunting, rubber and charcoal production, and other agriculture related activities pay menial wages.<sup>23</sup> In urban areas, people earn most of their income from inconsistent petty trade.<sup>24</sup> Returnees, disabled people, female-headed HHs, and young adults are among the poorest of the population.<sup>25</sup>

**Limited education.** Furthermore, due to the disruptions of war many Liberians have low education levels or no formal education at all, which is associated with low-paying jobs and unemployment. Nationally, more than 70 percent of HHs with an uneducated head or spouse are considered poor.<sup>26</sup> Over 40 percent of these HHs have consistent poor and borderline food consumption.<sup>27</sup>

**High food expenditures.** On average, HHs dedicate 53 percent of their total expenditures to food, while more than 30 percent of the population spends greater than 60 percent of their HH budgets on food purchases.<sup>28</sup> Nationally, only 23.4 percent of the population can allot less than 40 percent of their expenditures to food.<sup>29</sup>

#### I.2.4. Food Utilization

Poor food utilization poses a major obstacle to improved food security in Liberia. Primarily, the relatively large HH sizes exacerbates problems. Currently, the total fertility rate per woman (15-49 years of age) is 4.7 children, and on average, rural women birth 6.1 children.<sup>30</sup> Additionally, an estimated 37 percent of HHs take on orphans or foster children;<sup>31</sup> HHs also care for adults with disabilities (92,000 countrywide).<sup>32</sup> The greater the number of people in a HH, the more strained the family's resources to purchase foods that provide a diverse diet.<sup>33</sup>

Indeed, caloric deficiency and low dietary diversity remain serious problems in Liberia. Approximately 30 percent of the population is below the minimum level of dietary energy consumption,<sup>34</sup> and 27-30 percent of the population suffers from

low-borderline dietary diversity.<sup>35</sup> Though countrywide people consume rice with some fish and vegetables, large disparities between Monrovia and the rest of the country persist. Since poor HHs often consume food at home from large communal bowls, children disproportionately bear the negative effect of such a practice because they tend to receive food last and even when they do, they often feel pressure to share with other members in the HH.

Regarding Infant and Young Children Feeding (IYCF) indicators, Liberia remains among the worst in the West Africa region.<sup>36</sup> Only 30 percent of Liberian children achieve an acceptable minimum meal frequency,<sup>37</sup> and only 11 percent eat a diverse diet.<sup>38</sup> Eighty seven percent of all newborns start breastfeeding within 24 hours of delivery and 55 percent of children 0-6 months are exclusively breastfed.<sup>39</sup>

Another area of concern for proper food utilization is poor water, sanitation, and hygiene (WASH). About 72 percent of rural HHs and 24 percent of urban HHs practice open defecation.<sup>40</sup> Only a little over 4 percent of rural HHs have an improved sanitation facility such as a pit latrine with a slab.<sup>41</sup> Similarly, only about 55 percent of HHs in rural areas can access an improved water source and 2 percent of HHs had designated areas for hand washing.<sup>42</sup> Poor WASH increases the sickness burden because it contributes to diarrheal diseases, which affected 22 percent of children under 5 in the two weeks before the DHS survey,<sup>43</sup> and accounts for 21 percent of infant mortalities compared to malaria (11 percent) and neonatal sepsis (6 percent).<sup>44</sup>

Finally, limited food safety standards and enforcement capacity present further constraints. Liberians rely on outdoor markets that often lack proper waste management, which often results in tainted food supplies.<sup>45</sup> Although in 2010, the Government of Liberia (GoL) introduced certain policies to address biosecurity and food safety, lax regulation and enforcement continues to

22 World Bank, 2012, *Poverty and the Policy Response to the Economic Crisis in Liberia*.

23 Ibid.

24 Ibid.

25 WFP, 2013, *Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013: Executive Summary*.

26 World Bank, 2012, *Poverty and the Policy Response to the Economic Crisis in Liberia*.

27 WFP, December 2013, *Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013*.

28 Ibid.

29 Ibid.

30 LISGIS, MoHSW, et al, 2014, *Liberia Demographic and Health Survey 2013*.

31 Ibid.

32 GoL, April 2013, *Agenda for Transformation: Steps Toward Liberia RISING 2030*.

33 World Bank, 2012, *Poverty and the Policy Response to the Economic Crisis in Liberia*.

34 WFP, December 2013, *Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013*.

35 WFP, December 2013, *Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013*; WHO, 2010, *Liberia: Factsheet of Health Statistics*.

36 UNICEF, April 2012, *Infant and young child feeding programming status*.

37 The minimum meal frequency is defined as the number of children ages 6-23 months who receive three or more meals in a day, depending on whether the child is still breastfeeding or not. LISGIS, MoHSW, et al, 2014, *Liberia Demographic and Health Survey 2013*.

38 The minimum dietary diversity is based on the calculation of six food group score, which include grains, roots and tubers; legumes and nuts; flesh foods (meat, fish, poultry and liver/organ meats); eggs; vitamin-A rich fruits and vegetables; other fruits and vegetables. LISGIS, MoHSW, et al, 2014, *Liberia Demographic and Health Survey 2013*.

39 LISGIS, MoHSW, et al, 2014, *Liberia Demographic and Health Survey 2013*.

40 Ibid.

41 Ibid.

42 Ibid.

43 Ibid.

44 WFP, December 2013, *Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013*; WHO, 2010, *Liberia: Factsheet of Health Statistics*.

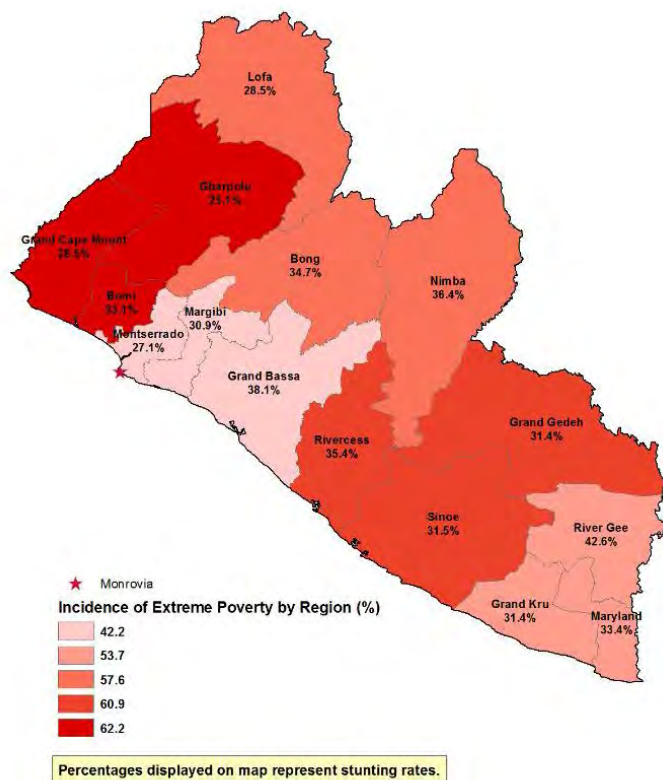
45 Land O' Lakes, August 2012, *Liberia Food for Progress (2011-2014)*; STDF and Vanderwal, L., August 2010, *Assessment of the Biosecurity/Sanitary and Phytosanitary (food safety, animal and plant health) Situation in Liberia*.



hinder effective implementation. While Liberia is a member of the Codex Alimentarius commission,<sup>46</sup> the national committee is not operational. Currently, agencies in charge of biosecurity and food safety are mostly located at the main port in Monrovia.

All the food availability, access, and utilization factors combined contribute to poor nutrition outcomes in vulnerable populations, as evidenced by high stunting rates in children under five in most of the country. In general, poverty and malnutrition remain tightly related. The figure below compares stunting levels and poverty levels (i.e., poverty head count) by county. High stunting rate (above 30 percent) counties such as Bomi, Grand Gedeh, Rivercess, and Sinoe have more than 60 percent of their population classified as poor. Although River Gee records the highest stunting rate in the country (42.6 percent), poverty headcount is slightly lower (about 57 percent), but still of concern.

**Figure 3. Moderate Stunting Rates (% of U5s) by Poverty (% of Population)**



Source: Created by USAID-BEST using data from LISGIS, MoHSW, et al, 2014, Liberia Demographic and Health Survey 2013.

### 1.2.5. Food Stability

Although the country has experienced a relatively calm political period since 2003, without a coup or major civil unrest and has been relatively stable in terms of macroeconomic indicators, the current stability remains fragile and a potential shock, such as the current Ebola outbreak, could cause the already weak food

46 The UN body chartered to address international food safety regulations.

security situation to worsen rapidly.

During the most recent conflict from 1989-2003, agriculture and fisheries total value added decreased by 52 percent, coffee production by 91 percent, rice by 76 percent, and cassava by 23 percent.<sup>47</sup> Eleven years after the official end of the conflict, effective rule of law in the country continues to present a challenge, political interference in the judicial system prevails, and protection of property rights remains weak, to name just a few of the outstanding governance challenges.<sup>48</sup>

Conflicts in neighboring countries also affect the socioeconomic and political environment of Liberia. For example, during the conflict in Côte d'Ivoire, the number of refugees crossing the border into Liberia rose from 71,000 in March 2011 to more than 157,000 in April 2011, which represents an increase of more than 121 percent in two months. This influx caused a tremendous stress on food and resource availability. In addition, when instability in Côte d'Ivoire peaked in 2011, rice imports to isolated areas of Liberia in Maryland county (e.g., Pleebo and Harper) stopped due to increasing prices and limited supply in Côte D'Ivoire. Facing difficulties, traders resorted to purchases from Monrovia; the subsequent increased transportation costs led to higher retail prices.<sup>49</sup>

At the macroeconomic level, Liberia is susceptible to price shocks. In particular, international food and fuel price variations have an important effect on retail prices in the country, given that food and fuel represent 49 percent of total imports. In recent years, high fuel prices have caused food prices to increase simultaneously, which adversely affect isolated areas in the country that are generally the most food insecure.<sup>50</sup> Quite significantly, any variation in rice retail prices directly influences poverty levels. According to the World Bank, a 20 percent increase in rice retail prices would likely cause poverty rates to increase from 63.8 to 68 percent.<sup>51</sup>

Persistent unemployment represents another potential problem for Liberia, given that limited livelihood opportunities can create opportunities for unrest.<sup>52</sup> Low education levels across different segments of the population limit labor opportunities, and especially so for the youth given that 75 percent of the population is under 35 years of age. Nationally, 33 percent of males and 47 percent of females have never attended school.

Lastly, health shocks, such as the ongoing Ebola outbreak, are expected to have severe economic consequences. As of August

47 GoL, 2008, *Poverty Reduction Strategy*.

48 Heritage Foundation, 2013, *Liberia Index of Economic Freedom*.

49 WFP, GoL, et al, June 2011, *Impacts of rising food, fuel prices and refugee influx in Liberia*.

50 WFP, September 2013, *Liberia Market Price Monitor September 2013*.

51 World Bank, 2012, *Poverty and the Policy Response to the Economic Crisis in Liberia*.

52 In a study conducted in Latin America, Africa and the Middle East, unemployment was an important reason young people gave for joining rebel groups. Hendrix, C. S. and Brinkman, H. J., 2013, "Food insecurity and conflict dynamics: causal linkages and complex feedbacks.", *Stability: International Journal of Security and Development*, 2.



2014, the GoL closed borders, schools, and restricted movement, all which will inevitably impact commerce and trade.

### 1.3. COMMODITY MARKETS

This section presents an overview of dynamics for major food commodities in Liberia, notably rice, cassava, and edible oils. Additionally, the research presented discusses those commodities important from a nutritional stand point (specifically, pulses, fish, and vegetables), and historically distributed for food assistance (e.g., bulgur wheat and related wheat products).

#### 1.3.1. Rice

**HH use.** Rice consumption is estimated at 90 kg per person per year.<sup>53</sup> At an estimated population of 4.2 million, national milled rice consumption stands at around 378,000 metric tons (MT). Approximately 68 percent of farm HHs in Liberia produce rice,<sup>54</sup> which they grow primarily for their own consumption. HHs typically eat boiled rice an average of two times per day if they can afford to do so and accompany this starch either with a sauce containing varying ingredients (e.g., oil, cassava leaves, beans, and as available, fish or other animal protein), or as 'dry rice' when simply eaten with a piece of fish or meat. HHs supplement their diets with cassava-based dishes when rice availability or access is limited.

Urban HHs mostly consume imported rice (the large majority of which is parboiled), since low domestic production leaves little marketable surplus for urban areas. Rural HHs consume both domestic and imported rice because the quantities produced on their small farms are not adequate to meet annual HH consumption needs. The 2013 Comprehensive Food Security and Nutrition Survey (CFSNS) reports that more than 60 percent of rice producing HHs are dependent on imported rice for HH consumption during the lean season.<sup>55</sup> Field work for the current market assessment, which coincided with the lean season, suggests this number may be low.

Some consumers believe that local, or "country rice" as it is called in Liberia, possesses superior nutritional benefits over imported rice; to the extent that traditional milling leaves part of the bran on the rice grain, these perceived nutritional benefits are legitimate. However, others dislike domestically produced rice because they find that traditional milling techniques leave behind some impurities (e.g., small stones) that make it unpleasant to consume. Despite these differing perceptions, field observations did not indicate a premium nor a discount for country rice relative to an imported rice of comparable quality, therefore suggesting no strong indication of consumer preference in either direction.

53 FAOSTAT, 2014, Food Balance Sheets. <http://faostat.fao.org/site/368/default.aspx#ancor>; accessed July 2014.

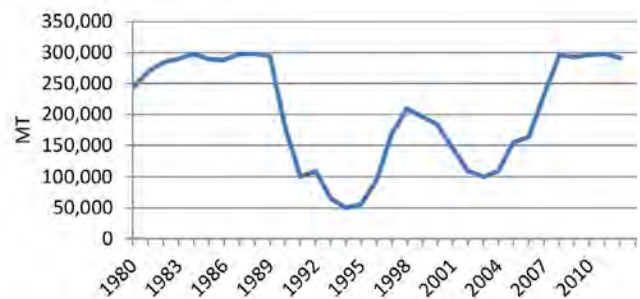
54 GoL LISGIS, 2012, Agricultural Crop Survey.

55 WFP, December 2013, *Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013*.

**Production.** At present, domestic production of roughly 300,000 MT paddy rice meets 1/3-1/2 of consumption requirements. This annual level of production mirrors pre-conflict levels, and reflects the robust recovery of the rice sector in the immediate post-conflict period. As the figure below illustrates, production since 2008 has effectively plateaued.

Overwhelmingly traditional production practices characterize rice farming. Mechanization is minimal as is the use of farm inputs. Two systems of rice farming predominate: upland rice (70-75 percent of rice area planted) and lowland rice (25-30 percent). Lofa, Bong, and Nimba counties account for approximately 50 percent of total output.

**Figure 4. Paddy Rice Production in Liberia, 1980-2012**



Source: Created by USAID-BEST using data from FAOSTAT, August 2014.

Note: Using 60 percent milling ratio, the current paddy production of 300,000 MT is equivalent to approximately 180,000 MT milled rice.

A slash and burn shifting cultivation system produces upland rice by cutting down and burning a section of forest or bush during the dry season and then broadcasting the rice; farmers frequently intercrop rice with cassava or beans. Only one crop per year is possible under this system as production needs to follow in accordance with the wet and dry seasons.



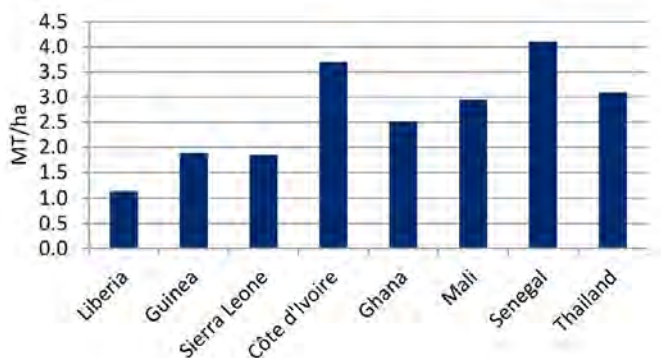
Photo by Fintrac Inc.

Although the slash and burn upland rice cultivation requires little external inputs, productivity is modest and only one crop per year is possible as it follows the patterns of the wet and dry seasons. Here, upland rice grows amidst dead trees. Grand Cape Mount County, Liberia, July 2014.

Lowland rice is predominantly cultivated in inland swamps developed into a flooded rice field that produces paddy rice. In regions where climatic conditions permit, farmers can double crop lowland rice. Since lowland rice cultivation does not require following the seasonal pattern of wet and dry seasons, the production calendar can be much more varied.

Rice yields in Liberia compare relatively poorly with other countries in the region. For example, the following figure shows that average rice yields in Liberia over 2011-13 totaled 1.1 MT per ha, compared to 1.8 MT per ha in Sierra Leone, 3 MT per ha in Ghana, and 3.6 MT per ha in Côte d'Ivoire.

**Figure 5. Average Paddy Rice Yields (MT/ha) in Liberia and Select Countries, 2011-13**



Source: Created by USAID-BEST using data from FAOSTAT, July 2014.

Meanwhile from 2001-13, annual productivity growth in yield was only 1.6 percent as compared to 2.1 percent in Ghana and 6.8 percent in Sierra Leone (see table below).

**Table 1. Yield Growth Rate (%) in Liberia and Select Countries, 2001-13**

Select Countries	Growth Rate (%)
Liberia	1.6
Guinea	1.0
Sierra Leone	6.8
Côte d'Ivoire	6.3
Ghana	2.1
Mali	5.4
Senegal	5.8

Source: FAOSTAT, July 2014.

Upland rice, based on slash and burn, has a lower potential for productivity increases than do lowland rice systems. However, even in neighboring Sierra Leone where this blend of production systems also predominates, growth in yields and absolute yield levels has been considerably better than in Liberia. Besides the dual production system, several other important constraints listed below could possibly explain the limited growth in country rice productivity.<sup>56</sup>

<sup>56</sup> Existing NGO initiatives seek to improve country rice production but programs remain small relative to the number of farmers and do not adequately cover all of the communities in Liberia.



Photo by Fintrac Inc.

Traditional practices characterize domestic rice production. At this upland rice field, a large wooden mortar and pestle is used for milling. Grand Cape Mount Country, July 2014.

- **High prevalence of pests.** Both upland and lowland crop systems suffer from high infestation rates of insects, rodents, and plant diseases. This reduces the amount of rice coming off the farm and, to the extent that pests are uncontrolled, results in a high rate of post-harvest losses.
- **Low level of improved farm inputs.** This assessment did not find a private sector trade of improved seed. Although field work indicates that the Ministry of Agriculture (MoA) through the Central Agricultural Research Institute (CARI) produced just over 500 MT of improved rice seed for distribution to farmers, this quantity only plants slightly less than three percent of total currently farmed rice area.
- **Minimal or non-existent use of chemical fertilizers.** Commercial imports of fertilizer to Liberia averaged 8,563 MT over the 2011-13 period.<sup>57</sup> Reportedly, the large majority of this fertilizer is used for vegetables, which have a higher value than rice. However, in the unlikely event that all of this fertilizer was used on rice, this would be an application rate of less than 40 kg per hectare. This evaluation of trade data corroborates field observations that the use of chemical fertilizers for rice production is minimal or non-existent.
- **Poorly functioning irrigation systems.** Irrigation systems for lowland rice seriously atrophied during the war and are still in the process of being reconstructed. To rehabilitate existing systems and bring new systems under production will require a great deal more work.
- **Lack of clarity over land ownership.** Many areas of land in Liberia are farmed under traditional communal ownership structures in which individual tenure rights are not well defined. The prolonged period of conflict also facilitated a situation of competing claims to farmland ownership. These circumstances complicate efforts to develop land for more long-term productive uses.
- **Low availability of farm extension services.** The MoA has a total of 56 extension staff for all farm advisory services around the country, not just rice. This results in a limited

<sup>57</sup> Comtrade, accessed July 2014.

