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FOOD AND ENTERPRISE DEVELOPMENT (FED) PROGRAM FOR LIBERIA

FISCAL YEAR 2015 ANNUAL REPORT

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Photo Caption: : Lettuce growing in the rain shelter at Mensah cluster in Montserrado County (bottom photo). A rain shelter in Careysburg, Monsterrado County, cabbage and cucumber are grown inside this rain shelter (Top photo).

Acronyms

ACC	Agriculture Coordination Committee
AEDE	Agency for Economic Development and Empowerment
APDRA	Association Pisciculture et Development Rural en Afrique
AVTP	Accelerated Vocational Training Program
AYP	Advancing Youth Project
BSTVSE	Bureau of Science, Technical, Vocational and Special Education
BWI	Booker Washington Institute
CARI	Center of Agriculture Research Institute
CAHW	Community Animal Health Worker
CBF	County Based Facilitator
CBL	Central Bank of Liberia
CGCWYEP	Chosen General Church Women and Youth Empowerment Project
CILSS	Permanent Interstates Committee for Drought Control in the Sahel
CoE	Center of Excellence
CYNP	Community Youth Network Program
DAI	Development Alternatives, Inc.
DCOP	Deputy Chief of Party
ECOWAS	Economic Community of West African States
ECREP	Evangelical Children Rehabilitation Program
EMMP	Environmental Mitigation and Monitoring Plan
ENA	Essential Nutrition Action
EO	Extension Officer
FtF	Feed the Future
FGD	Focus Group Discussion
FUN	Farmer Union Network
GAP	Good Agriculture Practices
GBCC	Grand Bassa Community College
G-CAP	Green Coast Agricultural Program
GoL	Government of Liberia
GPS	Global Positioning Systems
IBEX	Investing in Business Expansion Liberia
IFAD	International Foundation for Agriculture Development
IFDC	International Fertilizer Developmental Center
IITA	International Institute for Tropical Agriculture
IP	Implementing Partner

IPM	Integrated Pests Management
IQC	Indefinite Quantity Contract
ISFM	Integrated Soil Fertility Management
IREX	International Research and Exchanges Board
KRTTI	Kakata Rural Teachers Training Institute
LABEE IPG	Liberia Agriculture Business Enabling Environment Inter-Agency Policy Group
LAUNCH	Liberia Agriculture, Upgrading Nutrition & Child Health
LEAD	Liberia Entrepreneurial & Asset Development
LCCC	Lofa County Community College
LIFE	Livelihood Improvement for Farming Enterprises
LIPAS	Liberia Integrated Professional Agriculture Service
LISGIS	Liberia Institute of Statistics & Geo-Information Services (LISGIS)
LMEP	Liberia Monitoring and Evaluation Program
LNGO	Local Non-Governmental Organization
MFI	Micro Finance Institution
MIS	Market Information Systems
MoA	Ministry of Agriculture
MoCI	Ministry of Commerce and Industry
MoE	Ministry of Education
MoHSW	Ministry of Health and Social Welfare
MoP	Muriate of Potash
MoU	Memorandum of Understanding
MSME	Micro, Small and Medium Enterprise
MVSA	Monrovia Vegetable Sellers Association
NDA	National Diploma in Agriculture
NCCC	Nimba County Community College
NIC	National Investment Commission
NSL	National Standards Laboratory
PERSUAP	Pesticide Evaluation Report and Safer Use Action Plan
PIDS	Performance Indicator Database System
PMP	Performance Management Plan
PUA	Peri-Urban Agriculture
R&RF	Rights & Rice Foundation
RFTOP	Requests for Task Order Proposals
RRA	Rapid Rural Appraisal
SRI	System of Rice Intensification
TAMIS	Technical Administrative Management Information System

TSP	Triple Super-Phosphate
TVET	Technical, Vocational Education and Training
UDP	Urea Deep Placement
UL	University of Liberia
USADF	United States African Development Foundation
USAID	United States Agency for International Development
VET GOV	Veterinary Governance in Africa
WAAPP	West Africa Agriculture Productivity Program
WAFP	West Africa Fertilizer Project
WASP	West Africa Seed Project
WFP	World Food Programme

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Background

The USAID Food and Enterprise Development (FED) Program is a flagship USAID-funded Feed the Future (FtF) Initiative development program in Liberia that was launched in September 2011. USAID FED uses an all-inclusive strategy incorporating micro, small, and medium-sized enterprise (MSME), farmers, processors, suppliers, women, and youth while partnering with the Government of Liberia (GoL) and local civil society to achieve food security.

The goal of USAID FED is to increase food availability, utilization, and accessibility by building an indigenous incentive structure that assists agricultural stakeholders in adopting commercial approaches.

This incentive structure is built upon:

- Improved technology for productivity and profitability
- Expanded and modernized input supply and extension systems
- Commercial production, marketing, and processing
- Enterprise services
- Workforce development

USAID FED works with the Ministry of Agriculture (MoA), civil society, and the private sector in providing communities access to agricultural inputs, extension services, nutrition messages, processing services, market information, transportation, credit, agro-business education, training, and business development services.