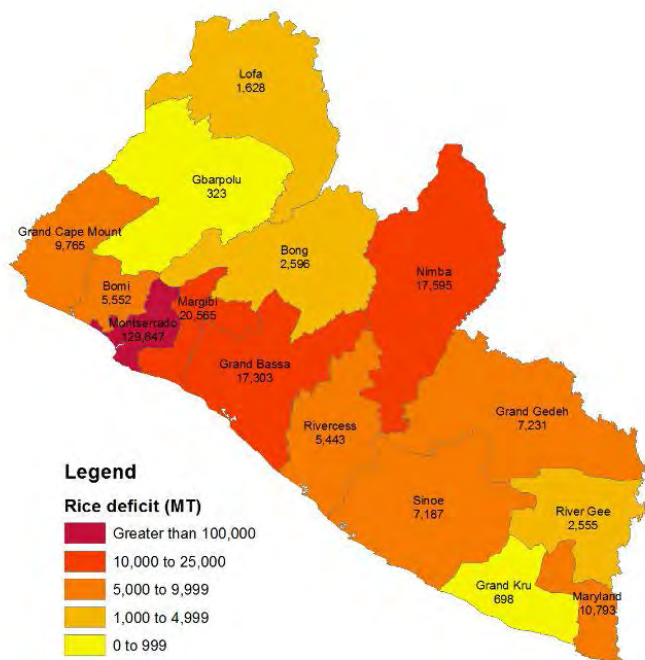
ability to transfer new technology and farming practices, and to effectively combat the significant pest outbreaks.

- **Skills atrophy.** As large numbers of HHs fled their farms during the conflict, a majority of Liberians are unfamiliar with effective farming practices. This situation has negatively affected the level of available skilled labor for farm work, and has led to a perception of farming as a less attractive potential vocation than other livelihood options.

Although all counties in Liberia experience a net rice deficit, the levels vary and, except Monrovia/Montserrado, do not exhibit particularly large or significant shortfalls. The same result was found in the 2013 CFSNS, which reported that all counties in Liberia have a net deficit of rice production. Lofa, Gbarpolu, and Bong are roughly self-sufficient in rice production since their respective county level deficits total less than 3,000 MT. Meanwhile the counties of Nimba, Grand Bassa, Margibi, and Maryland have deficits ranging between 10,000-25,000 MT per annum. Montserrado has a major deficit of 129,647 MT, but it also represents a major urban area of the country.

Such small deficits on average favor the ability of markets to make up for limited production at the local level. The map below plots domestic rice production less consumption to estimate the production deficit in each county.<sup>58</sup>

**Figure 6. Domestic Rice Deficit by County, 2012**



Source: Created by USAID-BEST using data from GoL LISGIS.

At current yield levels domestic rice production does not look to be very competitive with imported rice. The tables below calculate upland and lowland rice production costs against the

58 Consumption rates were derived using country level population figures from the 2008 National Census and inputting 2012 population based on reported population growth rate.

price of imported 25 percent broken parboiled rice. The assessment draws from a previous study done in 2009 and updates the evaluation with current wage rates. Further, the present calculation uses two labor cost<sup>59</sup> assumptions: one valuing labor at US\$3 per day and one using a wage rate of US\$5 per day.

**Table 2. Lowland Rice Production Cost Estimates Against Imported Rice**

Item	Traditional	Good Practice	Good Practice w/ Technology*
Labor days per ha.	200	240	220
Yield	1.2	3.0	5.0
Cost US\$/ha labor @ US\$3/day	\$600	\$720	\$1,763
Cost US\$/ha labor @ US\$5/day	1,000	1,200	\$2,203
Cost US\$/MT labor @ US\$3/day	\$769	\$369	\$542
Cost US\$/MT labor @ US\$3/day	\$1,282	\$615	\$678
Price of Imported Rice (Parboiled 25% broken)	\$682	\$682	\$682

Source: ACDI/VOCA, DAI, et al, October 2009, Global Food Security Response: West Africa Rice Value Chain Analysis.

\* Using improved seeds, fertilizer, and advisory services.

**Table 3. Upland Rice Production Cost Estimates Against Imported Rice**

Item	Traditional	Good Practice	Good Practice w/ Technology*
Labor days per ha.	140	186	145
Yield	0.9	1.5	2.0
Cost US\$/ha labor @ US\$3/day	\$420	\$558	\$1,338
Cost US\$/ha labor @ US\$5/day	\$700	\$930	\$1,628
Cost US\$/MT labor @ US\$3/day	\$718	\$572	\$1,029
Cost US\$/MT labor @ US\$3/day	\$1,197	\$954	\$1,252
Price of Imported Rice (Parboiled 25% broken)	\$682	\$682	\$682

Source: ACDI/VOCA, DAI, et al, October 2009, Global Food Security Response: West Africa Rice Value Chain Analysis.

\* Using improved seeds, fertilizer, and advisory services.

59 Although many farm systems in Liberia rely on own farm labor, this labor still poses a cost (e.g., farmer's time spent doing something else), so it is important to assign a value to the labor to accurately depict the economics of the production system and its incentive structures.



As the tables show, production costs using existing/traditional technology for both upland and lowland rice systems result in a per unit production cost higher than the price of a comparative imported parboiled rice. Under ‘good practice’ or ‘good practice with technology’ systems, profitability vis à vis imported rice improves but this improvement is not uniform.<sup>60</sup>



Photo by Fintrac Inc.

Two systems of rice farming predominate: lowland rice and upland rice. This photo shows rice growing under lowland rice cultivation in a flooded field in Gbanga, Bong County, Liberia, July 2014.

Traditional, rudimentary, and labor-intensive milling accounts for ninety percent of domestic rice. Millers use a large wooden mortar and pestle to mill the rice, and then woven baskets to winnow the chaff from the grain. Of the limited commercial-scale milling operations, most are primitive with small capacities. An enterprise in Kakata just began operation of two 15 MT per day commercial mills and the MoA runs two mills that each possess a daily capacity of 3 MT at a single warehouse in Gbanga; at the time of the field visit in July 2014, only one of these MoA mills was operational.

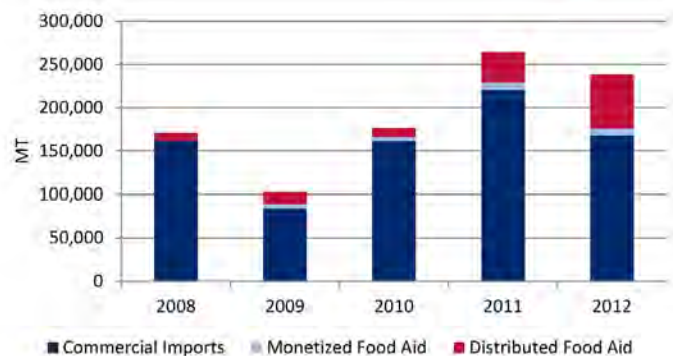
A number of small mechanized mills (capacity of less than 1 MT per day) were distributed to millers in the WFP Purchase for Progress (P4P) program, which seeks to procure rice locally. Collectively the quantity of rice milled by all these mechanized mills running at capacity would account for less than 10 percent of domestic production. As traditional milling technologies have a lower out turn of milled rice than mechanized mills (60 percent or less versus 66 percent, respectively) this results in a lower level of available milled rice than would be the case with a higher prevalence of commercial milling facilities.

<sup>60</sup> Under ‘good practice’ production systems, lowland rice appears to be competitive at both US\$5 per day and US\$3 per day wage rates. For upland rice, the good practice system is competitive at the wage rate of US\$3 per day but not at US\$5 per day. Under the system of ‘good practices coupled with technology,’ lowland rice is competitive at both wage rates but only marginally so at the wage rate of US\$5 per day. These results corroborate views within the industry that there is greater scope for expanding the productivity and competitiveness of lowland rice systems than there is for upland systems.

**Imports and exports.** Liberia imports milled parboiled rice of varying broken grains (5 percent, 25 percent, 100 percent) and lengths (medium or long) to meet 1/2-2/3 of national demand. According to field work, 90 percent of imported rice sold was parboiled rather than plain white rice (referred to in Liberia as ‘butter rice’).

From 2008-12, official data suggest commercial imports averaged 164,260 MT; this value falls broadly in line with the number that industry representatives reported to the USAID-BEST team during field interviews in July 2014. An evaluation of trade data showed no significant trend in seasonality of rice imports over the calendar year.

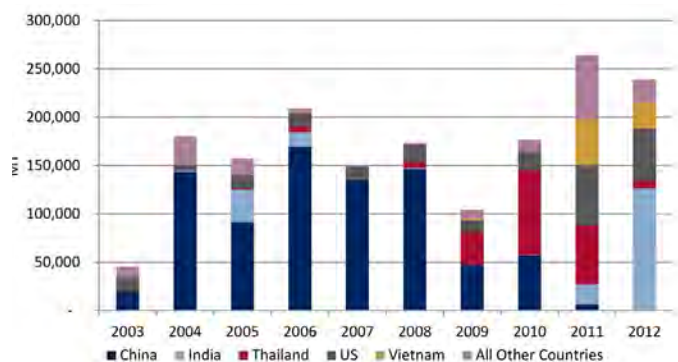
**Figure 7. Imports of Milled Rice (MT) by Source Type, 2008-12**



Source: Created by USAID-BEST using data from Comtrade.

The figure below shows rice imports by supplying country and charts the shift since 2009 from China as the primary source country to India.

**Figure 8. Rice Imports by Supplying Country (MT), 2003-12**



Source: Created by USAID-BEST using data from Comtrade, July 2014.

Interviews with key informants indicated that due to a policy change in China in 2008-09, rice imports from China lost their appeal to Liberian traders. At that time, supplies from Thailand and a number of other countries superseded Chinese rice imports. However, more recently, India has become the leading supplier of rice to the Liberian market. The field work



Photo by Fintrac Inc.

Due to low production levels and poor storage capacity, country rice is scarce in markets during the rainy season. However, this trader in the weekly Suakoko market did display country rice for sale in the blue and green tub shown in the foreground. Bong County, Liberia, July 2014.

conducted in July 2014 confirmed that traders sell bags of different quality rice of Indian origin in almost all markets. Data indicate that food aid shipments, including commodities for direct distribution and monetization, account for the rice imports from the US shown in the figure above.

As for exports, Comtrade data indicate that Liberia does not formally export rice. Border officials at the Ganta border with Guinea and at the Bhai border (near Toe Town) with Côte d'Ivoire confirmed the prohibition of rice exports from Liberia. However, the field team noted cars, trucks, and motorbikes passing through these borders do not necessarily undergo any kind of thorough inspection. Moreover, in speaking with traders, a number of them alleged that certain quantities of rice do indeed move out of Liberia into neighboring Guinea, Côte d'Ivoire, and Sierra Leone. USAID-BEST calculations of commodity demand and supply balances for rice suggest a small surplus of rice in 2011 and 2012, which could validate these traders' claims.

**Food aid.** The field team found no evidence that food aid was creating disincentives to domestic rice production or that it was creating a distortion in domestic rice markets. Food aid imports were in the range of 10,000 MT over the 2008-10 period, or less than 3 percent of total consumption. According to WFP

Interfais database, in 2011 food aid imports increased to 34,946 MT and to 63,395 MT in 2012, which represents donations from USAID and other organizations to WFP. Reportedly the large majority of this food aid went toward WFP emergency assistance targeted at the refugee population from Côte d'Ivoire such that this volume of rice reportedly did not enter the commercial market.

From 2010-12, the Title II Liberian Agricultural Upgrading, Nutrition and Child Health (LAUNCH) program monetized 11,550 MT of parboiled rice and the Health, Agriculture and Nutrition Development for Sustainability (HANDS) program monetized 15,129 MT, but both have since discontinued monetization. USDA Food for Progress awardees do presently monetize parboiled rice.

**Government policy.** Given the importance of rice in the Liberian diet, a number of government mandates and programs seek to improve production and ensure the continuous availability of this primary staple.

**Taxes.** The GoL does not impose an import tariff on rice so as to maintain low food prices on this basic staple.

**Grain reserves.** Although the government does not manage a public sector grain reserve, the Ministry of Commerce and Industry (MoCI) does monitor the stock levels of private importers to ensure that these businesses possess a minimum of three months' consumption in reserves. It remains unclear the penalty for those companies who fail to achieve this quota. The GoL reports that such a situation has not yet arisen as a problem.<sup>61</sup>

**Improved Seed.** Under the umbrella of the Liberia Agriculture Sector Investment Program, CARI conducts basic research and variety development for the creation of improved rice seed varieties. Annually, the institute, a sister agency of the MoA, produces approximately 500 MT of certified seed, which roughly represents three percent of total seed requirements.

**Procurement.** Since 2009 the MoA has implemented a public procurement program whereby it purchases paddy rice at farm gate, mills it at its facilities, and then passes the rice on to MoCI for distribution to government employees twice per year. As the table below shows, GoL purchases of local rice have consistently fallen short of 500 MT per annum from the beginning of the program up to 2013.

Table 4. MoA Paddy Rice Procurement, 2010-13

Year	Procurement (MT)
2010	425
2011	136
2012	146
2013	416

Source: MoA.

61 Personal communication with key informant, July 2014.

The total volume of rice provided through the government employee distribution program is approximately 3,500 MT per year. Given the quantities of local procurement listed in the table above, country rice remains a small percentage of the rice distributed in the program. Historically, this procurement program has sourced imported rice because of limited production that constrains GoL ability to procure greater volumes from domestic farmers.

However, in 2014, the GoL mandated that 25 percent of the approximately 3,500 MT rice procured should come from local purchases. This volume of 875 MT would effectively double the volume of rice that the GoL procures locally, but the tonnage is still modest relative to the volume of rice produced domestically.

Since January 2013, the MoA follows a policy requiring the agency to purchase the paddy rice at US\$20 per 50 kg bag plus US\$2 per bag for transportation and handling for a total effective farm gate price of US\$22 per 50 kg bag of paddy. Similarly, WFP procures rice for its Purchase for Progress (P4P) program at this same rate. In evaluating this procurement price, the table below provides an estimated derived equivalent farm gate price for paddy using market prices in the range of US\$16-20 with a midpoint estimate of US\$18 per 50 kg of paddy.

**Table 5. Estimated Farm Gate Price of Paddy Rice**

Item	Price
Price per bag, milled rice (25kg) LRD	1,450
Exchange rate LRD/US\$	85
Cost per bag, milled rice (25kg) US\$	17.05
Milled Rice Price USD/MT	682
Milling out-turn	60%
Equivalent Paddy Price (US\$/MT)	409
Milling expenses (US\$/MT)	50
Paddy Price US\$/50kg bag	17.97

Source: July 2014 USAID-BEST field work.

There is a range in the estimate because the derived farm gate price will depend on assumptions employed regarding exchange rates, milling efficiency, and other variables. As such, if the midpoint estimate of the derived farm gate price is US\$18 per 50 kg bag of paddy, the effective procurement price of US\$22 per 50 kg bag of paddy would constitute somewhat of a subsidy for rice producers in Liberia, equivalent to a 22 percent premium.

However, as the scope of both the MoA and WFP programs are rather modest (collectively these two programs rarely procure more than 1,000 MT against an aggregate production level of close to 200,000 MT milled rice) the impact of these procurements on distorting domestic rice markets is relatively limited.

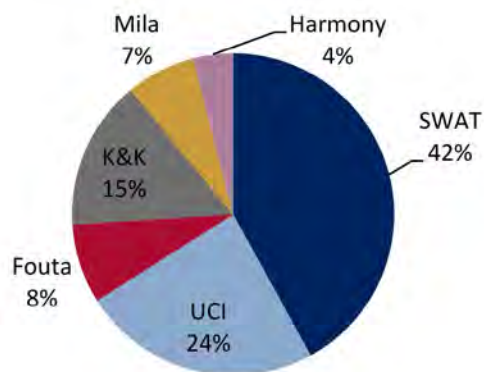
**Marketing.** The marketing of domestic rice differs from the

marketing of imported rice. Looking first at domestic country rice, the volume of marketable surplus is quite low. Based on informal estimations from field work, domestic rice could not have comprised more than 5 percent of rice available in all markets visited, which is extremely low even given that July is a lean season month. All domestic rice sold at the observed markets appear to have undergone milling using traditional practices. USAID-BEST did not encounter paddy rice at the retail level.

What surpluses are available will on occasion be marketed directly by the farmer, the farmer selling 'wholesale' to a vendor in the market, or the farmer selling to small itinerant traders who then sell directly on the market or sell to retailers. The market is characterized by a very large number of small producers and traders largely operating independently of one another.

By contrast, a small number of large ethnically non-Liberian traders, mostly based in Monrovia, dominate the marketing of imported rice. The figure below details the estimated market share of major traders by their sales according to monitoring from the MoCI in July 2014.

**Figure 9. Market Share of Rice Sales by Major Importer, July 2014**



Source: Created by USAID-BEST using data from GoL, MoCI.

Despite the small number of importers, no individuals interviewed during field work indicated that there was collusion or anti-competitive practices occurring within the industry.

For moving rice to other markets in Liberia, the predominant practice is selling to traders in markets upcountry with the predominant practice of having transportation contracted independently. There were few if any reports of significant problems in moving rice to upcountry markets while availability of imported rice in upcountry markets was strikingly high.

Traders in upcountry markets, most of whom are Liberian in contrast to Monrovia-based traders, either retail the rice independently or on sell to other retailers. Imported rice is largely comprised of parboiled rice with field work indicating that well over 90 percent of imported rice sold was parboiled

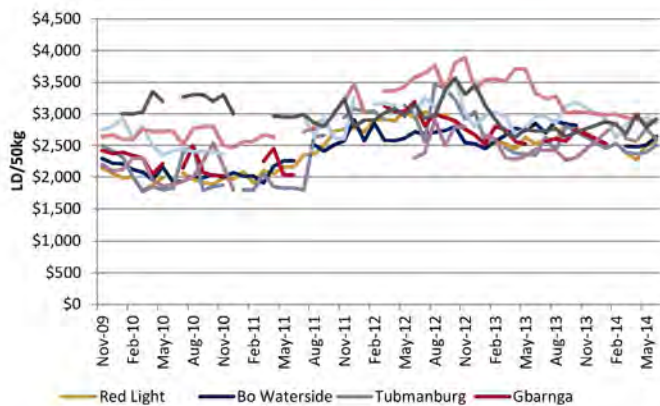


rather than plain white rice (what is referred to in Liberia as ‘butter rice’). There was a considerably large range in the grades of rice sold with 5, 25, and 100 percent broken grain rice commonly being sold in most markets with a surprisingly small differential in prices between these different qualities of rice types.

In addition, long, medium, and short grain parboiled rice were all also available while there did not appear to be a significant distinction or preference between grain lengths. Rice is most commonly sold either as a 25-kg sack or by the ‘cup’ (most frequently a used 14-ounce tin can). If HH funds are available, consumers often purchase rice by the bag so they can obtain a better price by buying a large quantity and ensure rice availability at the HH level over a period of time. This practice is particularly common prior to the onset of the lean season.

**Performance.** The figure below shows that prices for imported parboiled rice in select markets across Liberia<sup>62</sup> track one another relatively well. Although Zwedru shows consistently higher prices for rice than those in other markets over much of 2012-13, field work in July 2014 found prices for imported rice in Zwedru trading at a minimal differential over those in other markets.

**Figure 10. Parboiled Rice Prices (LRD/50kg bag), November 2009-June 2014**



Source: Created by USAID-BEST using data from WFPVAM.  
Note: WFP reports rice prices for 50 kg bags. Rice is most commonly traded in 25 kg bags.

An evaluation of correlation coefficients for the same markets indicates a quite high degree of market integration between parboiled rice prices<sup>63</sup>. The notable exception is Pleebo which showed very low correlation coefficient values suggesting that the relationship between rice prices in Pleebo and those in other markets is quite weak.

Finally, prices obtained during field work at select markets exhibited quite small differentials between locations for three grades of rice in the most commonly traded unit (25 kg bags).