In five years, USAID FED's thrust to expand market linkages is expected to lead to substantial increases in income and job opportunities. USAID FED aims to significantly boost the production, processing, marketing, and nutritional utilization of rice, cassava, and vegetables, and to enhance the productivity of goat farming in the counties covered by the program.

These initiatives are being carried out in Bong, Lofa, Nimba, Grand Bassa, Montserrado, and Margibi counties. USAID FED focuses on these counties because they are situated along regional development corridors that are crucial in promoting intra- and inter-county commerce. These growth corridors are expected to improve food availability and access for all Liberians.

USAID FED's methodology is market-led and value chain-driven; it is committed to indigenous capacity building, with a specific focus on Liberia's women and youth.

USAID FED is implemented by five partners: Development Alternatives, Inc. (DAI), Winrock International, International Fertilizer Development Center (IFDC), Louisiana State University (LSU), and The Cadmus Group.

Executive Summary

In spite of the Ebola virus disease outbreak, USAID FED has seen overwhelming success in program implementation in fiscal year 2015 (FY15). The project has exceeded targets in 19 out of its 25 indicators, and met or almost met targets in five other indicators, with one indicator—installed milling capacity—to be completed in the first quarter of FY16.

FtF No.	Indicator	LOP Target	FY15 target	FY15 Actual	FY15 Target % Accomplished	Cumulative Year 1-4	FY16 target
4.5.2-13	Number of rural households benefitting directly from USG interventions	102,679	83,905	**84,794**	101%	96,392	112350
4.5.2-5	Number of farmers and others who have applied new technologies and management practices as a result of USG assistance	114,088	88,566	**88,152**	100%	88,566	116800
4.5.2-2	Number of hectares under new technologies or management practices as a result of USG assistance	20,201	16,834	**17,223.0**	102%	17,223.03	20573
4.5.1-28	Hectares under new or improved/rehabilitated irrigation or drainage services as a result of USG assistance	6,370	5,427	**5,787**	107%	5,787.20	6787
4.5.2-11	Number of private enterprises, producers organizations, women's groups, trade and business associations and community-based organizations (CBOs) receiving USG assistance	2,750	2,292	**4,351**	190%	2,574	5627
4.5.2-42	Number of private enterprises, producer organizations, women's groups, trade and business associations and community-based organizations (CBOs) that applied new technology or management practices as a result of USG assistance	2,750	2,292	**4,351**	190%	2,574	5627
4.5.10	Total increase in installed storage capacity (M3)	12,267	8170	**8,129**	**99%**	**9,940**	**5242**
4.5.2-23	Value of incremental sales (collected at the farm level) attributed to FtF	17,655,965	4,879,108	**7,214,857**	**148%**	**8,436,448**	**13,786,344**
4.5.2-38	Value of new private sector investment in the ag sector or food chain leveraged by FtF implementation	5,178,961	2,405,500	**3,485,336**	**145%**	**4,277,925**	**2,585,200**
4.5.2	Number of jobs attributed to FtF implementation	6,702	1,848	**1,738**	**94%**	**4,367**	**1,649**
4.5.2-12	Number of public-private partnerships formed as a result of FtF assistance	3971	1,795	**2,047**	114%	3,551	1,052
4.5.1-24	Number of agricultural and nutritional enabling environment policies completing the following processes/steps of development as a result of USG assistance	14	6	**6**	100%	13	6
4.5.2-37	Number of MSMEs, including farmers, receiving business development services from USG-assisted sources	43,917	19,185	**22,205**	**116%**	**24,752**	**117,892**
4.5.2-30	Number of MSMEs, including farmers, receiving USG assistance to access loans	21,955	9,000	**10,010**	**111%**	**12,185**	**15,513**
4.5.2-43	Number of firms (excluding farms) or Civil Society Organizations (CSOs) engaged in agricultural and food security-related manufacturing and services now operating more profitably (at or above cost) because of USG assistance	**629**	**250**	**358**	**143%**	**377**	**252**
4.5.2-6	Number of individuals who have received USG supported long-term agricultural sector productivity or food security training	2	2	**2**	100%	2	2
4.5.2-7	Number of individuals who have received USG supported short-term agricultural sector productivity or food security training	201,308	96,024	**108,340**	113%	171,553	51,689
1.1.1	Number of farmers and others with access to improved planting materials	118,138	67,178	**87,211**	130%	87,211	182,480
1.1.2	Number of individuals receiving nutrition messages within agricultural programs as a result of USG assistance	88,133	39,610	**65,103**	164%	98,391	23,030
1.3.1	Total increase in install milling capacity for crop processing (MT)	27,043	10560	**5,796**	55%	20,083	44,000
1.3.2	Number of households with improved diet diversity as a result of USG assistance	**17,627**	**7,922**	**22,335**	**282%**	**22,335**	26,803
1.3.3	Percentage reduction in Post-Harvest Losses (for rice, cassava and vegetables)						
	rice	**15**	**5%**	**80%**	**2%**	**0.80**	**2**
	cassava	**15**	**5%**	**under study**	**10%**		**10**
	vegetables	**15**	**5%**	**73%**	**3%**	**0.73**	**3**
2.2.1	Total amount of financing (cash and in-kind) accessed by farmers and agribusinesses through formal, informal, and embedded services.	**1,454,481**	**751,654**	**$930,362.44**	**124%**	**$1,320,155**	**1,504,456**
3.2.1	Number of individuals who have received training on management and leadership	**14,325**	**19,195**	**23,352**	**122%**	**22,891**	**23,048**
3.2.2	Number of students and Faculty/Administration benefitting from improved academic facilities and programs	4,700	2,500	**2,851**	114%	6,916	4,060

The team has been highly motivated by the positive results of programming in FY14, especially the dramatic increase in rice production that resulted in a surplus unprecedented since the war. In addition to achieving the targets, several highly notable milestones were accomplished that set the stage for sustainability of initiatives and continuing development of the food-based value chains.

Rice Value Chain Development

A total of 19,389 farmers engaged in rice production in FY14 harvested in FY15 on average three metric tons of rice per hectare—150 percent higher than the previous average production of 1.2 metric tons per hectare[1]. As a result of their surpluses, farmers sold approximately 65 percent of their produce from the FY14 crop, whereas they used to sell only 15 percent at the beginning of the project. A total of 7,685 metric tons have been reported sold for US$3.15 million. The timely support of USAID FED to the establishment of Liberia's first industrial rice mill, Fabrar Liberia, the 10 community rice mills housed in rice business hubs (RBH), and the massive procurement by the Ministry of Agriculture made it possible for the surplus produce to be absorbed. Sales went up by 457 percent from US$565,025 in FY14 to US$3,146,171 in FY15; exceeding target for FY15 by 135 percent.

In FY 15, USAID FED opened 3,547 ha of abandoned lowlands. This brings the total lowlands rehabilitated and developed by the project to 5,300 ha. A total of 11,800 ha of lowland and upland were planted with improved varieties of rice by 50,000 farmers with FED support. A total of 51 power tillers have been distributed to demonstrate efficiency, cost reduction, and the ability to reach scale via mechanization. Mechanization together with more efficient use of fertilizer through urea deep placement (UDP) effectively demonstrated that cost can be reduced to $7 per 50 kg bag of paddy rice. This is very important as it addresses the issue of the ability of locally produced rice to compete with imported rice. Harvesting is expected to happen in Q1 and Q2 of FY16 and is anticipated to reach 35,000 metric tons. In anticipation of more surplus production, USAID FED has commenced the construction of nine more rice business hubs equipped with a thresher, solar dryer, rice mill, de-stoner, and warehouse. Total output capacity of rice mills (i.e., Fabrar and the 19 RBHs) established with FED support will reach 29,000 metric tons by November 2015. These rice mills can absorb approximately 45,000 metric tons of paddy rice.

A notable milestone in FY15 is the emergence of entrepreneur-traders who carried out the function of bulking and transporting the paddy rice to processors. In FY 16, more aggregators for paddy rice will be needed. In addition, the distribution channel for locally produced and milled rice has to be established up-country. USAID FED has obtained the commitment of the two largest importers of rice for procurement and distribution of local rice in milled form in Bong and Nimba counties. Meanwhile, paddy rice traders in Lofa are being assisted to also be the distributors of milled rice. The challenge for these small entrepreneurs is financing, especially to cover operating costs in rice-trading, both in paddy and milled form.

A major challenge faced in FY15 was the competition with the private sector posed by the MoA by buying paddy rice at prices that are prohibitive to the private sector. USAID FED campaigned against this market distortion by the government through policy forums and meetings with GoL officials as well as key stakeholders. The President announced during the inauguration of the Fabrar processing plant that the MoA has to stop buying paddy rice. The new Minister of Agriculture also re-affirmed in September 2015 that the MoA will not be involved in buying rice and will instead support the private sector. USAID FED also insisted on local rice procurement for the rice distribution by the World Food Programme (WFP) under the Ebola Response Program in order to not undermine the efforts of the project. Fabrar Liberia and three of the FED-supported RBHs supplied milled rice to WFP for distribution to Ebola-affected communities.

[1] Liberia Agricultural Statistics 2011

Cassava Value Chain Development

In FY15, a total of 17,091 farmers harvested approximately 43,000 metric tons of cassava tubers from 2,400 ha. They obtained 18 to 22 metric tons of cassava tubers per hectare, approximately 2.5 times more than what they would traditionally harvest without USAID FED's intervention. They sold 83 percent of their harvest for US$2.15 million, which is US$1.19 million more – or 125 percent higher – as compared to what they would have earned from their traditional harvest.