62 It was not possible to evaluate prices for domestic rice due to a lack of data.

63 Please contact infobest@fintrac.com for information on analytical methods and tables of correlations coefficients.

The table below contains observed prices at the time of the USAID-BEST field visit in July 2014.

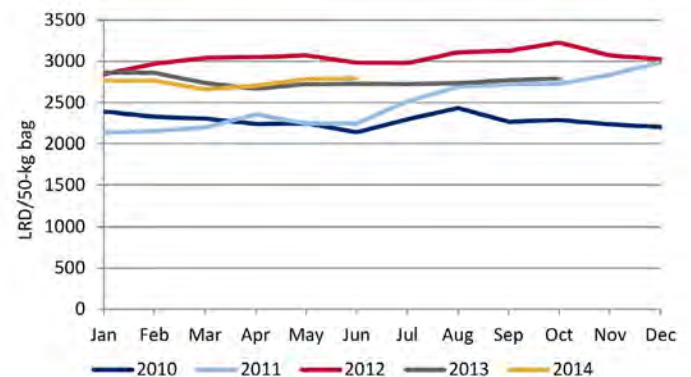
**Table 6. Prices for Imported Rice, Select Locations (LRD/25 kg bag)**

Location	5% broken	25% broken	100% broken
Monrovia/Red Light	1,500	1,300	1,250
Ganta	1,600	1,500	1,450
Zwedru	1,600	1,375	1,400
Bo Waterside	1,600	1,300	n.d
Buchanan	1,500	1,400	n.d
Gbanga	1,550	1,450	1,400
German Camp Junction	n.d	1,400	1,300
Toe Town	1,650	1,500	1,300

Source: USAID-BEST market visits, July 2014.  
Note: n.d = no data.

While there are frequent assertions that rice prices rise during the lean season of April-September, evaluation of available rice price data does not find a significant seasonal trend in rice prices. The figure below shows prices for imported parboiled rice over the calendar year for 2010-14.<sup>64</sup> Prices generally do not show any discernable increase over the April-September lean season. Although domestic rice prices are not available, the behavior of domestic rice prices would not significantly differ from imported rice prices since the two are close substitutes.

**Figure 11. Parboiled Rice Prices (LRD/50 kg bag), January-December, 2010-14**



Source: Created by USAID-BEST using data from WFPVAM.

Key informants during the field visit alluded to the potential problem of rice moving out of Liberia and into neighboring countries in the region because allegedly Liberia sells rice at a cheaper price. To evaluate this claim, the figure below shows retail prices of rice in Liberia, Guinea, and Côte d'Ivoire over 2009-13 using data from WFP. The rice price for Liberia is a composite of imported and domestic rice prices for Gbanga,

64 The price is calculated as the average price of nine major markets in Liberia: Red Light, Bo Waterside, Gbanga, Pleebo, Saclepea, Tubmanburg, Voinjama, and Zwedru.

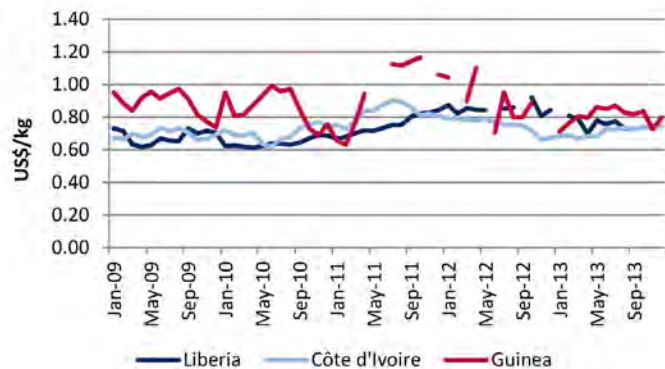


Photo by Fintrac Inc.

Of the many different types and qualities of rice sold in the Ganta market, this particular bag sells 100 percent broken grains from India. Surprisingly, the discount for this lower quality is small relative to other high quality, less broken, rice. Nimba County, July 2014.

Pleebo, Voinjama, and Zwedru; Guinea prices draw from domestic rice prices in Kankan and Nzerekore, and Côte d'Ivoire prices from imported and domestic rice prices in Man.

**Figure 12. Retail Imported Rice Prices, (US\$/kg), Liberia, Guinea, and Côte d'Ivoire, January 2009-August 2013**



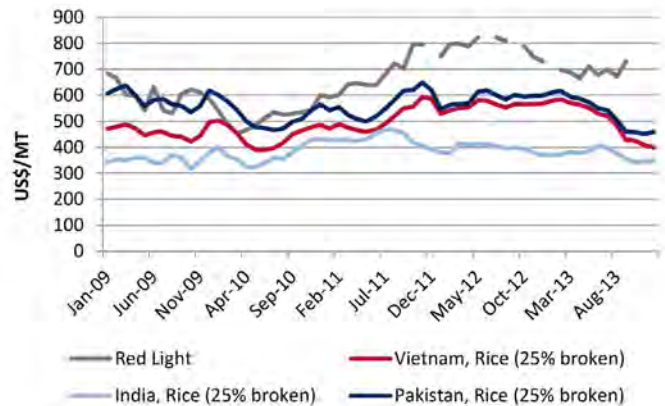
Source: Created by USAID BEST using data from WFPVAM, July 2014.

From the figure it appears that in some periods prices for rice in Liberia are in fact lower than Guinea and/or Côte d'Ivoire; during these times, traders may have an incentive to move rice from Liberia to these other markets. However, the price differentials fail to show any kind of consistency and at times become negligible across the three countries. Therefore, available data do not provide significant evidence to prove an unwavering incentive to move rice from Liberia out to markets in neighboring countries.

Of potential concern, the differential between imported rice

prices and those in international markets appears to have widened since the start of 2012. The figure below shows prices for imported rice in the Red Light market in Monrovia in comparison to comparable international price quotes of comparable quality rice from Vietnam, India, and Pakistan.

**Figure 13. Rice Prices (US\$/MT) in Liberia, Vietnam, Pakistan, and India, 2009-13**



Source: Created by USAID-BEST using data from WFP and FAO/GIEWS, August 2014.

USAID-BEST could not discern a plausible reason to explain why rice prices in Liberia did not recede in late 2011 to follow international trends, and why since then the price differential between Liberia and global markets has become larger than from 2009-11. However, if such a pattern continues, it could hurt the food security of consumers by raising rice prices; therefore, this issue may warrant further evaluation.

Overall the marketing sector for rice appears to be functioning effectively. The level of market integration is quite strong for most markets around the country. In addition, during field work, USAID-BEST observed and heard that storage and transportation infrastructure does not pose any severe restrictions to marketing. Ultimately on-farm productivity may be more of a hindrance to further development of the rice sector than improved efficiencies in the marketing chain.

### 1.3.2. Cassava

**HH use.** Cassava consumption is estimated at 126 kg per person per year.<sup>65</sup> In terms of kilos consumed, more cassava is consumed than rice (90 kg per person per year), however cassava's caloric contribution to the diet is lower due to its lower caloric value. HHs eat both the tuber and the leaves of the cassava plant on a regular basis commonly as the first meal of the day. Despite unavailable data on consumption rates between urban and rural areas, field work indicates that rural HHs and poorer HHs more heavily consume cassava. Typically, HHs boil or pound the cassava tuber into *fufu*, *demba*, or *GB*, but they also grate and parch raw cassava into *gari*, a type of

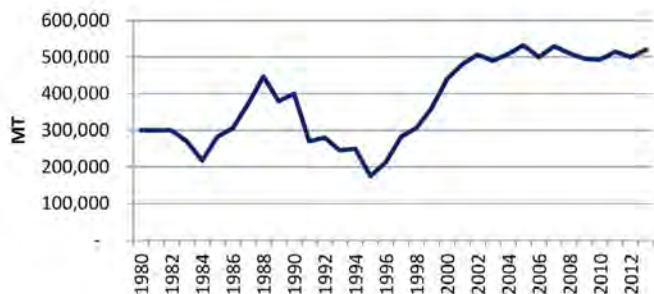
65 FAOSTAT. <http://faostat3.fao.org/faostat-gateway/go/to/download/FB/FBS/E>, accessed August 2014

coarse flour. In preparing cassava leaves, HHs usually mince the leaves and cook them into a sauce with onions, country oil, and either fish or other meats depending on availability. Generally consumers eat cassava as a substitute or alternative to rice rather than as a complementary or additional food because cassava is more widely available and often a less expensive option.

**Production.** Liberia is nearly self-sufficient in this staple starch. The crop is widely planted in every county of the country. It has strong appeal as a crop as it is easy to plant, it is much more pest and drought resistant than other crops and the tuber can effectively be stored in the ground underneath the growing plant. When it is needed for food or income it can simply be dug up regardless of the time of year. These attributes make it an appealing crop to address problems of potential food insecurity at the HH level. Generally, farmers grow some cassava partially for their own consumption as a supplement to rice, and sell small surpluses to meet cash and other needs throughout the year. The 2013 CFSNS reports that cassava is more commonly traded than rice with the highest rate of sales occurring in the lean season when rice is less available.<sup>66</sup>

Based on historical data, current production levels have remained flat over the past five years at roughly 500,000 MT (see figure below), but this volume quite considerably surpasses pre-conflict totals likely due to the return of displaced Liberians to their farms.

**Figure 14. Cassava Production (MT), 1980-2013**



Source: Created by USAID-BEST using data from FAOSTAT, July 2014.

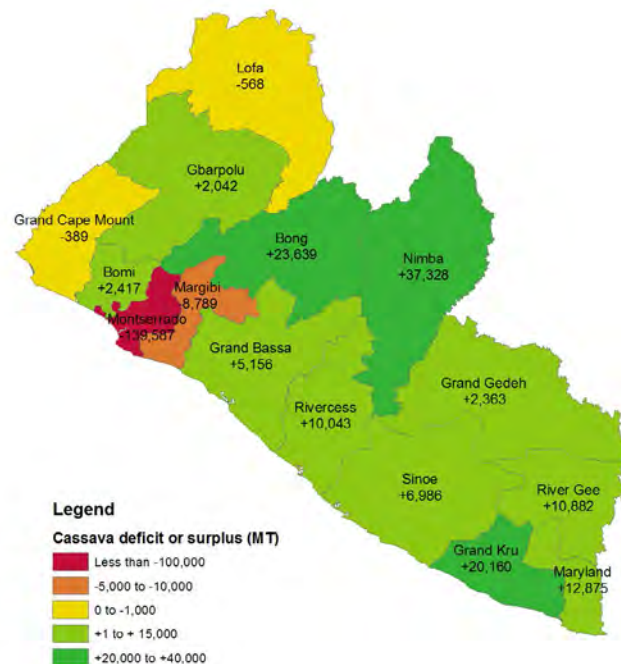
Formal and consistent estimations of cassava yields remain difficult to calculate because HHs often grow this crop informally in small plots. In speaking with key informants during the July 2014 field work, USAID-BEST heard reports of yields between 2-12 MT per ha, while the GoL official estimate puts the number at 8 MT per ha.

Based on estimations, most counties in the country have a net surplus of cassava production. Field experience corroborates this evaluation as USAID-BEST witnessed a high level of cassava availability in many different forms at nearly all markets visited

66 WFP, December 2013, Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013.

(see map below for a spatial visualization of surplus and deficit regions).

**Figure 15. Domestic Cassava Surplus or Deficit by County, 2012**



Source: Created by USAID-BEST using data from GoL LISGIS and FAOSTAT.

As the map indicates, the central regions of the country, notably Bong and Nimba counties, produce the largest surpluses of cassava. Montserrado County is the only area with significant deficit, but surplus cassava production from other regions moves to fill this demand. At the national level, the country has a net deficit of an estimated 15,000 MT, which represents three percent of national production; however, this figure may reflect a measurement error given the difficulty of monitoring cassava production.

**Imports and exports.** Nominal amounts of cassava may enter Liberia through informal cross-border trade from the three surrounding countries to make up for any small deficits. However, official imports effectively stand at zero, which indicates that domestic supply meets local consumption needs.

**Food aid.** Although donors do not presently distribute cassava, the Title II program HANDS manages a project that blends cassava with defatted soy flour and micronutrients to create a product called Super Gari that then goes into the ration for Maternal Child Health and Nutrition beneficiaries. At an output level of only several hundred MT of Super Gari per year, this program comprises only a very small portion of all cassava grown and processed in-country.

**Government policy.** The GoL does not implement significant programs to facilitate the development of the cassava sector. Primarily, the Cassava Sector Working Group, composed of public and private sector representatives, works in different





Photo by Fintrac Inc.

The peeled and pounded fufu is rolled into a ball for retail sale. At the Red Light market in the capital, a woman hopes to grab the attention of customers with her display of fufu. Monrovia, Liberia, July 2014.

capacities to improve the cassava industry. The Group hopes to assist the growth of the cassava sector through publicly financed research and development and seeks to facilitate agro-industrial investment. More specifically, the group has the following objectives:

- Ensure a coordinated, consistent, efficient, and realistic development of Liberia's cassava sector.
- Engage the effective participation of all sector actors (cassava growers, processors, and distributors).
- Identify the role and coordinate the point of entries of individuals and all private and public institutions.
- Provide a framework for effective coordination, monitoring, and review of sector development activities, as well as programs of all stakeholders.

**Marketing.** Cassava is the most commonly marketed locally produced food crop, but the marketing chain is very short with minimal value addition. The majority of cassava processing and retailing occurs at the HH level. Smallholders may dig up cassava and sell the tubers at the market within the next several days. The activity of pounding cassava into *fufu* or *demba* is also done at the HH level while the retailing of these products is also done individually usually by a female member of the HH. Producing *gari* often draws on the collaborative efforts of a small group as HHs recognize the value in creating large quantities suitable for more than one family. The individuals who contributed the cassava and labor frequently split up the *gari* produced and either consume or market the *gari* on an individual rather than collective basis. Primarily women take on activities related to marketing and retailing of cassava.

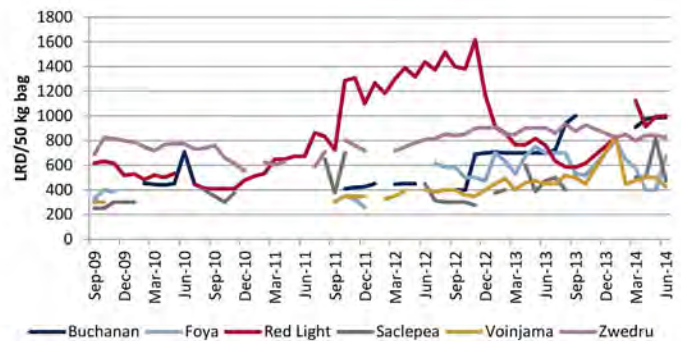
Nearly all markets visited sold cassava via a large number of small traders or retailers who were either farmers themselves or who had purchased the cassava on the farm directly. There is little evidence that the marketing chain extends beyond the farmer and the individual retailing the cassava. Field work

indicates that the perishability, weight, and bulk relative to value does not create incentives to move cassava significant distances.

A small number of commercial enterprises manufacture cassava chips, *gari*, and cassava flour, but the scale of these enterprises relative to the size of the sector is modest. The USAID Feed the Future Food and Enterprise Development program is reportedly setting up 16 processing facilities to facilitate further cassava processing and marketing through the production of cassava chips and *gari*.

**Performance.** There appears to be a high degree of variability in the cassava market in Liberia. An evaluation of correlation coefficients shows generally low values for most markets indicating a low level of integration between markets in Liberia. Most values ranged between 0.3-0.6 while few coefficient values exceeded 0.7. This coefficient is in contrast to rice where most values fell in the range of 0.7-0.8. This low level of integration also contrasts field work which found prices for cassava products consistent across markets. However, as field work only occurred over a three-week period, the findings might have simply reflected market dynamics prevalent at the time. As the figure below shows, from October 2011 to early 2013, the availability of cassava did become disrupted in Monrovia since bags of cassava traded at a price nearly double in Red Light than those in other markets.

**Figure 16. Cassava Prices (LRD/50kg bag) September 2009-June 2014**



Source: Created by USAID BEST using data from WFPVAM, July 2014.

### 1.3.3. Edible oils

**HH use.** Liberians use edible oils as an essential ingredient in sauces, stews, and fried foods on a near daily basis. Country oil, also known as red oil, refers to a thick, crude red palm oil from the indigenous *Dura* tree, and typically combines with sweet potato leaves, cassava leaves, bitterball, and other roots and leafy green vegetables. HHs with higher income demand RVO for frying food, sautéing vegetables, and making sauces. Some rural HHs in Liberia also obtain *Mekindo* oil (from *Tenera* trees), but this oil is predominantly used for soap production.<sup>67</sup> However,

<sup>67</sup> HHs generally do not consume *Mekindo* oil in Liberia. Consumers perceive a distinctive taste that makes this crude oil not suitable in the preparation of certain popular food such as potato and cassava leaves. To make *Mekindo* oil edible consumers need to refine it at the HH level, which is a laborious process.

people do mix country and *Mekindo* oil to obtain *Tubagee* oil, a specialty oil which some consumers regard for its taste and aroma but only use in small quantities for certain sauces. The preference for these specialty oils also varies depending on specific regions of the country.

In general, consumers across rural and urban areas use country oil and can access this product year round. Although RVO (mostly palm oil) consumption concentrates among affluent urbanites, consumption is increasing among rural HHs as more markets become connected due to better roads and relatively low import prices.

**Production.**<sup>68</sup> CPO production represents an important source of income for many smallholders in Liberia. Around 29,000 HHs, farming around 75,000 ha, are involved in small cottage oil palm production.<sup>69</sup> Over 50 percent of these producing HHs are in Nimba, Lofa, and Bong counties, which have traditionally accounted for higher production volumes. Medium- to large-scale plantations currently operate about 25,000 ha mostly to produce *Mekindo* oil for industrial uses.<sup>70</sup>

The GoL does not keep records of country oil volume produced. Most HHs produce for their own consumption, which complicates the data collection process for obtaining accurate country oil production figures. At present, total CPO production (country and *Mekindo* oil combined) is estimated to range from approximately 45,000-67,000 MT per year,<sup>71</sup> out of which country oil represents as much as 60 percent of output volume. Over the years production has remained relatively flat, and productivity will likely remain stagnant instead of reaching its pre-conflict output of 170,000 MT<sup>72</sup> given the old age of trees and use of traditional processing.<sup>73</sup>

Although in 2010 USAID introduced “Freedom Mills” (mechanical, electric mills which can significantly improve extraction rates) for farmers/processors, there are currently only about 240 mills in operation in the entire country.<sup>74</sup> In addition, farmers use Freedom Mills almost exclusively to produce non-edible *Mekindo* oil, because country oil requires twice the *Dura* oil palm, and therefore would increase production costs.

68 This section focuses on production of edible oil. Although the GoL investment promotion and concession agreement promotes the development of large-scale production, which will take place on 800,000 ha mostly in coastal areas, these plantations are not currently in production; even when they begin production there is no plan to refine oil for human consumption in Liberia.

69 GoL, September 2010, *Liberia Agriculture Sector Investment Program Report*; GoL, 2010, *Production Estimates of Major Crops and Animals*.

70 This does not include the new concessions, which are currently not producing oil.

71 FAOSTAT and Hanif, Charity, 2013, *Smallholder Oil Palm Market Assessment for the SHOPS Program Liberia*.

72 GoL, September 2010, *Liberia Agriculture Sector Investment Program Report*.

73 This figure represents only the production of edible oils and does not account for the palm oil concessions projected production.

74 Hanif, Charity, 2013, *Smallholder Oil Palm Market Assessment for the SHOPS Program Liberia*.

## OIL PALM PRODUCTION

There are two main oil palm trees in Liberia: *Dura* and *Tenera*. *Dura* palms are indigenous trees to Liberia. *Dura* tree fruits have big kernels with little flesh. These trees produce roughly 3 MT per hectare. It is extremely difficult to calculate yields given that trees grow everywhere in Liberia and in most cases when people need to consume or sell some oil, they climb a tree, cut a bunch, and process it into oil. Only small-scale farmers collect and extract oil from *Dura* trees to obtain crude palm oil (CPO) and crude kernel oil (CKO). *Dura* CPO is also known as red oil, country oil, or wild oil. From a bunch of *Dura* oil palm farmers can obtain approximately 10 percent of CPO. As for CKO, farmers generally put the dry seed on the fire with some water to extract its oil, but small-scale farmers tend to refrain from extracting CKO.