Eighty commercial nurseries have been established and are now propagating improved cassava varieties and supplying disease-free cuttings of higher yielding varieties to farmers. Processing capacities of 33 processors have been upgraded from the previous output capacity of 240 metric tons per annum to a current capacity of 480 metric tons.

An additional 13,373 new farmers (bringing the total to 31,016 beneficiaries) were supported with tools, training, and cuttings to grow improved varieties of cassava on 3,565 ha using improved practices. This crop is expected to be harvested starting Q2 of FY16 through Q1 of FY17. Production in FY16 is anticipated to reach 71,000 metric tons. This additional volume of approximately 43,000 metric tons of cassava will further bring prices down, making it more competitive for processors. Investing in large scale processing could now be more attractive to the private sector. To ensure expanded market access for this surplus production, USAID FED has proposed to the Ministry of Commerce and Industry (MoCI) to put in place a 10 percent Cassava Composite Flour policy. This policy would require baked products using flour to incorporate at least 10 percent cassava flour into the wheat flour. Up to 25 percent cassava content does not have a significant impact on the taste of bread. It is attractive to bakers, as it could mean cost-savings of approximately US$4.6 million due to the lower cost of cassava flour. It also means reduction in the importation bill of approximately US$8.6 million. More importantly, it could mean an additional market for approximately 43,000 metric tons of cassava tubers. The Minister of Commerce is supportive of the policy. To support implementation of the policy once passed, there is a need in FY16 to identify and support investment in a large scale cassava flour/starch processing plant, as well as support the downstream markets, such as the bakeshops in adapting their equipment and processes to implement the policy.

Vegetable Value Chain Development

Off-season production of high value and domestic vegetables has been made possible with the introduction of improved varieties of higher value vegetable species, good agricultural practices (GAP), establishment of 40 rain shelters, and provision of 188 pumps and drip irrigation kits to 4,617 vegetable farmers. Improved packaging, such as plastic crates, low-tech, affordable cooling technologies, and refrigerated containers have been introduced as part of the efforts to reduce post-harvest losses and extend the shelf life of vegetables. This comprehensive assistance has resulted in a 35 percent increase in production per ha from 4.6 metric tons in FY14 to 6.2 metric tons in FY15, 72 percent higher than FY13. The higher value of the species and improved quality has resulted in better prices, on average 185 percent higher in FY15 in comparison to FY14. The combined increase in volumes and prices resulted in a 526-percent increase in sales from US$251,107 in FY14 to US$1.57 million in FY15, exceeding the fiscal year target by 145 percent. Gross margin per ha has increased by 544 percent from US$1,125 in FY13 to US$7,245 in FY15, and by 500 percent relative to FY14.

USAID FED was gearing up to support the export of okra to Paris, but found a high unmet demand for this in Monrovia. Supermarkets expressed strong desire to buy the okra and all the other high-value vegetables that USAID FED beneficiaries are producing. The prices locally are twice the price offered by the buyer in Paris, hence it was decided to sell the produce locally.

A major challenge for the vegetable growers is access to good quality chemicals for pest and disease control, and USAID FED will focus on addressing this in FY16.

Goat Value Chain Development

The goat value chain suffered from the Peste de Petite Ruminant (PPR) virus outbreak, especially in Lofa and Nimba counties, in the third quarter of FY15. Despite this, the goat herds of USAID FED-supported farmers exhibited dramatic improvements. From a beginning inventory of 5,419 animals, the herds have grown to 16,665 animals at the end of FY15, 63 percent higher than target. Production has increased 218 percent from 3,700 animals in FY14 to 11,755 in FY15, which is 80 percent higher than target. This success in goat production is attributable to improved technologies, such as the use of shelters, vaccination and deworming, improved feeding and animal husbandry, introduction of fattening before selling, and product standardization. USAID FED's objective was to improve the weaning rate from 54 percent at project inception to 80 percent. At the end of FY15, the weaning rate was at 98 percent. In the last three fiscal years, 7,479 kids were born and only 94 died. This means 3,346 kids have been saved as a result of the improved practices. This shows that the USAID FED approach at re-stocking is effective. Sales have increased by 185 percent from US$346,214 in FY14 to US$625,583 in FY15. Herd size of the 3,896 farmers directly benefiting from the shelters is expected to grow by 24 percent and reach a total population of 20,678 by end of FY16. Sales are expected to grow by 72 percent from 6,049 in FY15 to 10,426 animals in FY16. In addition to the 3,896 farmers, USAID FED has trained in FY15 2,500 goat farmers from surrounding communities on mineral salt lick and disease prevention.

Improving Human Nutrition

The mainstreaming of nutrition messages in training and extension delivery has reached approximately 60 percent (65,100) of USAID FED beneficiaries based on a study conducted by the project. Additionally, preliminary results of a household diet diversity survey show that approximately 22,355 households supported by the project since FY14 have improved their diet diversity. Further, preliminary analysis on another study done by USAID FED showed that the increase in incomes of farmers in the rice value chain is resulting in improved diet diversification, as evidenced by a 14.6-percent increase in USAID FED-supported rice farming households now buying vegetables.

Additional major milestones by the end of FY15 are:

1. The introduction of "tuk-tuks," motorbikes with trailers that can carry up to 1.5 metric tons of cargo, which will help farmers in transporting cassava, rice, goats, and other produce to the markets.
2. Rice value chain integrator model established in Lofa with FED support to entrepreneur John Selma, who provides inputs to 195 farmers and will buy back their produce, mill it, and distribute it to retailers for sale in community markets. This is also a platform to promote adoption of fertilizer use via embedded financing. This will be replicated in other major rice producing areas in FY16.
3. A total of 400 metric tons of "certified" rice seeds was harvested in FY15 from 160 ha by 1,375 FED-supported farmers who were trained on seed production by the Central Agricultural Research Institute (CARI) and Africa Rice in FY14. Regular inspection was performed by 15 seed inspectors on these seed production areas. A total of 3,432 trained seed producers planted foundation seeds on 435 ha in FY15 with FED support. Another 164 ha seed production area was jointly supported by FED and Africa Rice. A total of 2,124 metric tons of certified rice seeds of the Nerica 8 and Nerica 19 varieties are expected to be harvested in Q1 of FY16. Total "certified" seed produced will reach 2,524 metric tons by January 2016, representing 84 percent of the FED LOP target.
4. Storage capacity was increased by 7,676 cubic meters.

5. The database system for the Ministry of Agriculture (MoA) has been developed; the data collection and reporting tools have been developed and piloted in the Bong County Office of the MoA.
6. Eleven special studies and surveys were carried out, including on diet diversity, women in agriculture empowerment index (WAEI), impact of increased rice production on household economics, technology adoption, and VSLA as a financing platform for agriculture.
7. USAID FED carried out a survey in August and September 2015 on post-harvest losses. Preliminary results of the survey indicate a possible reduction of 8 percent and 7.27 percent, respectively, for rice and vegetables—from 30 percent in 2011 to 22 percent in 2015 for rice, and from 45 percent in 2011 to 37.3 percent in 2015 for vegetables[2]
8. Extension curricula for goats, rice, cassava, and vegetables have been standardized and training manuals and farming guides have been developed and validated by stakeholders.
9. The ECOWAS seed, pesticide, and fertilizer regulations have been domesticated.
10. Rice policy that recommends replication of USAID FED's approach has been submitted to the Rice Policy Technical Working Group (TWG), which was to submit a rice policy recommendation to the President.
11. A total of 358 micro, small and medium-sized enterprises (MSMEs) have improved their profitability as a result of USAID FED's assistance, and 314 MSMEs have been registered as businesses, exceeding target by 143 percent.
12. A total of 22,205 MSMEs, including farmers, have been assisted in accessing US$930,362 in financing (124 percent of target) through 573 Village Savings and Loans Associations (VSLAs), microfinance institutions, and embedded financing.
13. Four Centers of Excellence (CoEs) have been established with a National Diploma in Agriculture (NDA) program. Syllabi and lesson plans for 30 courses of the program have been prepared. Modern science laboratories have been constructed and outfitted with equipment, power, and water supply. Textbooks and reference materials for effective delivery of the NDA have been provided, and instructors have been trained to deliver the NDA courses.
14. A total of 52,254 or 59 percent of USAID FED beneficiaries who are implementing improved technologies are youth. This represents 132% of FY15 target. Additionally, 25 peri-urban agriculture (PUA) projects involving 500 youth were assisted and are now growing and selling high value vegetables; 86 youth entrepreneurs generated and 124 youth employed in ancillary businesses supporting the value chains.

job-relevant skills development	No. of Youth
Extension aides	25
cassava mill operators	58
rice mill operators	41
subtotal	124

Entrepreneurs	No. of Youth
tuk-tuk operators	24
carpenters	16
blacksmiths	16
powertiller operators	30
subtotal	86

15. Women constitute 46 percent (49,836 out of 108,340) of USAID FED beneficiaries who received training in FY15, and 36,312 of the 88,152 (41%) of beneficiaries who actually implemented improved technologies are women.

[2] Rice baseline is derived from the "Project Appraisal Report: Smallholder Agricultural Productivity Enhancement and Commercialization Project," 2011, and from LASIP; vegetable baseline is taken from "Urban Agriculture in Liberia, A Policy Narrative by Welthungerhilfe, CARE and RUAF," April 2012.