*Tenera* palms are trees planted for commercial production. *Tenera* trees produce fruits with smaller kernels and more flesh. *Tenera* trees yield around 6 MT per hectare and the extraction rate is approximately 20-22 percent. The CPO from *Tenera* trees is commonly known as *Mekindo* oil. Few small-scale farmers collect *Tenera* tree fruits from abandoned government plantations and extract CPO. Almost all production goes toward soap or cosmetics, although a minimal 1 percent of production does mix with *Dura* CPO to obtain different edible and non-edible oils. CKO extracted from *Tenera* fruits also channel into soap production.

Source: USAID-BEST field visits, July 2014 and Hanif, Charity, 2013, *Smallholder Oil Palm Market Assessment for the SHOPS Program Liberia*.



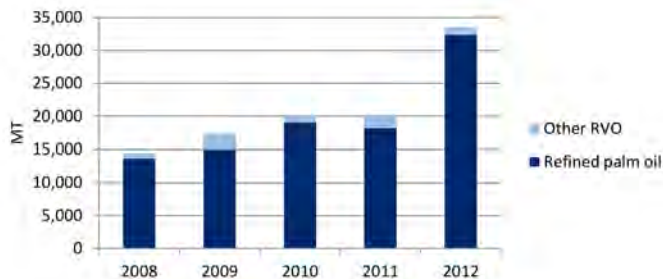
Photo by Fintrac Inc.

Harvesters of both traditional and commercial oil palm must frequently climb 30 feet up into the palm tree to cut the bunches. At this government farm, a harvester shows two bunches of oil palm he has just collected. Bong County, Liberia, July 2014.



**Imports and exports.** Liberia relies exclusively on imports to satisfy its demand for RVO. Currently, the country sources more than 80 percent of imports from Indonesia and Malaysia. Commercial imports average 19,000 MT per year and rank third in volume after rice and wheat imports. Refined palm oil represents more than 95 percent of total commercial RVO imports; soybean, corn, and sunflower oils constitute the remainder. From 2008-12, refined oil import has more than doubled with volume reaching 33,057 MT in 2012 (see figure below). According to traders, consumer demand for RVO is rapidly increasing, and therefore likely driving a surge in import volume.

**Figure 17. RVO Commercial Imports (MT), 2008-12**



Source: Created by USAID-BEST using data from Comtrade, July 2014.

As for exports, around 20,000 MT of country and *Mekindo* oil reportedly leaves the country informally to neighboring Guinea and Côte d'Ivoire. Allegedly, trade of these two commodities also extends as far as Mali and Senegal. A small volume of approximately 1 MT of CPO (most likely all country oil) per year does leave the country formally through the Port of Monrovia to Liberian diaspora communities in the US and Europe.

**Food aid.** Distribution of RVO currently represents around 2 percent of total edible oil consumption in Liberia and does not significantly harm the production and marketing of locally produced oils.<sup>75</sup> Currently, the Title II LAUNCH program distributes RVO. Although the volume distributed in the six months of the lean season averaged 137 MT from July 2010-March 2014, these quantities varied significantly per year due to beneficiary participation. Additionally, LAUNCH monetized 1,200 MT of RVO from 2010-12.

From 2011-14, FFP donated 434.25 MT annually of RVO to WFP for emergency food aid to refugee camps; WFP also receives RVO from other donors for this program. During the same period, USDA McGovern Dole donated 270 MT of RVO to WFP for school feeding.

**Government policy.** The GoL considers smallholder oil palm production a strategic sector for investment and support. The Liberia Agriculture Sector Investment Program (LASIP) seeks to

<sup>75</sup> USAID-BEST estimates average consumption of 42,600 MT per year from 2011-14.



Photo by Fintrac Inc.

Generally only the flesh is used when processing country oil from palm fruit. The kernel is quite hard and therefore requires industrial extraction technologies that are not widely available. Zwedru, Grand Gedeh County, Liberia, July 2014.

provide smallholders with improved planting materials.<sup>76</sup> To complete this objective, CARI, with support from Africa Rice and the International Institute of Tropical Agriculture (IITA), will implement a five-year strategic plan to develop new and improved oil palm seedlings for distribution to farmers.<sup>77</sup> At present, it is unclear whether these improved varieties are intended for consumption or industrial use.

In addition, the GoL expects that when the concessions of land to private investors for the production of CPO are fully productive, these companies will be able to buy fresh oil palm bunches from small-scale farmers and thereby boost farm incomes. In total, the GoL has awarded 800,000 ha of land to five different companies; however, these companies do not have plans to refine oil palm in Liberia and instead expect to export all CPO.<sup>78</sup>

Regarding RVO, in 2013, the National Fortification Alliance of Liberia began to mandate Vitamin A fortification of imported cooking oil that adheres with the standards of the Economic Community of West African States (ECOWAS). Fortification of country oil is not a part of the national standards.

**Marketing.** Numerous buyers and sellers across the country characterize the market for country oil and imported RVO. Year-round availability helps traders purchase country oil directly from farmers at village markets. Traders (mostly women) then transport country oil in 5 gallon containers to different markets across the country, including Monrovia, and also to neighboring markets in Guinea and Côte d'Ivoire. At the retail level, consumers generally purchase half pints of country oil and smaller bags (about 2 ounces or less) of RVO.

A handful of traders located in Monrovia dominate RVO imports. Importers sell to retailers and wholesalers who in turn transport oil alongside rice and other products to rural markets. In general, local and imported edible oil markets are very

<sup>76</sup> GoL, September 2010, *Liberia Agriculture Sector Investment Program Report*.

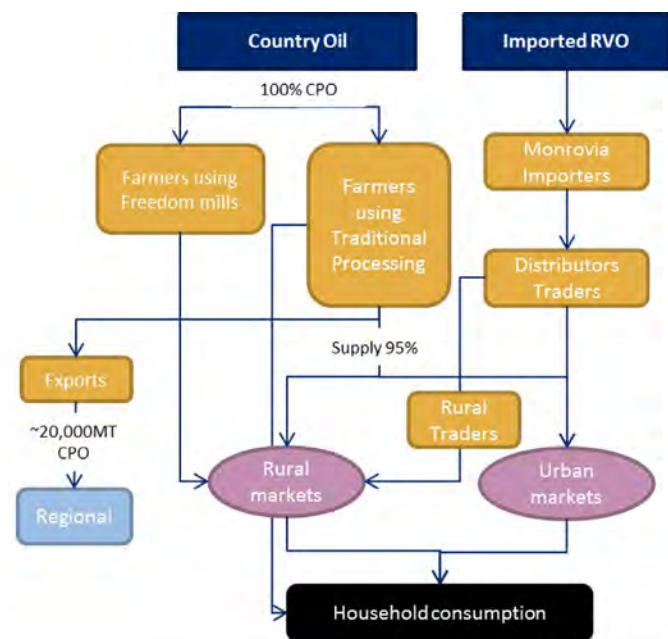
<sup>77</sup> Personal communication with researchers from the MoA, July 2014.

<sup>78</sup> GoL, September 2010, *Liberia Agriculture Sector Investment Program Report*.



competitive. The figure below presents a flow chart illustrating the value chain for both country oil and imported RVO.

**Figure 18. Country Oil and RVO Value Chain**



Source: Created by USAID-BEST based on market visits and Hanif, Charity, 2013, Smallholder Oil Palm Market Assessment for the SHOPS Program Liberia.

**Performance.** As the following table shows, edible oil retail prices across markets show minimal price variations. Generally, in markets located around traditional production areas (Gbanga, German Camp Junction, and Tubmanburg) country oil prices range from LRD 77-85 per liter compared to areas with limited production such as Monrovia and Buchanan. Bo Waterside market had the highest retail price for country oil most likely because of demand from neighboring Sierra Leone and the limited oil production in the area.

**Table 7. Edible Oil Retail Prices (LRD/liter) in Select Markets**

Market	Country Oil	RVO	% Difference RVO and Country Oil
Monrovia	106	163	54
Ganta	106	127	20
Zwedru	95	136	43
Gbanga	77	128	67
German Camp Junction	85	127	50
Klay	103	150	46
Tubmanburg	82	124	52
Bo Waterside	113	133	18
Buchanan	100	133	33

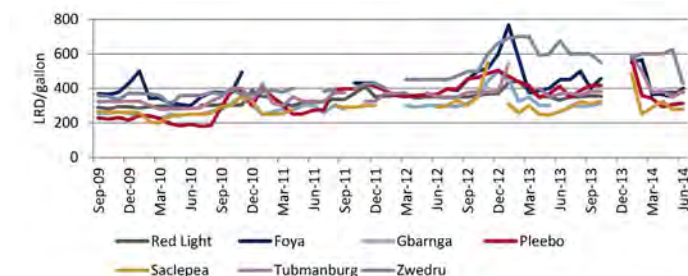
Source: USAID-BEST market visits, July 2014.

However, there are some exceptions to this trend. For example, the market in Zwedru, a less traditional production area, sold country oil at a relatively low LRD 95 per liter. Additionally, Ganta, a main production area, showed relatively higher prices (LRD 106 per liter) than other production areas; however, demand in Guinea and Côte d'Ivoire likely influences retail prices.

Imported RVO is more expensive than country oil. However, surprisingly, price differentials between RVO and country oil were higher in Gbanga (67 percent), Monrovia (54 percent), Tubmanburg (52 percent), and German Camp Junction (50 percent) despite the closeness of these towns to the main port in Monrovia through improved roads.

In general, country oil experiences relatively small price variations during the year. Between 2009 and the first half of 2012, retail prices for country oil only slightly increased. However, by the second half of 2012, country oil prices increased more rapidly, and particularly so in Zwedru, Foya, and Tubmanburg. The figure below charts the progression of monthly retail prices for country oil and illustrates how variations became more erratic from September 2012 but have leveled out by March 2014. Increasing local and regional demand for country oil could explain the sharp increase in prices as traders feel a stronger incentive to move oil out of the country.

**Figure 19. Country Oil Retail Price (LRD/gallon), September 2009- June 2014**



Source: Created by USAID-BEST using WFP/VAM Retail Prices, July 2014. Note: Q1, Q2, Q3 represents first, second, and third quarters in a year, respectively.

Correlation analysis of country oil retail prices suggest most markets across Liberia are integrated. Gbanga market, located near main production areas, and Red Light market, an important distribution center, generally show medium-high levels of market integration (correlation coefficients above .50) with most markets. Toe Town and Bo Waterside are the only two markets consistently having low levels (correlation coefficients below .50) of market integration, possibly because most people near these markets generally consume their own production before trading any surplus.<sup>79</sup>

<sup>79</sup> Foya market, also near a production area, shows low levels of market integration (below .50 correlation coefficient) with Red Light and Saclepea markets despite good road connections, but show high market integration levels with Pleebo, a distant market from this region. Unfortunately, the USAID-BEST team did not visit Foya market due to the Ebola virus outbreak in Lofa County, and Pleebo market due to road conditions making the area inaccessible during visits in July 2014.

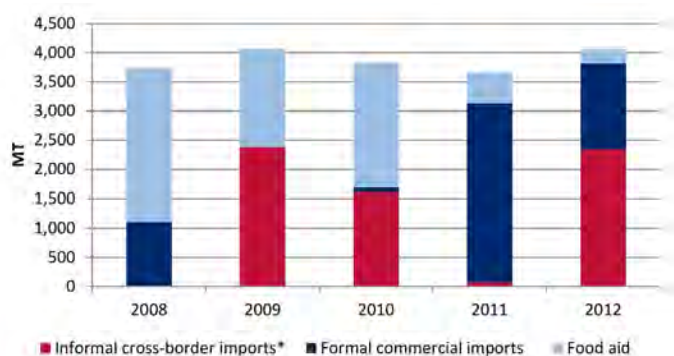
### 1.3.4. Beans

**HH use.** Beans do not generally represent a major component of the Liberian HH diet. Consumers generally purchase less than one cup (10 ounces) and sometimes in packages as small as 2 ounces. Liberian families typically use a small spoonful of beans as a thickener in soups and sauces to accompany rice or cassava. Despite the limited consumption, a large variety of beans is available in markets across the country including pinto beans, dark red beans, fava beans, crowder peas, black-eyed peas, yellow peas, red lentils, yellow lentils, and mung beans. Though freshness is valued because it speeds cooking time, people appear nearly indifferent among varieties. HHs prepare bean sauces cooked with country oil for special occasions. Although HHs store limited quantities of beans to consume throughout the year, pest infestation quickly damages most stored beans.

**Production.** Official data on bean production in Liberia do not exist. FAO estimates that total production averages 3,600 MT per year. Local production becomes available starting in September and reaches a peak during dry season in December and January. Farmers generally intercrop beans with upland rice and keep beans for home consumption. Production remains traditional, and farmers typically do not use improved seeds unless provided (e.g., cowpea seeds provided to P4P farmers). Although beans are produced all over the country, the main production area is Lofa, and from this area traders collect to transport beans to markets mostly in and around Monrovia.

**Imports and exports.** Formal commercial imports (mostly from the US and Canada) stand at around 1,141 MT per year, but available data mostly records imports arriving through the Freeport of Monrovia and does not account for the largest inflow from neighboring Guinea and Côte d'Ivoire. According to reports from traders during field work, these unofficial imports reach an estimated 2,000 MT per year, twice the volume of official imports. In the absence of official data, the figure below presents an estimate of total imports from 2008-12.

**Figure 20. Total Bean Imports (MT), 2008-12**



Source: Created by USAID-BEST using data from Comtrade, WFP and AMEX, July 2014.  
\*Imports from Guinea and Côte d'Ivoire are USAID-BEST estimates.

As the chart illustrates, the origin of imports varies considerably from 2008-12. Although annual country bean availability likely



Photo by Fintrac Inc.

Despite the variety of beans traded in markets across Liberia, households eat them infrequently and only in small amounts in soups and/or stews. Liberians consider all beans grown domestically essentially the same in taste, and categorize fava beans, displayed here at the Red Light market, under the general term of "country beans." Monrovia, Liberia, July 2014.

affects the volume of informal cross-border trade, the political situation in neighboring countries also influences the flow of imports. For example, in 2008, Guinea and Côte d'Ivoire banned food exports as a result of the global food crisis, which could explain the null imports to Liberia that year. The minimal quantities traded informally across borders in 2011 could be attributed to the unrest in Côte d'Ivoire, which limited production and impeded trade. Commercial imports, largely satisfying the demand of urban consumers, cannot adequately cover the shortfall across the country in times when informal cross-border imports decline.

**Food aid.** The US government is the main donor of beans and lentils. During the period 2012-13, LAUNCH distributed on average 117 MT of lentils and 196 MT of yellow split peas (YSP). In addition, from 2008-14, FFP provided on average 785 MT of YSP to WFP emergency programming. In total, distributed food aid represents approximately 4 percent of total consumption, a volume that is not expected to have any substantial effect on production or marketing incentives. No programs have monetized beans/peas. WFP purchased about 45 MT of local cowpeas in 2013 for its P4P program.

**Government policies.** Currently the GoL does not impose policies that affect the local production and marketing of beans.

**Marketing.** Female traders dominate the bean trade and sell about 75-100 kg per month. Usually, traders sell their own production or purchase beans from neighboring farmers. Traders tend to travel to or buy from other traders in Lofa or across the border into Guinea and Côte d'Ivoire during market days in those locations. Cross-border informal trade with Guinea and Côte d'Ivoire, though important to increased bean availability, accounts for minimal quantities since traders generally bring less than 500 kg of beans per trip monthly and usually do so as a

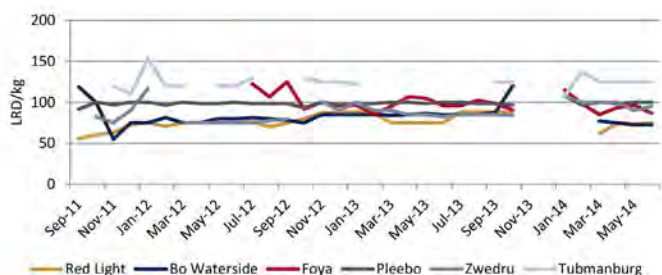
supplement to other commodities traded if space in their mode of transportation allows. According to the UN, the requirement to pay high bribes, sexual harassment, and loss of goods to officials at borders pose the main barriers to increasing trade.<sup>80</sup>

The number of bean sellers in each market visited in July 2014 varied depending on the market size. In markets with less than 20 traders such as Bo Waterside and Karnplay, one or two traders had no more than 50 kg of beans for sale. In markets with more than 100 vendors, such as Kakata or Ganta, more than 10 traders sold beans; however, these traders also sold small quantities. In most markets visited, traders indicated that no single trader could gain enough market power to influence availability and/or prices.

**Performance.** Retail prices across markets showed small variations based on prices recorded during market visits in July 2014.<sup>81</sup> Given general availability in Guinea, border markets featured lower retail prices (LRD 70-80 per kg) than other markets. Zwedru recorded higher prices (around LRD 120 per kg) despite its proximity to Côte d'Ivoire, which could possibly reflect seasonal limited supply from Côte d'Ivoire.

Country beans also showed minimal seasonal retail price variation. As the following figure charts, country bean retail price variation has been relatively small over the years. Tubmanburg was the only market with consistently higher retail prices compared to all the other markets for which data are available.

**Figure 21. Country Beans Retail Prices (LRD/kg), September 2011-June 2014**



Source: Created by USAID-BEST using data from WFP/VAM, July 2014.

Limited retail price data restrict a thorough assessment of bean market integration. However, markets for which sufficient price data are available do not show high levels of market integration.<sup>82</sup> This outcome is not surprising given that the trade of country beans is local; moreover, beans that make it to main markets such as Red Light in Montserrado County, Ganta in Nimba County or Zwedru in Grand Gedeh County are imported from Guinea and Côte d'Ivoire. Some markets, e.g., Pleebo in Maryland County market, are poorly integrated, most

80 UN Women 2007, *Informal Cross Border Trade (ICBT) in Liberia*.

81 Retail price data for imported beans from Guinea and Côte d'Ivoire are not collected in Liberia.

82 Please contact [infobest@fintrac.com](mailto:infobest@fintrac.com) for information on analytical methods and tables of correlations coefficients.

likely due to the relative distance to other markets and isolation based on road conditions.

### 1.3.5. Wheat Products

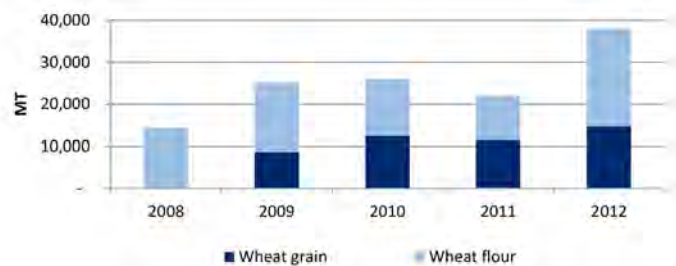
**HH use.** Urban Liberians commonly consume wheat flour products. Bread, fritters, and doughnuts from locally milled and imported wheat flour are readily available in urban areas. There is some demand in main markets in rural areas, where small quantities of these products are increasingly available. Consumers do not strongly prefer a certain brand or specific country of origin for wheat flour since traders sell imported and local varieties side-by-side.

Bulgur wheat, while not commonly consumed in the Liberian diet, is familiar in the country due to its widespread distribution as a food aid commodity throughout the war; school feeding programs have also consistently distributed this food. Liberians mix bulgur wheat with rice in order to stretch rice dishes, boil the grain with oil and pulses in a sauce, or ground it to cook with oil and beans.