Component One: Increase Agricultural Productivity and Profitability

Task 1A: Increased Productivity and Profitability of the Rice Value Chain

Principal objectives of FY15

During FY15, USAID FED's objectives under the increased production and profitability of the rice value chain task were as follows:

- Support 7,175 new rice farmers to open up 1,908 ha of abandoned lowland area;
- Support 11,025 new rice farmers to cultivate rice on new 2,965 ha of upland area;
- Support 19,389 continuing farmers from FY13 and FY14 to ensure that they continue to produce upland and lowland rice;
- Promote double cropping of lowlands supported by water management infrastructures (spillways) and establish additional sites;
- Enhance adoption of mechanization as well as promoting local processing of paddy rice and fee-based services through community rice business hubs;
- Explore opportunities of supporting large-scale Liberian landowners to produce rice on commercial scale; and
- Develop stronger supply chains for paddy rice linking the farm gate, aggregators, processors and markets.

FY14 rice crop harvests

In FY15, rice farming groups supported by USAID FED in FY14 harvested rice from 3,952 ha of upland and lowland areas and produced an estimated 11,856 MT of paddy rice, based on a survey conducted by USAID FED that showed the average yield across lowland and upland to be 2.833 metric ton per hectare. Reported yields in Tables 1and 2 are slightly lower than estimated totals because farmers often don't report the rice that was given away or consumed.

Table 1: FY14 Upland rice harvests.

County	Ha established in FY14	FY14 Ha harvested YTD	Volume harvested YTD (MT)
Lofa	230	230	542
Nimba	95.32	95.32	267
Bong	1,673.50	1,673.50	3,968
Grand Bassa	490	490	1,176
Total	**2,488.82**	**2,488.82**	**5,954**

Table 2: FY14 Lowland rice harvests.

County	Ha established in FY14	FY14 Ha harvested in FY15	Volume harvested YTD (MT)
Lofa	170	170	626
Nimba	483.22	483.22	1,386
Bong	748.5	748.5	2,801
Grand Bassa	25	25	99
Total	**1,426.72**	**1,426.72**	**4,912**

Despite the Ebola virus disease outbreak, surplus harvests of paddy rice were recorded in Lofa County during quarters one and two.

The finding of a study done by USAID FED shows that rice-farming households supported by USAID FED have increased their rice harvest by 72 percent per household on the average—from 18 bags from the 2012 crop to 31 bags from the 2014 crop.

Figure 1: Farmers harvesting FY14 lowland rice in Fuama, Bong County.

Rice sales from FY14 crop

In FY15, USAID FED-assisted rice-farming groups supported in FY14 sold a total of 7,685 MT of paddy rice for a value of US$3,146,171.

Figure 2: Farmers with aggregated rice in Voinjama, Lofa County.

Table 3: FY14 rice sales.

County	Sales Volume YTD (MT)	Sales value YTD (US$)
Lofa	2,447	$1,051,492
Nimba	893	$357,035
Bong	3,656	$1,462,244
Grand Bassa	689	$275,400
Total	**7,685**	**$3,146,171**

Total gross margin in FY15 from the FY14 rice crop reached US$4.15 million, which is 90 percent more than the gross margin in FY14 and 26 percent higher than the target for FY15. This can be attributed to a combination of the opening up of 1,426 hectares of lowland and the massive buying of the Ministry of Agriculture at prices higher than the buying price of the private sector. Additionally, sales of seed rice have not been segregated resulting in high gross margin per hectare amounting to US$1049, which is four percent higher than FY14, and 25 percent higher than target. The average farm gate price for paddy rice at US$20/50 kg bag remains uncompetitive. The milled rice cost at this price comes to approximately US$37.50/50 kg bag at the factory level. Imported rice in recent months costs US$31/ 50 kg bag landed at the port. For the private sector to be competitive farm gate prices of paddy rice should not be more than US$13/ 50 kg bag. . In line with the objective of improving competitiveness of local rice versus imported rice, the success of work in this value chain may not be measured in terms of increase in gross margin per hectare, but rather total gross margin, reduced cost of production per kg of rice produced, and competitiveness of the milled product with imported rice.

Improving productivity and profitability of upland rice

In FY15, USAID FED assisted an additional 11,296 beneficiaries (6,787 men and 4,509 women) to cultivate an additional area of 2,965 ha of uplands in Bong, Nimba, Lofa and Grand Bassa counties (Table 4).

Table 4: FY15 new area under upland rice production.

County	Number of beneficiaries	Male	Female	Targeted ha for FY15 production	Number of ha planted by Q3	Number of ha planted by Q4	Total number of ha planted YTD
Lofa	1,912	934	978	420	378	42	420
Nimba	4,550	2684	1,866	182	182	0	182

Bong	4,064	2599	1,465	2030	1,735	295	2030
Grand Bassa	770	570	200	333	228	105	333
Total	**11,296**	**6787**	**4509**	**2,965**	**2,523**	**442**	**2,965**

USAID FED established 297 ha of demonstration sites, which were used to train and demonstrate improved technologies, e.g, improved seeds varieties, fertilizer, chemicals, and ISFM (crop rotation with legumes) to 297 lead farmers (248 men and 49 women) and their group members. It is anticipated that these farmers will produce at least 7,200 MT of paddy rice during Q1 of FY16 from demonstration sites.