**Production.** Liberia does not grow any type of wheat and relies exclusively on imports to meet demand. Premier Milling Corporation continues to be the only milling company in the country processing wheat flour, and its sales reportedly exceed 1,000 50-kg bags per day.<sup>83</sup>

**Imports and exports.** Commercial imports of wheat grain and flour represent about 25,087 MT per year (a distant second to rice in volume imported). As the figure below shows, flour imports have increased by more than 60 percent from 15,707 MT in 2008 to 26,000 MT by 2012. Liberia mostly sources wheat flour from Belgium, Germany, Turkey, and Morocco. Wheat grain imports, which started in 2009, currently reach about 10,000 MT per year. Premier Milling Corporation is the only company purchasing US hard wheat to process into flour.<sup>84</sup> At present, bulgur wheat is imported solely as a food aid commodity.

**Figure 22. Commercial Wheat and Wheat Flour Imports, 2008-12**



Source: Created by USAID-BEST using data from Comtrade, July 2014.

**Food aid.** The US government is the main donor of bulgur wheat. From July 2010 -March 2014, USAID Title II donated

83 GoL, 2010, *Production Estimates of Major Crops and Animals*.

84 Ibid.





Photo by Fintrac Inc.

LAUNCH beneficiaries report that they use bulgur wheat, pictured here, to stretch rice dishes. Additionally, households report eating small quantities of bulgur wheat boiled in a soup, or fried with pulses and oil. Bong County, Liberia, July 2014.

1,416 MT of bulgur wheat to LAUNCH for distribution to MCHN beneficiaries. Historically, FFP has donated bulgur wheat for WFP emergency programming. Separately, USDA provides bulgur wheat to WFP for the McGovern-Dole Food for Education programs, which averaged 4,310 MT annually from 2011-13.

From 2010-12, USAID Title II provided LAUNCH with 1,180 MT of wheat flour for monetization and 5,678 MT to HANDS

**Government policies.** The Ministry of Health and Social Welfare (MoHSW) and the Ministry of Commerce and Industry (MoCI) established the National Fortification Alliance (NFA) in 2010 with technical support and guidance from Project Healthy Children (PHC). The NFA serves as a forum in Liberia to coordinate, monitor, and generate policy guidelines around food fortification activities. In October 2013, fortification standards for imports of cooking oil, wheat flour, sugar, and salt became mandatory in Liberia.

According to the standards, the requirements for imported wheat flour and domestically milled flour are B vitamins (1, 2, 3, 12), folic acid, zinc, and iron.

A seven percent duty is imposed on 100 pound bags of imported wheat flour (reportedly, this restriction is meant to protect the only local milling in country). In addition, Bureau Veritas fees are 1.2 percent of Free on Board products. As a signatory of ECOWAS, Liberia follows the tariff schedule of this organization. Finally, Liberia follows the Codex Alimentarius and Ghana food safety standards for wheat flours.

**Marketing.** According to the MoCI, eight companies currently possess the license required to import wheat flour. These importers generally sell flour in Monrovia and greater Monrovia. To move the flour out of Monrovia, traders from other areas of the country arrange for transportation to deliver the wheat

flour out of Monrovia and into their markets. As the only importer of wheat grain, after milling Premier Milling works with distributors in Monrovia and these authorized distributors then distribute flour to different traders around the country. Mostly large-scale markets sold flour during field visits in July 2014.

**Performance.** Despite the small number of wheat flour importers, the market did not show signs of monopoly or collusion among these businesses. USAID-BEST found a wide availability of wheat flour at main markets across the country and observed that retail prices showed little market-to-market variation.

### 1.3.6. Other Commodities

In addition to the staple foods mentioned above, Liberians consume fish, bush meat, and vegetables on a regular basis. More affluent consumers, usually in urban areas, also consume beef and poultry (including eggs), and generally reserve goat and mutton for special celebrations and holidays.

**Fish.** The coastline, seven rivers, and abundant swamps host both saltwater and freshwater fish, and Liberians do not have a strong preference for any specific type. HHs predominantly consume fish in small amounts in soups or stews that accompany rice or *fufu*. At a per capita consumption around 4.4 kg per year,<sup>85</sup> fish consumption represents less than one percent of calorie intake and 0.6 grams of protein per person per year.<sup>86</sup> However, based on the field visit, these reported figures are likely low. LAUNCH currently promotes a blended food recipe



Photo by Fintrac Inc.

Fishing represents an income source for many households and also provides an important food for improved nutrition. Urban and rural markets primarily sell dried fish, but also offer fish powder, fresh fish, and frozen fish in certain areas. Monrovia, Liberia, July 2014.

85 FAO, 2007, *Fishery country profile - Liberia*.

86 FAOSTAT, 2014, Food Balance Sheets. <http://faostat.fao.org/site/368/default.aspx#ancor>, accessed July 2014.

at the HH level that incorporates fish powder (bony dust).

Fishing not only represents a valuable income source for many HHs in Liberia but also provides an important food for improved nutrition. Fisheries directly employ around 3,000 people and an additional 2,500 people are involved in some form of fish farming activities (e.g., pond construction, extension services, fish harvesting).<sup>87</sup> Total fish production is estimated at 11,300 MT per year, far exceeding imports of around 3,000 MT.

Traditional production dominates the sector as small-scale fisherfolk operate small boats either alone or in pairs catching wild fish. Small-scale female traders dominate the marketing. These traders dry the fish for preservation and occasionally engage in cross-border trade. The availability of saltwater fish in inland markets such as Ganta or Zwedru indicates a relatively effective marketing chain for the distribution and sale of fish products.

Although aquaculture remains underdeveloped, certain programs in place seek to expand this industry. For example, in 2013, the Liberian Bureau of National Fisheries received a grant from FAO to create a National Aquaculture Strategy and Development Plan.

**Bush meat.** Liberians consume a variety of animals from the bush, including deer, bush rats, anteaters, large birds, groundhogs, bush hogs (black and pink), snakes, monkeys, and chimpanzees. People in urban and rural areas across income strata consume bush meat regularly either in stews accompanying rice or as snacks (e.g., dried monkey meat pieces like beef jerky). The current Ebola outbreak has had some mixed effects on consumption. Some organizations suggest that the virus (and the ban on hunting)<sup>88</sup> will deprive HHs of an important source of nutrition and income. However, multiple news organizations report<sup>89</sup> that people have not complied with the ban on consumption and trade.

Despite the importance of bush meat in Liberia no official documents record the total volume harvested per year; however, according to some estimates, the number averages 150,000 MT per year, thereby representing 75 percent of in-country meat production and over US\$20 million in commercial value.<sup>90</sup> Unlike other foods, consumption of bush meat did not decline during the conflict as sometimes it was the only food available.<sup>91</sup> Currently, bush meat is harvested in all

87 FAO, 2007, *Fishery country profile - Liberia*.

88 In April 2014, the government of Liberia banned bush meat consumption (The ban included the following foods plums/mangoes and other fruits partially eaten by bats; monkeys, bats, and bamboos). The New Dawn, April 1, 2014, To stop Ebola: Gov't bans monkey meat, others.

89 VICE news, 2014, Bushmeat in the Time of Ebola. <https://news.vice.com/video/bushmeat-in-the-time-of-ebola>, accessed September 2014. ; Cooney, D and CIFOR, 2014, Banning bushmeat to stem Ebola outbreaks is unworkable, expert says. <http://www.trust.org/item/20140903102956-2ajml>, accessed September 2014.

90 Hoyt, R, 2004, "Wild meat harvest and trade in Liberia: managing biodiversity, economic and social impacts", Wildlife Policy Briefing.

91 Ibid.



Photo by Fintrac Inc.

Along the main road in Grand Gedeh, vendors sell bush meat to customers passing through in cars, trucks, and motorbikes. Not just a regular protein source, bush meat offers many rural HHs an income generating activity. Grand Gedeh County, Liberia, July 2014.

areas with forests. However, total volume is likely declining rapidly due to high levels of deforestation, and unsustainable hunting practices.<sup>92</sup>

Traders also bring bush meat across the borders. The Daobly market in Côte d'Ivoire is one important hub where Ivorians from as far as 570 km away will travel to source bush meat from this market due to the countrywide ban on bush meat trade in Côte d'Ivoire. According to reports, this market sells approximately 9,500 primates every year.<sup>93</sup>

In terms of marketing, people generally hunt wild animals using firearms or rudimentary traps, and then take their catch directly to a woman in a rural or urban market, or to a family member for onward sale informally at their homes. Hunters have agreements with traders and receive from these traders ammunition and other supplies (usually women will give them these supplies). From a transporter, they can agree to share production and a percentage of sales. Transporters are bush taxis, logging trucks, and government and NGO vehicles. Many times relations with police and military personnel are important to secure the passage of bush meat.<sup>94</sup>

USAID-BEST observed that 15 out of the 19 markets visited in July 2014 sold bush meat primarily as dried animals preserved with some oil and salt. Traders selling this product were usually

92 Hoyt, R, 2004, "Wild meat harvest and trade in Liberia: managing biodiversity, economic and social impacts", Wildlife Policy Briefing; Ryan, C. and McGraw, S., 2014, "Monkeys in a West African Bushmeat Market: Implications for Cercopithecoid Conservation in Eastern Liberia", Tropical Conservation Science.

93 Cooney, D and CIFOR, 2014, Banning bushmeat to stem Ebola outbreaks is unworkable, expert says. <http://www.trust.org/item/20140903102956-2ajml>, accessed September 2014. ; Ryan, C. and McGraw, S., 2014, "Monkeys in a West African Bushmeat Market: Implications for Cercopithecoid Conservation in Eastern Liberia", Tropical Conservation Science.

94 Hoyt, R, 2004, "Wild meat harvest and trade in Liberia: managing biodiversity, economic and social impacts", Wildlife Policy Briefing.



in the meat sections of the market accessible to all and displayed their products openly (despite the ban on trading bush meat).

**Vegetables.** Liberian HHs consume bitterball, peppers, tomatoes, and chilies almost on a daily basis.<sup>95</sup> Vegetables are generally intercropped with upland rice and other food crops, but production is minimal. Production concentrates along the Central belt area near main urban centers and roads. In Nimba, Grand Bassa, and Montserrado more than 60 percent of farmers reportedly sold their vegetable production; overall, farmers consider vegetables an important cash crop.<sup>96</sup> Despite the opportunities, production remains traditional with almost no use of modern inputs. Since irrigation is not a common practice, production volume and prices tend to show strong fluctuations during the year. Given this condition, and the high post-harvest losses, (some estimates more than 40 percent), Liberia regularly imports vegetables from neighboring countries (in particular Guinea).<sup>97</sup>



## 1.4. CHARACTERISTICS OF MARKET SITES

USAID-BEST selected markets for site visits based on relative size in terms of main commodities traded, number of traders, road accessibility, market operation (i.e., daily or weekly), and location near current food security programs. Due to the Ebola virus outbreak, the team did not visit Douala market in Monrovia and markets in main surplus areas in Lofa and Gbarpolu counties. In total, USAID-BEST visited 20 urban and

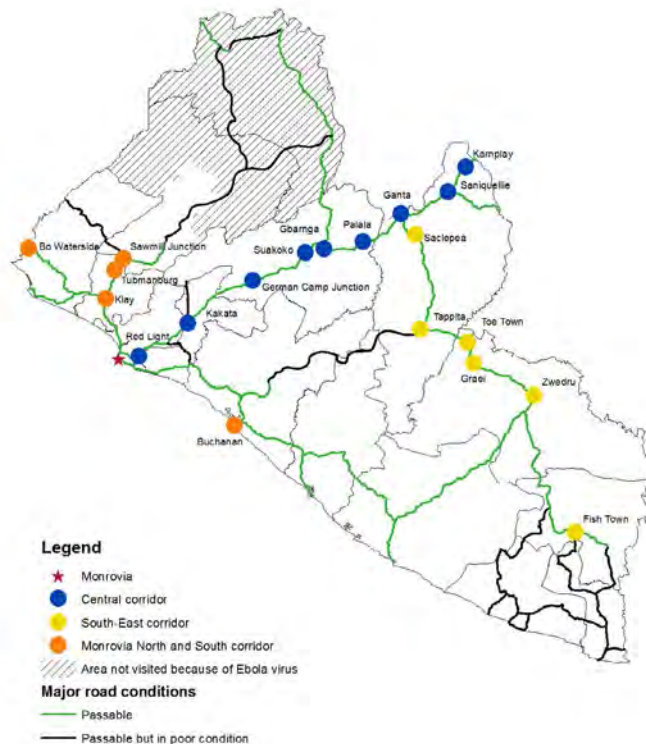
95 WFP, December 2013, *Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013*.

96 GoL, 2007, *Comprehensive Assessment of the Agriculture Sector in Liberia (CAAS-Lib): Synthesis Report*.

97 Ibid.

rural markets across Liberia during field research in July 2014. The map below highlights the locations of these markets.

**Figure 23. Markets Visited During USAID-BEST Field Research, July 2014**



Source: Created by USAID-BEST based on July 2014 field work.

For the purpose of this report, USAID-BEST grouped markets visited into three different corridors considering their distance to Monrovia and location along main highways. The following paragraphs describe each of these market corridors.

### 1.4.1. Central Corridor

Markets along this segment connect Montserrado, Margibi, Bong, and Nimba counties all the way to Guinea via roads with more than 80 percent of the sections paved and in good condition. The area around this highway, commonly referred to as the central belt region, accounts for approximately 40 percent of the total population in Liberia, thereby representing the largest demand base for different products.

Notably, the Central corridor includes the Red Light market<sup>98</sup> in Monrovia, which represents the most important wholesale/retail market for all imported rice and RVO products before onward sale to the rest of the country. Red Light also serves as a critical wholesale center for locally produced commodities, such as country oil, vegetables, cassava products, and fish. Although Duala market in Monrovia is another big wholesale and retail center, as previously mentioned, the team did not visit this market due to concerns about the Ebola virus outbreak.

98 Red Light market is also commonly referred to as “Gobachop” market.



**Table 8. Central Corridor Markets Visited During USAID-BEST Field Work, July 2014**

County	Market Name	Market Day	Population/Market Base	Number of Traders	High Cross-border Trade
Bong	Palala	Thursday	Rural	50-100	Yes
Bong	Suakoko	Friday	Rural	50-100	Yes
Bong	Gbanga	Daily	Urban	>100	Yes
Bong	German Camp Junction	Daily	Rural	20-50	Yes
Margibi	Kakata	Daily	Urban	>100	Yes
Montserrado	Red Light	Daily	Urban	>100	Yes
Nimba	Ganta	Daily	Urban	>100	Yes
Nimba	Sanicullie	Daily	Rural	50-100	Yes
Nimba	Karnplay	Wednesday	Rural	20-50	Yes

Source: USAID-BEST market visits, July 2014.

Note: Some daily markets close on Sundays; High cross-border trade refers to availability of products from Guinea and/or Côte d'Ivoire in the respective market.

**Table 9. South-East Corridor Markets Visited During USAID-BEST Field Work, July 2014**

County	Market Name	Market Day	Population/Market base	Number of Traders	High Cross-border Trade
Grand Gedeh	Toe Town	Saturday	Rural	20-50	No
Grand Gedeh	Zwedru	Daily	Urban	>100	Yes
Nimba	Saclepea	Tuesday	Rural	>100	Yes
Nimba	Tappita	Wednesday	Rural	20-50	Yes
Nimba	Graei	Monday	Rural	20-50	Yes
River Gee	Dry Rice	Daily	Urban	20-50	No

Source: USAID-BEST market visits, July 2014.

Note: Some daily markets close on Sundays; High cross-border trade refers to availability of products from Guinea and/or Côte d'Ivoire in the respective market.

**Table 10. Monrovia North and South Corridor Markets Visited During USAID-BEST Field Work, July 2014**

County	Market Name	Market Day	Population/Market base	Number of Traders	High Cross-Border Trade
Bomi	Klay	Friday	Rural	20-50	No
Bomi	Tubmanburg	Daily	Rural	50-100	No
Gbarpolu	Sawmill Junction	Wednesday	Rural	<20	No
Grand Cape Mount	Bo Waterside	Saturday	Rural	20-50	Yes
Grand Bassa	Buchanan	Daily	Urban	20-100	No

Source: USAID-BEST market visits, July 2014.

Note: Some daily markets close on Sundays; High cross-border trade refers to availability of products from Guinea and/or Sierra Leone in the respective market.

Of the 10 markets visited along this corridor, four feature more than 100 traders each. These large-scale markets operate daily and in centrally located buildings with specific sections for retailers selling different food crops and meat products. Wholesale rice and RVO traders generally manage shops alongside the main retail building that have relatively large storage capacity. Medium- and small-scale markets (those with fewer than 100 traders each) operate on a weekly basis with some retailers selling from established wooden stalls partially attached to the ground and others doing so on the ground.

Overall, USAID-BEST observed that all small- and medium-scale markets visited lack storage capacity, standardized scales, and consistent/visible reporting of prices. Women account for most of the retail traders while men tend to dominate the wholesale business.

#### 1.4.2. South-East Corridor

This corridor includes markets in Nimba, Grand Gedeh, and River Gee counties and serves a fairly small demand base since the surrounding area accounts for approximately 15 percent of total population in Liberia. Only about 20 percent of the main highway along this corridor is paved and in good condition. However, from field observation in July 2014 during the rainy season, the unpaved sections were functioning as people and vehicles passed along these roads despite difficult conditions. Three out of the five markets visited were daily markets and relatively large (with more than 100 traders each). Nimba County accounted for most of the medium and large markets (with over 50 traders each). In Grand Gedeh County, the one large market is located in Zwedru.

In this corridor, similar to others, large-scale retail markets

operate in buildings while rice and RVO wholesalers traded outdoors alongside the main structure. Given the smaller size of retail buildings in the South-East corridor compared to those in the Central corridor, most traders select to sell their products in the open so that they have the necessary space to conduct their business. Some large-scale traders also participate in weekly markets in Guinea and Côte d'Ivoire from which they supply different products such as beans and vegetables. Small-scale markets (with fewer than 50 traders each) operate on a weekly basis. The USAID-BEST team did not observe significant storage capacity in any market visited along this corridor. The gender differentiation in market roles observed in the Central corridor was also observed in the South-East corridor with women focusing on retail while men function primarily as wholesalers.

### 1.4.3. Monrovia North and South Corridors

In this area, Grand Bassa, Bomi, and Grand Cape Mount account for less than 10 percent of total population in Liberia, which means that the markets in this region serve the smallest demand base. All markets visited, with the exception of Sawmill Junction, were located along paved and good condition roads generally accessible even during the rainy season. Most markets visited were of medium size with around 50 traders or fewer, and operate on a weekly basis. Buildings in Tubmanburg, Bo Waterside, and Buchanan contain the retail markets, while wholesalers trade along the road surrounding the main market buildings.

For the most part, traders in this corridor maintain good connections to Monrovia since they regularly source different imported and locally produced commodities from the capital.



Photo by Fintrac Inc.

At some daily markets, the main building houses retailers selling food and non-edible products. This photo of the Tubmanburg retail market shows clothes and other household supplies for sale at the entrance. Bomi County, Liberia, July 2014.



# ANNEX I SELECT ECONOMIC, AGRICULTURAL, AND FOOD SECURITY INDICATORS

Given the heavy involvement of women in retail and trade, keeping markets up and running frequently involves bringing children to markets. This female trader in the Ganta market sells onions while also caring for her daughter. Nimba County, Liberia, July 2014.

Photo by Fintrac Inc.

## AI.1. INTRODUCTION

This annex provides supplementary information regarding key macroeconomic, agricultural, and food security indicators for Liberia. The findings noted below are entirely from secondary sources and informed the analysis presented in the main report.

The annex begins by presenting indicators on the macroeconomy and the agricultural sector, follows with information on international trade, presents a table summarizing the government policies most relevant for staple food markets in Liberia, and then transitions to providing indicators around food security that include data on livelihoods; diets; water, sanitation, and hygiene; shocks and coping; and malnutrition. Lastly, this annex concludes with table summaries of recent food security assessments and relevant bulletins.

## AI.2. MACROECONOMY

### AI.2.1. Gross Domestic Product (GDP)

Table 11. GDP Indicators, 2005-12

	2005	2006	2007	2008	2009	2010	2011	2012
GDP (million current US\$)	542	604	739	850	1,155	1,293	1,538	1,734
GDP growth (annual %)	9	10	16	11	14	11	9	10
GDP per capita (US\$)	166	178	210	231	302	327	377	414

Source: World Bank Development Indicators Database, February 2014.

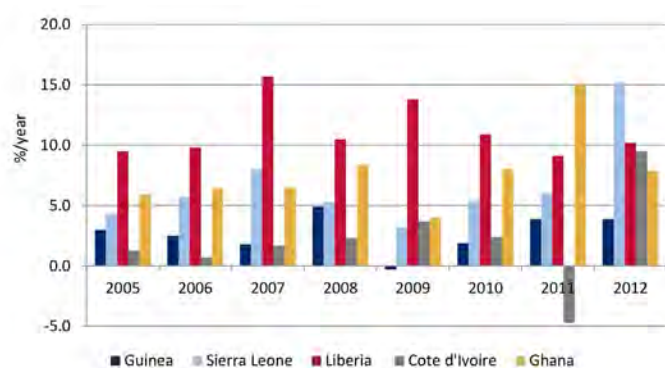


**Table 12. GDP by Sector (%), 2005-12**

	2005	2006	2007	2008	2009	2010	2011	2012
Agriculture, value added	67	64	66	67	58	45	45	39
Industry, value added	7	8	8	7	5	5	8	16
Services, etc., value added	26	28	26	26	37	50	47	45

Source: World Bank Development Indicators Database, February 2014.

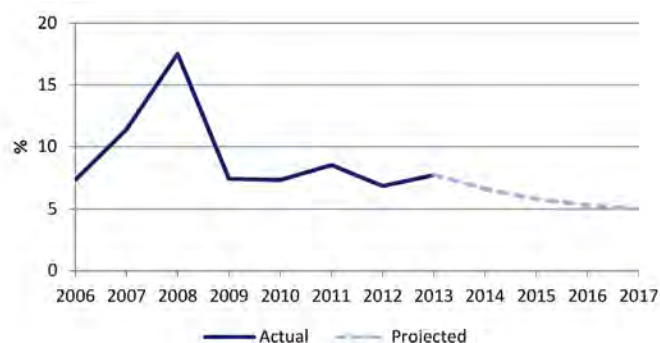
**Figure 24. GDP Growth (%/year) in Liberia Compared to Countries in the Region, 2005-12**



Source: World Bank Development Indicators Database, February 2014.

### A1.2.2. Inflation

**Figure 25. Annual Inflation Rate, Actual (2006-12) and Projected (2013-17)**

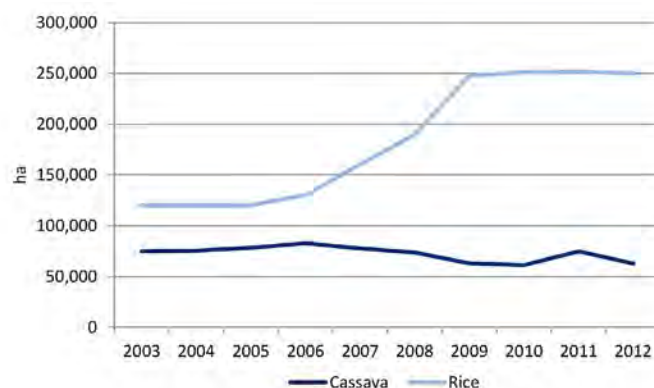


Source: World Bank Development Indicators Database and IMF, March 2014.

## A1.3. AGRICULTURAL SECTOR

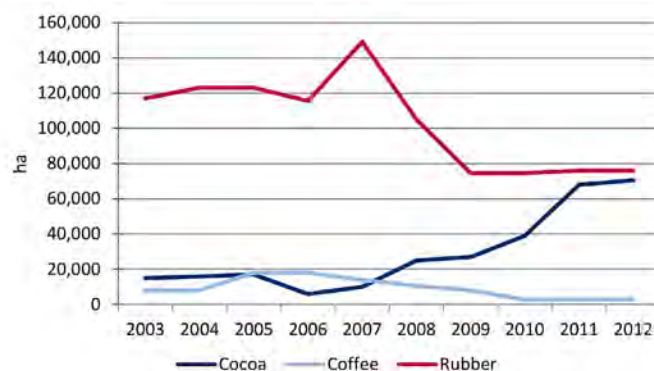
### A1.3.1. Trends in Area Planted, Yields, and Production

**Figure 26. Area Planted (ha) to Cassava and Rice, 2003-12**



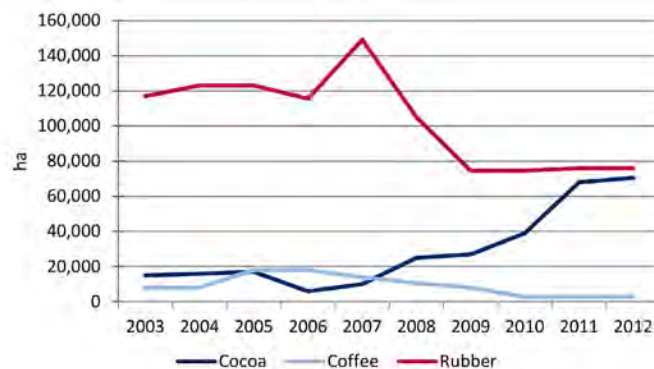
Source: FAOSTAT, February 2014.

**Figure 27. Area Planted (ha) to Cocoa, Coffee, and Rubber, 2003-12**



Source: FAOSTAT, February 2014.

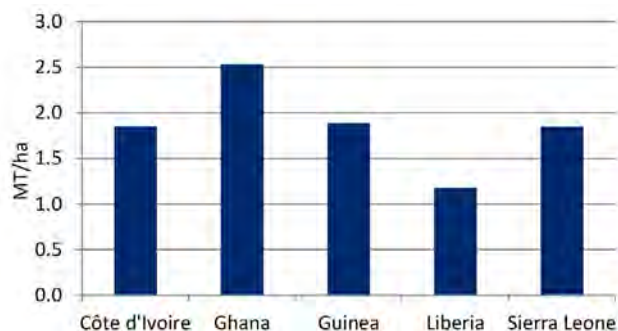
**Figure 28. Production (MT) Cocoa, Coffee, Oil Palm, and Rubber, 2003-12**



Source: FAOSTAT, February 2014.

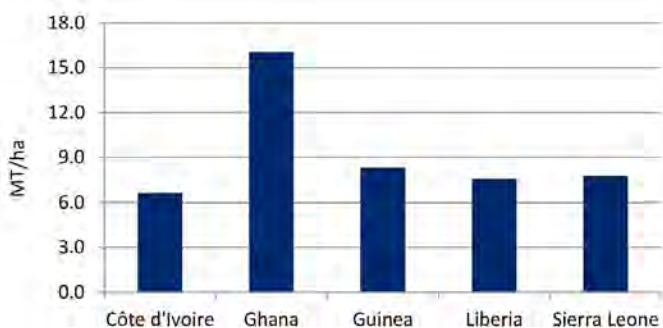
### AI.3.2. Productivity of Major Crops in Comparison to Select Countries in the Region

**Figure 29. Yields (MT/ha) for Rice, Liberia and Selected Countries, Average 2007-12**



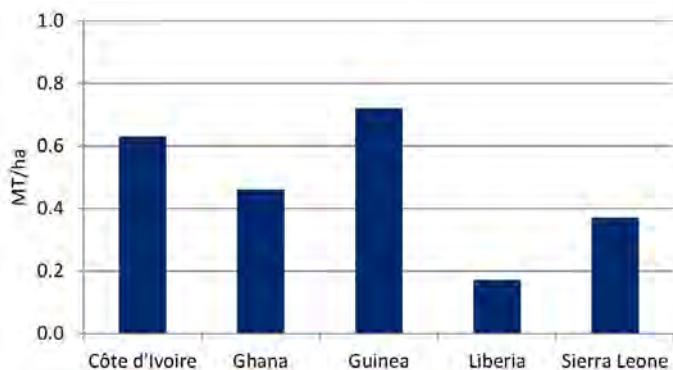
Source: FAOSTAT, February 2014.

**Figure 30. Yield (MT/ha) Cassava, Liberia and Select Countries, Average 2007-12**



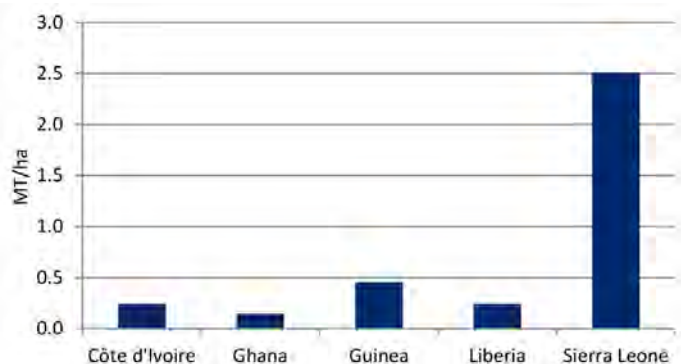
Source: FAOSTAT, February 2014.

**Figure 31. Yield (MT/ha) Cocoa, Liberia and Select Countries, Average 2010-12**



Source: FAOSTAT, February 2012.

**Figure 32. Yield (MT/ha) Coffee, Liberia and Select Countries, Average 2010-12**



Source: FAOSTAT, February 2012.

### AI.3.3. Characteristics of Agricultural Households (HHs)

**Table 13. Distribution of Agricultural HH Members (Number and %) by Sex and Activity, 2011**

	Total Number	% Total	% Male	% Female
<b>Total</b>	<b>1,685,820</b>	<b>100</b>	<b>49.4</b>	<b>50.6</b>
Working on farm	1,180,070	70	48.2	51.8
Only	726,590	43.1	44.2	55.8
Also going to school	387,730	23	53.1	46.9
Also work for money	65,750	3.9	63.4	36.6
Not working on farm	505,750	30	52.3	47.7
Going to school	234,330	13.9	54.7	45.3
Too young	262,990	15.6	50	50
Work elsewhere	8,430	0.5	59.2	40.8

Source: GoL, 2011.

**Table 14. Heads of Agricultural HHs by Age and Sex, 2011**

	Total Number	% Total	Number Male	% Male	Number Female	% Female
<b>Total</b>	<b>287,320</b>	<b>100</b>	<b>213,990</b>	<b>100</b>	<b>73,330</b>	<b>100</b>
< 20	1,720	0.6	1,000	0.5	720	1
20-29	46,260	16.1	36,590	17.1	9,670	13.1
30-39	79,010	27.5	60,680	28.4	18,330	24.9
40-49	74,420	25.9	55,680	26	18,740	25.5
50-59	40,230	14	29,180	13.6	11,050	15.1
≥ 60	45,680	15.9	30,860	14.4	14,820	20.3

Source: GoL, 2011.

**Table 15. Types of Food Crops and Animal Farming HHs, 1988 and 2008-11**

	2011	2010	2009	2008	1988	% Change 2008-10	% Change 1988-2010
Agriculture HHs	287,320	284,760	289,550	274,070	180,290	1.6	59.4
Rice producing HHs	207,020	209,740	232,200	231,370	156,180	-7.8	32.6
Cassava producing HHs	114,830	113,370	118,980	177,730	103,050	-16	11.4
Livestock rearing HHs	61,200	61,680	64,290	65,470	46,350	-4.1	32
Poultry raising HHs	130,720	125,640	123,290	117,120	96,330	7.1	35.7

Source: GoL, 2011.

**Table 16. Major Reported Production Constraints of Rice Producing HHs, 2011**

	Rice HH	%
<b>Total</b>	<b>207,020</b>	<b>100</b>
Poor soil fertility	7,160	3.5
Lack of seeds	35,220	17
Poor quality seeds	6,050	2.9
Lack of farming tools	50,410	24.3
Lack of farming labor	26,760	12.9
Early rain	14,150	6.8
Late rain	8,940	4.3
Plant diseases	15,170	7.3
Lack of ext. service/ training	10,080	4.9
Pest	26,720	12.9
Lack of access to land	2,590	1.3
Others	3,770	1.8

Source: GoL, 2011.

## AI.4.1. Imports and Exports

**Table 18. Top Imports (US\$ Thousand), 2008-12**

	2008	2009	2010	2011	2012
Mineral fuels, oils, distillation products, etc.	502,129	398,879	620,030	1,189,172	1,329,897
Articles of iron or steel	188,822	235,016	169,129	296,264	284,684
Machinery, boilers, etc.	108,973	94,935	124,006	273,464	262,448
Vehicles other than railway, tramway	93,861	64,542	65,136	110,456	128,303
Cereals	68,088	40,745	70,684	131,332	100,702
Electrical, electronic equipment	78,518	64,148	58,224	176,142	92,822
Meat and edible meat offal	17,449	13,306	20,107	34,724	36,566
Iron and steel	21,820	16,921	23,218	32,397	36,161
Animal, vegetable fats and oils, etc.	14,328	15,929	21,677	28,248	36,098

Source: UN Comtrade, March 2014.

## AI.4. INTERNATIONAL TRADE

**Table 17. Trade Balance (US\$ Million), 2009-13**

	2009	2010	2011	2012	2013	% Female
Exports of goods Free on Board (FOB)	180	241.2	645.7	716.7	831.4	100
Imports of goods FOB	559	719.1	2068.4	2275.2	2457.3	

Source: Economist Intelligence Unit, March 2014.

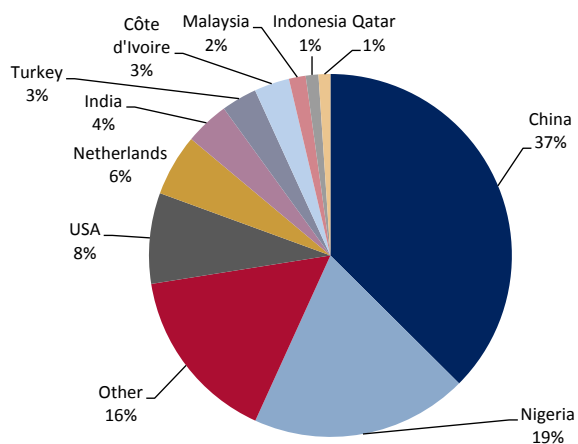


**Table 19. Top Exports (US\$ Million), 2008-12**

	2008	2009	2010	2011	2012
Rubber and articles thereof	265,694	162,819	262,636	363,047	271,363
Ores, slag, and ash	5,768	2,221	16,615	10,687	236,893
Mineral fuels, oils, distillation products, etc.	323,950	202,593	241,221	158,330	203,118
Wood and articles of wood, wood charcoal	1,070	5,522	6,843	38,873	69,643
Cocoa and cocoa preparations	10,828	12,380	14,465	29,861	24,396
Pearls, precious stones, metals, coins, etc.	21,685	11,194	19,520	15,785	10,032
Machinery, nuclear reactors, boilers, etc.	1,620	5,753	1,585	4,093	7,168
Iron and steel	20,437	10,640	10,054	13,599	4,703

Source: UN Comtrade, March 2014.

**Figure 33. Proportion of Trade (%) with Top Trade Partners, 2012**



Source: UN Comtrade, February 2014.

## AI.5. SUMMARY OF MAJOR AGRICULTURE AND FOOD SECURITY POLICY AND PLANNING DOCUMENTS

**Table 20. Summary of Major Agriculture Food Security Policy and Planning Documents**

Strategy/Component/Policy	Main Objectives	Funding	Description
Liberia Rising 2030	Increase the average Liberian income from its current per capita level of US\$280 to a per capita income above US\$1000 by 2030	GoL with heavy support from development partners	Main poverty reduction strategy prepared with inputs from different stakeholders  All other policies must be consistent with its overall objective
Agenda for Transformation (Aft)	Define the steps to achieve the vision of Liberia Rising 2030	Funding from development partners mostly	Medium term planning for public investment programs  Annually revised to ensure consistency with the Liberia Rising 2030 vision
Aft Pillar 2. Economic Transformation  Section D. Agriculture, Food Security and Nutrition Sector	Promote a robust, competitive and modernized agriculture sector  Improve nutrition for all Liberians	Resources leveraged from foreign direct investment in mining and plantations to support private enterprise  All other funding not specified	Ministry of Agriculture in charge to evaluate purchase of designated food crops from small farmers to create jobs; improve access to credit; and provide training through extension  GoL will develop product standards and support agro-business development
Cooperative Development Act 2010 and Liberia Cooperative Development Regulations of 2010	Develop autonomous, viable, and demand-driven cooperatives through an institution and legal framework	Funding source not specified	Main policies resulted from the Agriculture, Food Security and Nutrition Sector section of the Aft
National Health and Social Welfare Policy and Plan 2011–2021 (NHSWPP)	Improve the health and social welfare status of Liberians by improving maternal and child health and nutrition  Better prevention, control, and management of major diseases; and increasing equitable access to quality health care and social welfare services	Funding source not specified	This policy is stated under Aft Pillar 3 Human Development Section 3. Social protection  In 2011, the MoH published this policy to set the sector strategy for 2012–17 and beyond
National Nutrition Policy	Ensure adequate nutritional intake and utilization for all people living in Liberia, especially the most vulnerable	GoL with heavy support from development partners	Outlines a framework to address the levels of morbidity and mortality due to malnutrition  Focus on improving infant and young child feeding and caring practices for women and children
2012 Draft National Social Protection Policy and Strategy	Improve social protection of most vulnerable populations	All support from development partners	Elaborated by a National Steering Committee for Social Protection and chaired by the Minister of Planning and Economic Affairs, the strategy provides a framework for social protection programs in Liberia
WASH Compact: Water and Sanitation for All: A Global Framework	Increase access to safe water supply and sanitation and improve hygiene practices	Funding source not specified	Established in 2011  Lacks financing for infrastructure investments and human resource and technical capacity to coordinate operations
Liberia Agriculture Sector Investment Program (LASIP)	Identify priority areas from which investment projects aligned with national objectives under the Comprehensive Africa Agriculture Development Programme (CAADP)	Multi-donor Trust Fund, hosted at the World Bank	Establishes public-private partnerships in support of investment growth for the export sectors and concentrate public sector efforts on small-scale farming growth and development

Source: GoL, September 2010, Liberia Agriculture Sector Investment Program Report.; GoL, 2012, Agenda for Transformation Steps toward Liberia RISING 2030.; GoL, 2013, National Social Protection Policy and Strategy.; GoL, 2008, National Nutrition Policy.

## AI.6. SUMMARY OF MAJOR TRADE AGREEMENTS

**Table 21. Summary of Major Trade Agreements**

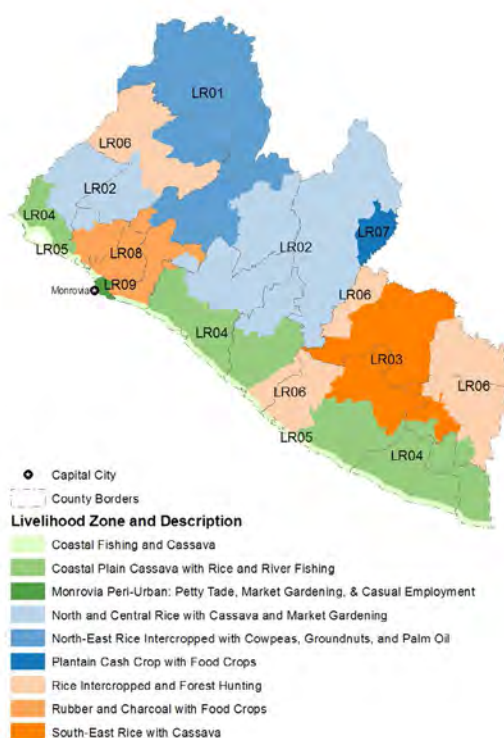
Country/Region	Agreement/Treaty	Main Benefits	Signatory Date
Regional	Mano River Union	Customs union between Liberia, Côte d'Ivoire, Guinea, and Sierra Leone.	1973
Regional	Economic Community of West African States	Customs union promoting trade liberalization between Benin, Bukina Faso, Cape Verde, Gambia, Ghana, Guinea, Guinea-Bissau, Cote d'Ivoire, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo.	1975
United States	African Growth and Opportunity Act	Duty-free exports to the United States.	2000
EU	Everything but Arms	Duty-free exports to the EU.	2001
United States	Trade and Investment Framework Agreement	Established a United States-Liberia Council on Trade and Investment to promote investment and expand trade in products and services.	2007
Multilateral	World Trade Organization (observer status)	Liberia is currently in the accession process.	Applied in 2007

Source: MoCI, 2014, The Republic of Liberia National Export Strategy 2014 - 2018.