Technical assistance and extension services to these farmers were provided by five LNGOs[3], USAID FED technical experts, and extension staff. These five LNGOs added 82 jobs to their workforce.

By the end of September 2015, more than 21,000 farmers are cultivating upland rice using improved technologies on 6,500 ha. All the 2,965 ha of new areas had been planted with NERICA 14. In addition, 594 ha was planted with legumes to demonstrate ISFM through crop rotation and is expected to yield at least 475 MT of cowpeas and peanuts (an average of 800 kg per ha) valued at US$830,000 in FY16.

Expanding lowland rice production

In FY15, USAID FED assisted 11,145 new beneficiaries (6,062 men and 5,092 women) to cultivate rice on newly rehabilitated lowland area totaling 3,546 ha in Bong, Nimba, Lofa and Grand Bassa counties (Table 5)[4].

Table 5: FY15 new area under lowland rice production.

County	Number of beneficiaries for FY15	Male	Female	New targeted ha for FY15	Ha planted in Q3	Ha planted in July	Ha planted in August	Ha planted in September	Ha planted YTD	Ha pending planting
Bong	3,280	1,826	1,454	1,655	350	595	591	118	1,653	1
Lofa	2950	1500	1,450	970	7	79	411	377	874	96
Nimba	4435	2437	1,998	836	169	81	325	246	821	15
Grand Bassa	489	299	190	86	7	59	6	10	82	4
Total	**11,154**	**6,062**	**5,092**	**3,547**	**533**	**814**	**1,333**	**751**	**3,430**	**116**

USAID FED established 267 ha of demonstration sites, which were used to train and demonstrate improved technologies, e.g., improved seeds varieties, fertilizer, chemicals, and mechanization to 267 lead farmers (238 men and 29 women) and their group members. It is anticipated that these farmers will produce at least 15,962 MT of paddy rice during Q1 and Q2 of FY16 from demonstration sites.

[3] The LNGO's sub-contracted by FED are Agriculture Relief Services (ARS) for Nimba, Community Youth Net Work Program (CYNP) for Bassa, Green Coast Agriculture Program (G-CAP) for upland in Bong, Action for Silver Community Organization (ASCO) for lowland in Bong and Rural Agriculture Agency (RAA) for Lofa.

[4] The original target of 1,908 ha as per the FY15 work plan was increased to 3,546 ha after USAID FED made a decision to continue providing support to beneficiaries during the Ebola Virus Disease outbreak period

By the end of September 2015, a total of 28,000 farmers assisted in FY13, FY14, and FY15 were cultivating rice on 5,300 ha of lowland areas using improved technologies such as improved rice varieties, better water management infrastructures, nursery, transplanting in lines, fertilization, and weeding.

Technical assistance and extension services to these farmers were provided by five LNGOs, FED technical experts and extension staff.

By the end of September 2015, all the new areas comprising of 3,430 ha had been planted with NERICA L-19 with the balance of 116 ha to be completed before the end of October 2015.

Enhancing mechanization for lowland rice production

Toward ensuring that lowland rice farmers have access to mechanized services, USAID FED trained and supported 30 youth entrepreneurs to establish power tiller enterprises under cost-share arrangements. The 30 youth entrepreneurs were trained on power tiller operations and mechanical maintenance from June 15-19 in Gbarnga, Bong County. An official ceremony to hand over the 30 power tiller equipment to the youth entrepreneurs took place on July 16, in Suakoko, Bong County. Each youth entrepreneur will support land preparation and till 48 hectares of USAID FED-assisted lowlands in order to meet their cost-share obligations[5].

Figure 3: Power tiller handover ceremony in Suakoko, Bong County.

By the end of September, the 30 power tiller entrepreneurs had tilled a total of 634 ha of lowlands (or 44 percent of the target 1,440 ha of lowland as part of their cost-share) across the four core counties (Table 6). It is anticipated that the entrepreneurs will complete the balance 806 ha in FY16.

Table 6: Power tiller distribution to youth entrepreneurs by county.

County	Number of power tillers provided	Target Cost Share Ha	Ha tilled in August	Ha tilled in September	Total Ha tilled in FY15	Ha to be tilled in November FY16 (double cropping)	Ha to be tilled in FY16 (Lowland Rice)
Bong	10	480	104	100	204	65	211
Lofa	9	432	67	50	117	65	250
Nimba	10	480	187	78	265	65	150
Grand Bassa	1	48	37	11	48	0	0
Total	**30**	**1,440**	**395**	**239**	**634**	**195**	**611**

In addition to the 30 power tillers given to young entrepreneurs, USAID FED also provided power tillers to the rice business hubs (RBHs). A total of 51 power tillers were used in providing mechanized services to the farmers. The use of power tillers is reducing cost of land preparation by approximately US$50 per hectare, thereby reducing the cost of rice production.

Figure 4: Paddy drum seeder used for planting in lowland field.