## AI.7. LIVELIHOODS

### AI.7.1. Livelihood Zones

**Figure 34. Liberia Livelihood Zone Map, 2011**



Source: Created by USAID-BEST using data from FEWS NET, January 2011, Livelihoods Zoning "Plus" Activity in Liberia.



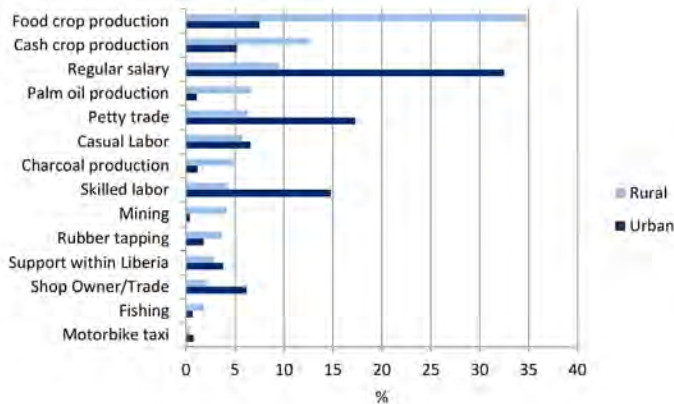
**Table 22. Characteristics of Livelihoods Zones, 2011**

Livelihood Zone	Counties	Main Markets	Shocks and Hazards	Key Income Sources	Select Agroecological Characteristics
LR01: North-East Rice Intercropped with Cowpeas, Groundnuts, & Palm Oil	Lofa, Bong, Gbarpolu	Voinjama, Zorzor, Ganta	Rodent, bird, and grasshopper damage to crops; erratic rain at planting time	Groundnuts, rice, cowpeas, palm oil, vegetables (bitterball, chilies, okra); coffee and cocoa cultivated before the war; have not been reestablished	High rainfall for West Africa (1,500-2,500 mm annually), but lower than the Liberian coast; some of the highest elevations in the country
LR02: North & Central Rice with Cassava & Market Gardening	Nimba, Bong, Rivercess, Grand Bassa, Grand Cape Mount, Bomi, Gbarpolu, Margibi	Ganta, Gbarnga, Saclepea, Monrovia (target market)	Ground hog, bird, and grasshopper damage to crops; erratic rain at planting time	Vegetables, cassava, rice, palm oil, on-farm work	St John River is an important source for small-scale irrigation and the source of fertile soils
LR03: South-East Rice with Cassava	Grand Gedeh, River Gee, Sinoe	Zwedru, Tappita, Saclepea	Erratic rain at planting time; rodent and grasshopper damage to crops	Cassava, rice, on-farm work	Lower elevation than LR01 & LR02 with more erratic rainfall during the crucial sowing and planting period
LR04: Coastal Plain Cassava with Rice & River Fishing	Grand Bassa, Rivercess, Sinoe, Grand Kru, Maryland, River Gee, Grand Cape Mount, Bomi	Monrovia, Buchanan, Kakata, Barclayville, Harper, RobertSPORT	Excessive rain leading to waterlogging or flooding; rodent, caterpillar, and grasshopper damage to crops	Cassava, vegetables, charcoal	Lower elevation and receives more rainfall than the highlands, with more small river networks
LR05: Coastal Fishing & Cassava	Coastal Areas of: Grand Cape Mount, Bomi, Montserrado, Margibi, Grand Bassa, Rivercess, Sinoe, Grand Kru, Maryland	Monrovia, RobertSPORT, Harbel, Buchanan, Cesstos City, Greenville, Barclayville, Harper	Rough seas in the rainy season leading to capsized boats, low catches, and lost nets; flooding of fields	Fish, cassava, charcoal, petty trade	Zone behind the beach or mangrove from a half a kilometer to 5 meters inland, the land tends to be unsuitable for vegetables
LR06: Rice Intercropped & Forest Hunting	Rivercess, Sinoe, Grand Gedeh, River Gee, Gbarpolu	Saclepea, Tapitta, Zwedru	Wind/storms; food price spikes	Bush meat, vegetables, on-farm work, rice	Large forested and sparsely populated area similar to other rice-dominant zones
LR07: Plantain Cash Crop with Food Crops	Nimba	Ganta, Tappita	Cut off from market transport; crop pests	Plantains, cassava, vegetables	Fertile soils rich in potash and phosphorus are conducive to intensive plantain cultivation
LR08: Rubber & Charcoal with Food Crops	Bomi, Bong, Montserrado, Margibi, Grand Bassa	Kakata, Bensonville, Monrovia Central, Red Light	Crop pests and rodents; food price spikes	Rubber, charcoal, vegetables, petty trade, commerce, daily hire, cassava and other tubers	Largely agricultural land with some forest cover; dominated by two large rubber plantations
LR09: Monrovia Peri-Urban: Petty Trade, Market Gardening & Casual Employment	Montserrado	Monrovia Central, Red Light	Food price spikes; garden pests; livestock theft; floods	Vegetables, petty trade, casual work, backyard gardens, trading, government work	Part of the coastal region, which receives the highest rainfalls in the country

Source: FEWS NET, January 2011, Livelihoods Zoning "Plus" Activity in Liberia. and GoL, 2007, Comprehensive Assessment of the Agriculture Sector in Liberia (CAAS-Lib); Synthesis Report.

## A1.7.2. Income Indicators

**Figure 35. Most Common Livelihood Activities (% of HHs), by Activity, 2012**



Source: Created by USAID-BEST using data from WFP, December 2013, Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013.

## A1.7.3. Employment

**Table 23. Men and Women Current Employment\* Status (%) by Age Group, 2013**

Age group	Currently Employed Men	Not Currently Employed Men	Currently Employed Women	Not Currently Employed Women
15-19	32.3	2.3	25.2	1.1
20-24	63.2	4.1	42.9	2.3
25-29	82.6	2.8	57.8	2.8
30-34	93.2	1.4	64.7	2.5
35-39	96.3	1.9	71.4	3
40-44	92.1	2.1	75.8	2.4
45-49	95.5	1.3	74.4	3

Source: LISGIS, MoHSW, et al, 2014, Liberia Demographic and Health Survey 2013.  
\* Current employment means the person has done work in the past seven days prior to the survey.

**Table 24. Men and Women Current Employment\* Status (%) by Area of Residence, 2013**

Residence	Men currently employed	Men not currently employed	Women currently employed	Women not currently employed
Urban	67.9	2.3	49.9	2.5
Greater Monrovia	66.8	2	48.9	2.9
Other urban	69.6	2.8	51.5	1.8
Rural	81.7	2.5	58.6	2

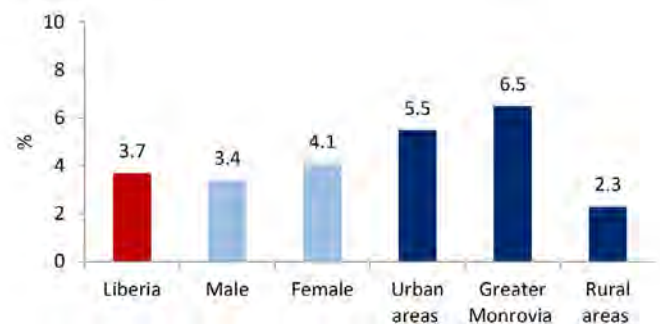
Source: LISGIS, MoHSW, et al, 2014, Liberia Demographic and Health Survey 2013.  
\* Current employment means the person has done work in the past seven days prior to the survey.

**Table 25. Employed Men and Women (%) by Type of Activity and Age Group, 2013**

	Agriculture	Sales/ services	Skilled manual	Unskilled manual	Other
<b>Women</b>					
15-19	45.7	45.7	3.4	1.7	3.5
20-24	39.4	52.6	1.8	2.1	4.2
25-29	35.9	56.4	2.7	0.7	4.3
30-34	39.9	49.5	2.7	2.4	5.5
35-39	37.7	53.2	1.8	1.7	5.6
40-44	46.7	42.6	2.1	2.1	6.5
45-49	54.5	34.6	0.6	1.2	8.8
<b>Men</b>					
15-19	39.6	8.5	14.2	17.2	20.5
20-24	35.1	16.5	14.4	13.6	20.6
25-29	37.1	16.3	16.2	17.4	13.1
30-34	44.7	14.3	13.1	17.5	10.5
35-39	43.6	13.2	11.4	16.1	15.7
40-44	40.3	15.1	11.7	13.9	19.0
45-49	43.4	11.5	13.7	10.8	20.7

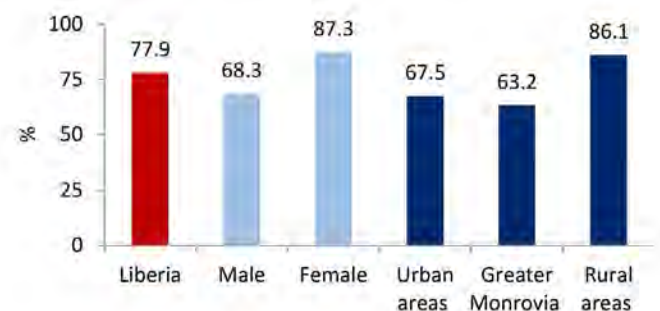
Source: LISGIS, MoHSW, et al, 2014, Liberia Demographic and Health Survey 2013.  
Note: The category other includes professional and managerial, clerical, and domestic jobs. Male activities also include missing data.

**Figure 36. Unemployment (% of Population), 2010**



Source: Created by USAID-BEST using data from LISGIS, February 2011, Report on the Liberia Labour Force Survey 2010.

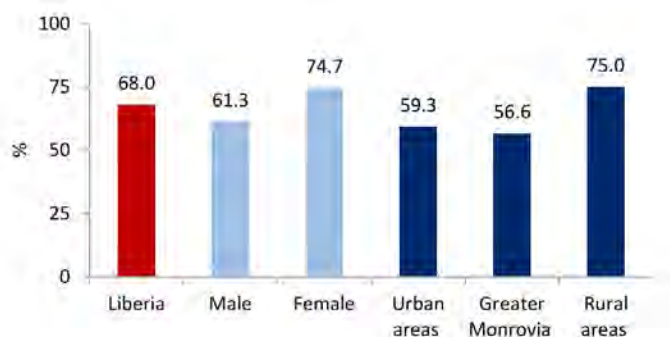
**Figure 37. Vulnerable Employment\* (% of Population), 2010**



Source: Created by USAID-BEST using data from LISGIS, February 2011, Report on the Liberia Labour Force Survey 2010.

\*Vulnerable employment includes own-account workers and contributing family workers. These people generally do not receive any job benefits (e.g., sickness, retirement, health), and their working conditions are less favorable (e.g., no minimum working hour, no job security, under salaried).

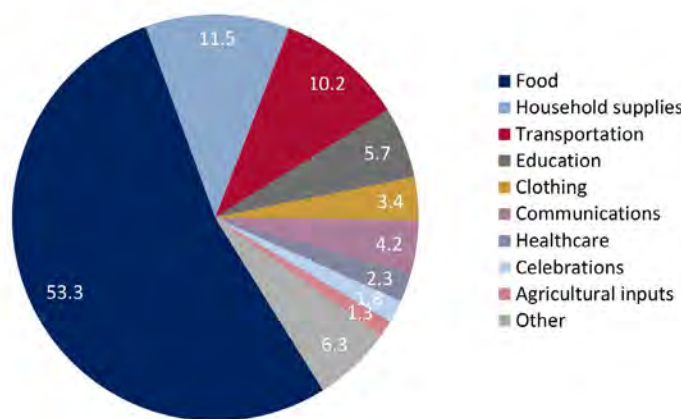
**Figure 38. Informal Employment (% of Population), 2010**



Source: Created by USAID-BEST using data from LISGIS, February 2011, Report on the Liberia Labour Force Survey 2010.

#### AI.7.4. Expenditure Indicators

**Figure 39. HH Expenditure (%) by Category, 2012**



Source: Created by USAID-BEST using data from WFP, December 2013, Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013.

Note: HH supplies include: alcohol, tobacco, soap, detergents, gasoline, and water. Other includes: savings, constructions, labor, taxes, and repayment of debts.

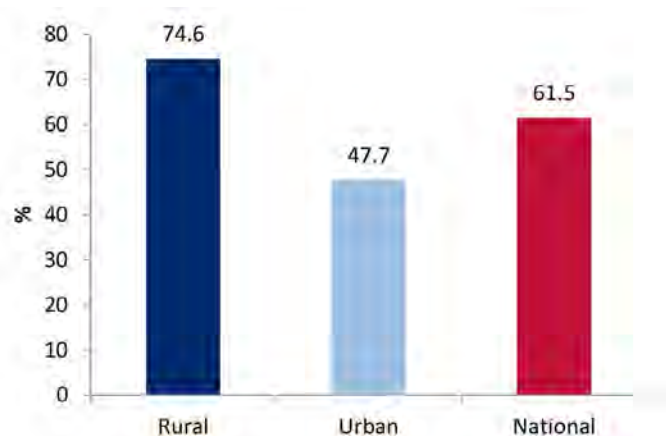
**Table 26. HH (% Nationally) Expenditure on Food, 2012**

Share of Expenditure on Food (%)	% of HHs Nationally
>60	36.69
40-60	39.89
<40	23.41

Source: WFP, 2013, Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013: Executive Summary.

#### AI.7.5. Poverty Indicators

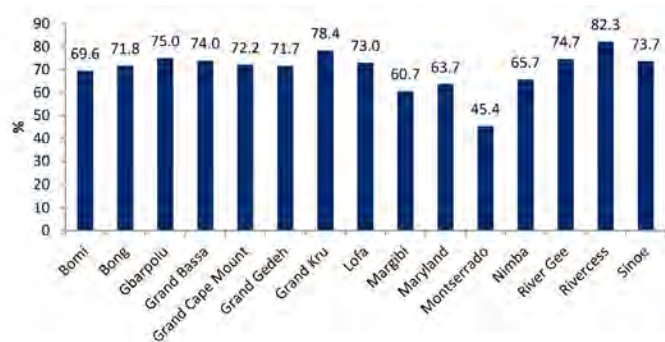
**Figure 40. Poverty Rate (% of HHs) by Area, 2008**



Source: Created by USAID-BEST using data from GoL, April 2013, Agenda for Transformation: Steps Toward Liberia RISING 2030.

Note: Liberia uses the Unmet Basic Needs (UBN) Index for poverty assessments, which examines various basic needs such as quality of housing, employment, asset ownership, safe water, and access to health services in order to determine poverty levels.

**Figure 41. Poverty Rate (% of HHs) by County, 2008**



Source: Created by USAID-BEST using data from GoL, April 2013, Agenda for Transformation: Steps Toward Liberia RISING 2030.

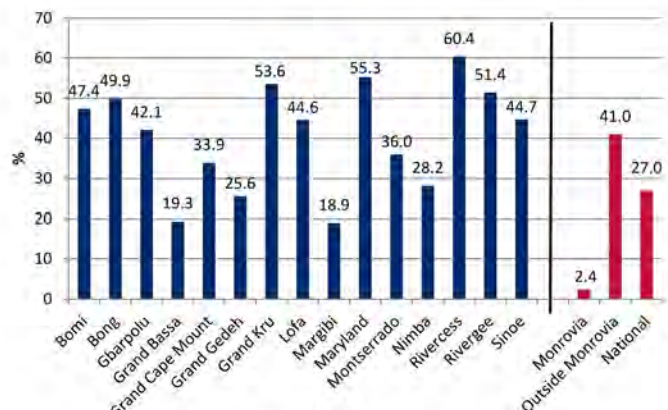
Note: Poverty rates according to the UBN Index.



## AI.8. TYPICAL DIET

### AI.8.1. Food Consumption Patterns

**Figure 42. Low Dietary Diversity (% of HHs) by County, 2012**

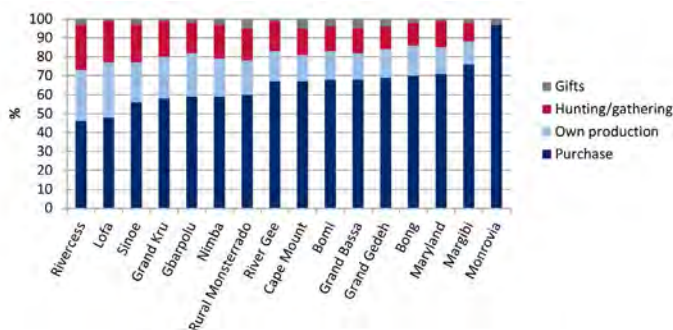


Source: Created by USAID-BEST using data from WFP, December 2013, Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013.

Note: HHs that consumed foods from four or fewer of seven food groups over the course of a seven day recall period are classified as having low dietary diversity.

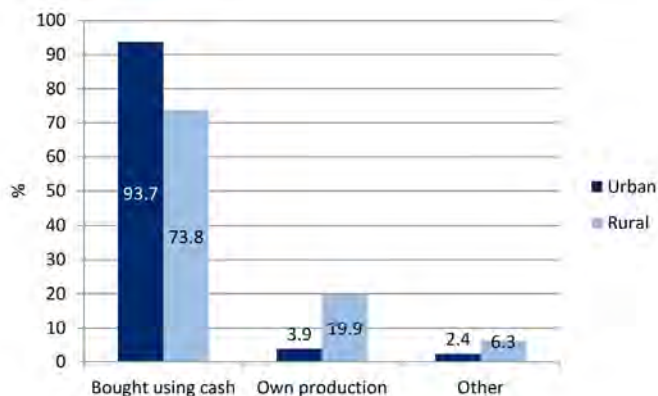
### AI.8.2. Sources of Food

**Figure 43. Sources of Food (%) by County, 2010**



Source: Created by USAID-BEST using data from WFP, October 2010, Comprehensive Food Security and Nutrition Survey 2010.

**Figure 44. Sources of Food (%) by Strata, 2012**



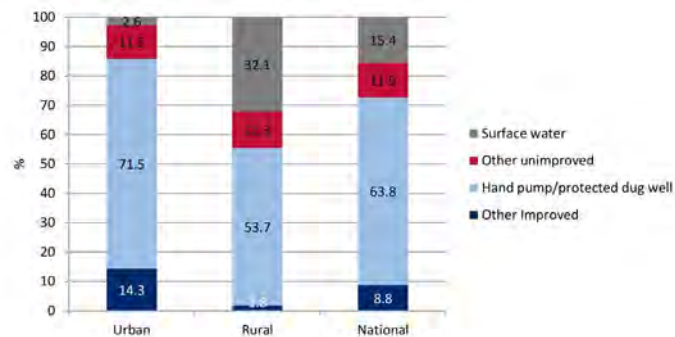
Source: Created by USAID-BEST using data from WFP, December 2013, Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013.

Note: Other includes hunting/gathering, gift, labor exchange, and credit.

## AI.9. WATER, SANITATION, AND HYGIENE

### AI.9.1. Water

**Figure 45. Water Source (% of Population) by Type, 2013**



Source: Created by USAID-BEST using data from LISGIS, MoHSW, et al, 2014, Liberia Demographic and Health Survey 2013.

Note: Surface water includes: river, dam, lake, pond, stream, canal, and irrigation channels. Unimproved sources includes: unprotected dug well, unprotected spring, cart with small tank/drum, surface water; and bottled water. Other improved sources includes: public taps or standpipes, tube wells or boreholes, protected dug wells, protected springs, and rainwater collection.

**Table 27. Characteristics of Drinking Water (% of HHs), 2013**

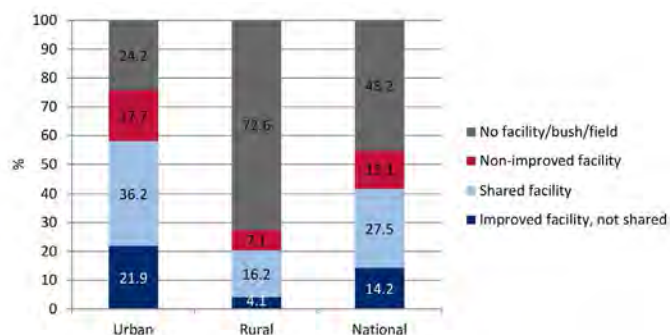
Characteristic	Urban	Rural	National
Source of Drinking Water			
Improved source	85.8	55.5	72.6
Piped water into dwelling/yard/plot	1.9	0.0	1.1
Public tap/standpipe	0.3	0.0	1.8
Hand pump/protected dug well	71.5	53.7	63.8
Other: Tubewell/borehole, protected spring, rain water, bottled/sack water	9.2	1.7	5.2
Non-improved source	14.1	44.4	27.3
Unprotected dug well	6.2	9.2	7.5
Unprotected spring	0.5	2.8	1.5
Tanker truck/cart with small tank	4.8	0.3	2.8
Surface water	2.6	32.1	15.4
Time to obtain drinking water (round trip)			
Water on premises	9.7	4.8	7.6
Less than 30 minutes	66.6	76.7	71.0
30 minutes or longer	19.0	16.7	18.0
Don't know/missing	4.6	1.8	3.4
Water treatment			
Bleach/chlorine added	12.9	7.0	10.4
No treatment	80.5	90.2	84.7
Percentage using an appropriate treatment method*	18.0	9.0	14.1

Source: LISGIS, MoHSW, et al, 2014, Liberia Demographic and Health Survey 2013.

\* Appropriate water treatment methods include: boiling, bleaching, PUR, WaterGuard, filtering, and solar disinfecting.

## AI.9.2. Sanitation

**Figure 46. Sanitation Facilities (% of Population) by Facility Type, 2013**



Source: Created by USAID-BEST using data from LISGIS, MoHSW, et al, 2014, Liberia Demographic and Health Survey 2013.

Note: Open defecation includes: disposal of human feces in fields, forests, bushes, open bodies of water, beaches or other open spaces. Unimproved facilities include: pit latrines without a slab or platform, hanging latrines, and bucket latrines. Shared unimproved facilities are shared between two or more HHs. Improved facilities are not shared or public and include: flushes/pour flushes to either a piped sewer system, septic tank, or pit latrine; ventilated improved pit latrines, pit latrines with slabs, and composting toilets.

**Table 28. Sanitation Facilities (% of HH) by Facility Type, 2013**

Type of Facility	Urban	Rural	National
Improved, not shared facility	21.9	4.1	14.2
Flush/pour flush piped to sewer	1.0	0.0	0.6
Flush/pour flush to septic tank	16.4	0.9	9.7
Flush/pour flush to pit latrine	0.6	0.2	0.4
Ventilated improved pit (VIP) latrine	3.4	2.1	2.8
Pit latrine with slab	0.5	0.9	0.7
Improved, shared facility	36.2	16.2	27.5
Flush/pour flush piped to sewer	0.8	0.0	0.4
Flush/pour flush to septic tank	8.2	0.6	4.9
Flush/pour flush to pit latrine	2.0	0.1	1.2
Ventilated improved pit (VIP) latrine	19.2	12.3	16.2
Pit latrine with slab	6.0	3.1	4.7
Non-improved facility	41.9	79.7	58.3
Flush/pour flush not to sewer/septic tank/pit latrine	1.0	0.1	0.6
Pit latrine without slab/open pit	6.2	5.3	5.8
Bucket	0.4	0.0	0.2
Hanging toilet/hanging latrine	9.7	1.7	6.2
No facility/bush/field	24.2	72.6	45.2
Other	0.5	0.0	0.3

Source: LISGIS, MoHSW, et al, 2014, Liberia Demographic and Health Survey 2013.

## AI.10. ACCESS TO HEALTH SERVICES

**Table 29. Time Required to Travel to Nearest Health Facility (% of HH) by Strata, 2013**

Time	Urban	Rural
<20 min	45.0	15.8
20-40 min	32.1	16.5
40-60 min	11.0	15.4
61-120 min	5.0	24.1
>120 min	3.9	25.8
Don't know	2.9	2.3

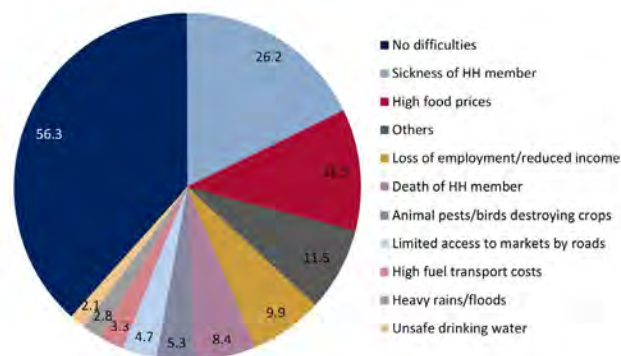
Source: LISGIS, MoHSW, et al, 2014, Liberia Demographic and Health Survey 2013.

Note: Time to get to nearest health facility by usual means of transportation

## AI.11. SHOCKS AND COPING

### AI.11.1. Main Shocks

**Figure 47. Shocks Experienced in the Last Seven Days (% of HHs), by Shock Type, 2012**



Source: Created by USAID-BEST using data from WFP, December 2013, Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013.

### AI.11.2. Main Coping Strategies

**Table 30. Consumption Related Coping Strategies in the Last Seven Days (% of HHs), 2012**

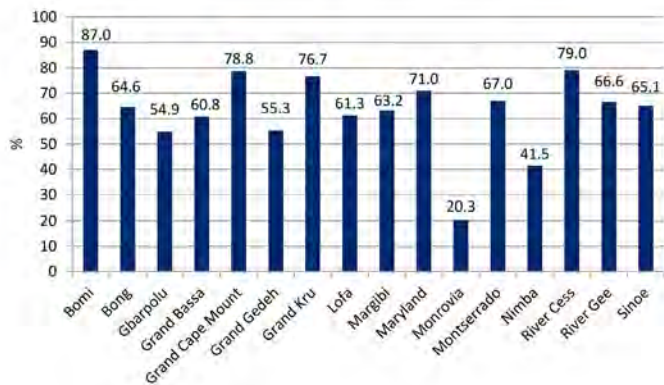
Coping Strategy	% of HH
Limit portion size at mealtime	32
Rely on less preferred food	29
Reduce number of meals eaten in a day	22
Purchase food on credit	16
Restrict consumption by adults in order for small children to eat	15
Total HHs employing one or more coping strategies	42

Source: WFP, December 2013, Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013.

## AI.12. DISTRIBUTION OF FOOD INSECURITY

### AI.12.1. Food Insecurity by Region

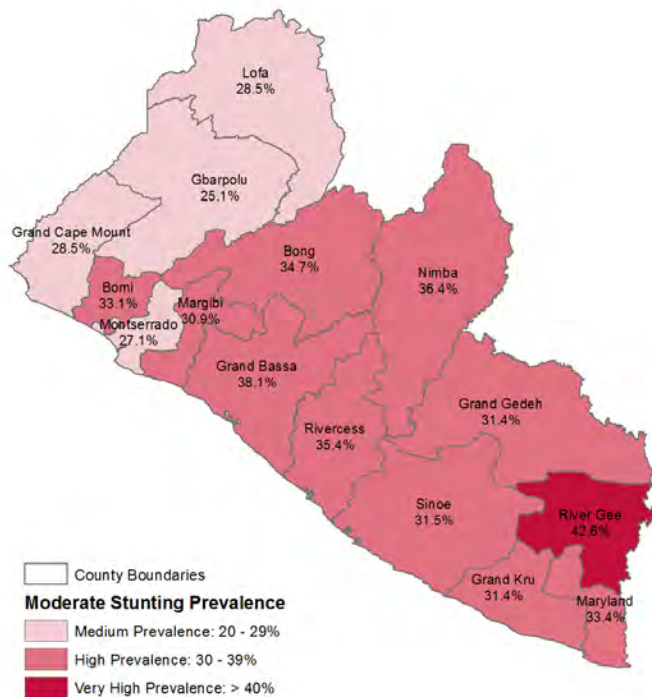
**Figure 48. Food Insecurity Prevalence (% of HH) by County, 2012**



Source: Created by USAID-BEST using data from WFP, December 2013, Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013.  
 Note: In the 2013 CFSNS WFP defines food insecurity using a composite indicator consisting of food consumption scores and the share of HH expenditure devoted to food. The numbers displayed here include both HHs that are food insecure and moderately food insecure according to that indicator.

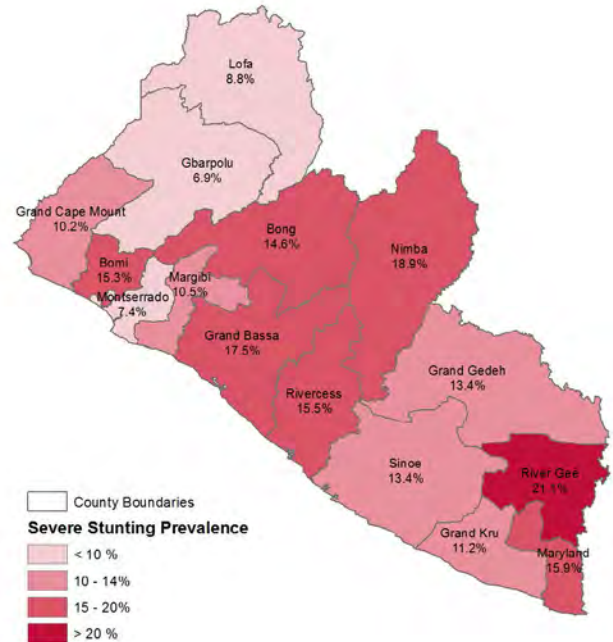
### AI.12.2. Malnutrition Rates

**Figure 49. Prevalence of Moderate Stunting (% of Children 0-59 months) by County, 2013**



Source: Created by USAID-BEST using data from LISGIS, MoHSW, et al, 2014, Liberia Demographic and Health Survey 2013.  
 Note: Moderate stunting = height for age <-2 z-score. Categories medium to very high provided for moderate stunting prevalence are WHO international threshold standards.

**Figure 50. Prevalence of Severe Stunting (% of Children 0-59 Months) by County, 2013**



Source: Created by USAID-BEST using data from LISGIS, MoHSW, et al, 2014, Liberia Demographic and Health Survey 2013.  
 Note: Severe stunting = height for age <-3 z-score.



## AI.13. RECENT FOOD SECURITY ASSESSMENTS

The following table provides a summary of the major food security reports for Liberia including select findings.

**Table 31. Major Reports Relevant to Food Security**

Author, Publication Date, Title	Data Collected	Objective	Methodology	Select Findings
LISGIS, MoHSW, et al, 2014, Liberia Demographic and Health Survey 2013.	March - July 2013	Track health and nutrition indicators	<ul style="list-style-type: none"> <li>Nationally representative survey down to the county level</li> <li>Men and women of reproductive age</li> <li>9,333 HHs</li> <li>Collects data on fertility, health, childhood mortality, and nutrition</li> </ul>	<ul style="list-style-type: none"> <li>31.6% of children under 5 (U5s) are moderately stunted and 12.3% are severely stunted. River Gee County has the highest rates: 42.6% moderate and 21.1% severe</li> <li>55% of children under 6 months are exclusively breastfed, up from 29% in 2007</li> <li>Mortality rates in the five years preceding the survey - infant mortality: 54 deaths/1000 live births; child mortality: 42; U5 mortality: 94</li> </ul>
WFP, December 2013, Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013.	August - November 2012 (harvest season)	Provide information on food security, vulnerability to food insecurity, and nutritional status	<ul style="list-style-type: none"> <li>Nationally representative survey down to the county level</li> <li>13,719 randomly selected HHs in 15 counties (130 districts)</li> <li>Took anthropometric measurements for 11,133 children 6-59 months</li> <li>Interviewed 154 traders</li> </ul>	<ul style="list-style-type: none"> <li>36% of U5s are stunted. Fifteen counties still have critical levels of chronic malnutrition (30-39%)</li> <li>27% of Liberians have low dietary diversity</li> <li>On average Liberians spend 53% of their income on food</li> <li>18% of HHs are food insecure, 31% are moderately food insecure</li> <li>Liberians are heavily dependent on the market for food, 93.7% of food for urban HHs is purchased and 73.8% for rural HHs</li> </ul>
WFP and UNHCR, February 2013, Joint Assessment Mission: Ivorian Refugee Operation in Liberia.	November 2012	Assess the food and non-food needs of refugee populations on both sides of the border of Liberia and Côte d'Ivoire	<ul style="list-style-type: none"> <li>Indicative HH survey of 90 HH interviews</li> <li>Key informant and HH interviews, focus group discussions, observation, and secondary data sources</li> <li>Surveyed 4 refugee camps and 5 refugee relocation communities</li> <li>Collected data on food availability, expenditure, land access, and income earning activities</li> </ul>	<ul style="list-style-type: none"> <li>In December 2012 the total refugee population living in Liberia was 64,781 (or 23,945 HHs), 81% of this population are women, and children under the age of 18</li> <li>Refugee expenditure is mostly for fresh vegetables, fish, and condiments to compliment the WFP ration</li> <li>Global Acute Malnutrition rate in the camps is 3.9%, within WHO acceptable levels, according to an October 2012 nutrition survey</li> <li>38% of refugees in the camps lack a balanced and adequate diet: (3% poor food consumption, 35% borderline)</li> <li>Many refugees in relocation communities have gained temporary access to land, primarily to grow cassava and rice</li> </ul>
WFP, October 2010, Comprehensive Food Security and Nutrition Survey 2010.	May - October 2010 (lean season)	Provide information on food security, vulnerability to food insecurity, and nutritional status	<ul style="list-style-type: none"> <li>Nationally representative survey down to the county level</li> <li>8,002 HHs surveyed</li> <li>Anthropomorphic measurements for 7,586 U5s and mothers between 18 and 49 years (6,800 were children aged 6-59 months)</li> <li>Collected data on food security, nutritional status, markets, agriculture, and expenditures</li> </ul>	<ul style="list-style-type: none"> <li>41% or 1.2 million people have unacceptable food consumption</li> <li>41.8% of U5s are stunted, 2.8% are wasted, 14.9% are underweight</li> <li>Over half of the counties have stunting rates above WHO threshold of 40%</li> <li>Share of household expenditure on food is 53%</li> </ul>

Source: LISGIS, MoHSW, et al, 2014, Liberia Demographic and Health Survey 2013.; WFP, December 2013, Liberia Comprehensive Food Security and Nutrition Survey (CFSNS) June 2013.; WFP and UNHCR, February 2013, Joint Assessment Mission: Ivorian Refugee Operation in Liberia. WFP, October 2010, Comprehensive Food Security and Nutrition Survey 2010.

## AI.14. BULLETINS

**Table 32. Main Bulletins Relevant to Food Security**

Publication Title, Source	Frequency	Description
Liberia Market Price Monitor, WFP	Quarterly	<ul style="list-style-type: none"> <li>• Focuses on commonly consumed staples as well as other essential commodities that can be exchanged for food</li> <li>• Summarizes domestic price trends, showing seasonal variation for key staples and global price variations, and compares domestic markets prices in the current month to the previous year, as well as on a month-to-month basis</li> </ul>
Liberia Country Brief, WFP, GIEWS	Quarterly	<ul style="list-style-type: none"> <li>• Presents the overall food security situation in Liberia</li> <li>• Provides information on crop production, food price trends, HH food access, environmental conditions, and macro-economic indicators</li> </ul>
Liberia Remote Monitoring Report, FEWS NET	Semi-annually	<ul style="list-style-type: none"> <li>• Provides an assessment of the current food security situation and a forecast for the upcoming three-six months</li> <li>• Uses data from key partners to conduct scenario development and analyses; presents information on agriculture, climatic conditions, markets, and food security</li> <li>• As there is no FEWSNET office in Liberia, this report is produced by a coordinator working from a regional office in Guinea</li> </ul>
Household Food Security and Nutrition Surveillance, WFP	As needed	<ul style="list-style-type: none"> <li>• Tracks select food security and nutrition indicators among certain communities over time in order to identify trends</li> <li>• Presents information on rates of food insecurity, shocks and coping mechanisms, key demographic characteristics, and employment</li> <li>• Reference data are from 2008</li> </ul>
Liberia Price Bulletin, FEWS NET	As needed	<ul style="list-style-type: none"> <li>• Focuses on trends in staple food prices</li> <li>• Provides information on monthly prices in the current year in urban centers, and compares current trends with five-year average prices</li> </ul>

Source: Liberia Market Price Monitor, WFP. Liberia Country Brief, WFP, GIEWS. Liberia Remote Monitoring Report, FEWS NET. Household Food Security and Nutrition Surveillance, WFP. Liberia Price Bulletin, FEWS NET.

# ANNEX 2

## CONTACTS

Table 33. Contacts

NAME (LAST)	NAME (FIRST)	ORGANIZATION	TITLE
Anderson	Emmanuel	WFP/Liberia	Director, VAM Unit
Baawo	Kou	MoHSW	Director, Nutrition
Bafaie	Boima	DAI	Deputy Chief of Party, Technical, FED
Baker	Emmanuel	MoPW	Deputy Program Director
Ballayan	Amos	WFP/Liberia	National Programme Officer
Barry	Omaru	Fouta Corporation	Manager
Bernard	Henry	BIVAC	Deputy Managing Director
Braun	Hendrike	PHC	Country Coordinator
Carto	Rueben	Efficient Logistics Services	General Manager/Partner
Dickerson	Barbara	USAID/Liberia	Deputy Mission Director
Diop-Faye	Adama	WFP/Liberia	Representative and Country Director
Enders	Jonathan	OICI	Program Manager, HANDS
Fuggle	Brian	APM Terminals	Managing Director
Gbadyu	Joe-Hoover	USAID/Liberia	FFP Specialist and Alternate Mission Disaster Relief Officer
Gongar	Erasmus	MoT	Research & Policy Officer
Jallah	Paul	MoA	Assistant Minister, Regional Development, Research and Extension
Jocson	Noli	WISHH Liberia	Country Representative
Kadouh	Chaouki	K&K Trading Corp	Manager
Kpakolo	Alibaba	MoPW	Chief of Feeder Roads, Liberian Swedish Feeder Roads Project
Legg	James	WFP/Liberia	Country Coordinator, P4P
Loergering	Steven	OICI	Chief of Party, HANDS
Luz	Agnes	DAI	Chief of Party, FED
Marvie Jr.	Stephen	MoCI	Assistant Minister
Masurenko	Christian	Putu Iron Ore Mining Company	CEO
McClain	Charles	MoA	Deputy Minister, Planning and Development
Milapo	Job	ACDI/VOCA	Commodity Operation Manager, LAUNCH
Morlu	James	MoPW	Director of Highways
Mugabi	Emmanuel A	ACDI/VOCA	Chief of Party, LAUNCH
Mullins	Jolene	PCI/Liberia	Country Representative, Health and Nutrition, LAUNCH
Mykers	Marion	NFA	Coordinator
Nyambaka	Robert	DAI	Agri-business Specialist, FED
Saint-Jean	Etienne	WFP/Liberia	National Logistics Officer
Sheriff	Noah	APM Terminals	Commercial Manager
Sow	Mohammed	Fouta Corporation	President
Street	Nicholas	Mary's Meals	Country Director
Tall	Ousman	MoA	Assistant Minister, Planning
Taplah	Anthony	CARI	Associate Researcher, Agricultural Engineer
Thompson	Rod	USAID/Liberia	FFP Officer
Wureh	Ambrose	MoPW	Director, Labor-based Road Rehabilitation



# ANNEX 3

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