[5] The cost of a power tiller is US$4,800. Each entrepreneur will till 48 ha at U
obligation

USAID FED distributed 20 paddy drum seeders and 20 cono-weeders to the counties for onward distribution to the rice business hubs. These paddy drum seeders and cono-weeders will be used to demonstrate the use of mechanization and reduction of labor in lowland rice production in FY16. Each of the 19 rice business hubs will receive one paddy drum seeder and one cono-weeder, which will enable them to provide fee-based services for weeding and planting.

Promoting the use of fertilizers in upland and lowland rice production

During Q3 of FY15, USAID FED procured 600 leaf color charts, which will be used to guide farmers to determine the sufficiency or insufficiency of nitrogen in the rice crops to enable them to provide the required nitrogen application during a given time.

Figure 5: Cono-weeder used for weeding in lowland rice.

From June 9-11, 2015, USAID FED's Senior Rice Technical Specialist trained 10 LNGO and 8 USAID FED extension staff (16 men and two women) in Gbarnga, Bong County on how to use the leaf color charts to determine fertilizer requirements. The extension staff were also trained on irrigated rice, rice fallows, rice fallow pulse, and ratooning. A total of 564 lead farmers have in turn been trained by these extension staff. It is anticipated that these leaf color charts will help increase fertilizer adoption rates in FY16.

Promoting two rice crops per year

FY14 water management infrastructure sites:

In FY14, USAID FED established 12 spillway sites with head dykes to promote double cropping on 50 ha supported by the water management infrastructure. Out of the 50 ha targeted, only 15 ha (or 30 percent of the target area) were planted with a second crop and 52 MT of paddy rice harvested at an average of 3.5 MT per ha during FY15 (Table 7). Some farmers did not plant a second crop because they were waiting for additional assistance from USAID FED in terms of inputs (seeds and fertilizers). Other farmers were simply not used to planting a second crop of rice and did not know how to go about it. Still other farmers focused on producing other crops such as vegetables in the uplands.

Table 7: Hectares under double cropping that have been harvested.

County	Number of Ha under double cropping	Number of Ha harvested in Q3	Volume of harvest (MT)	Number of Ha harvested in August	Volume of harvest (MT)	Total number of Ha harvested	Total volume of harvest (MT)
Bong	4	4	14	0	0	4	14
Lofa	6	2	5	4	15	6	20
Nimba	5	0	0	5	18	5	18
Total	**15**	**6**	**19**	**9**	**33**	**15**	**52**

FY15 water management infrastructure sites:

In FY15, USAID FED established 30 new water spillways to support double cropping on additional 160 ha. By the end of September 2015, a total of 30 spillways with head dykes had been constructed in Bong, Nimba, Lofa and Grand Bassa counties (Table 8). These spillways sites, if fully double cropped, have the potential to produce 840 MT of paddy rice valued at US$320,000 in Q1 and Q2 of FY16.

Table 8: FY15 spillway sites.

County	Targeted number of spillways for FY15	Number of spillways completed in Q3	Number of spillways completed in July	Number of spillways completed in August	Number of spillways completed in September	Total number of spillways completed YTD	Number of spillways pending completion
Bong	10	3	4	2	1	10	0
Nimba	6	0	0	5	1	6	0
Lofa	11	10	0	1	0	11	0
Grand Bassa	3	0	0	1	3	3	0
Total	**30**	**13**	**4**	**8**	**5**	**30**	**0**

USAID FED will be deploying a Rice Technical Specialist (STTA) during Q1 of FY16 who will provide technical assistance to farming groups on the 42 sites in order to ensure that they produce a follow-on crop.

Figure 6: FY15 spillway site in Bazagizia Town, Voinjama District, Lofa County.

Enhancing post-harvest management practices

FY14 Rice Business Hubs (RBHs):

In FY14, USAID FED established nine rice business hubs in Bong, Nimba, Lofa and Grand Bassa counties. In FY15, USAID FED continued to provide technical assistance (coaching on operations and maintenance of the machines, record keeping, and business management) to these RBHs through business service providers under Component 2 to ensure that they are in a position to operate profitably. These RBHs benefited a total of 19,000 rice farmers.

Eight of these RBHs milled and sold 128 MT of rice valued at US$95,980 during the reporting period. Most of the rice inventory was sold to community markets and the World Food Programme. The ability of these RBHs to operate profitably beyond the USAID FED program will hinge on their entrepreneurial capabilities to market and provide embedded and fee-based services to farmers. To build this capability, USAID FED will continue to provide technical support to these RBHs in order to strengthen their capacity to manage and grow their business and provide services to farmers in a sustainable way.

FY15 Rice Business Hubs:

In FY15, USAID FED planned to establish nine more RBHs (Table 9).

Table 9: Rice Business Hub Locations.

County	RBH location FY14	RBH location FY15
Lofa	Serkonnedu	Foya

	David Selma Town	Kanjella
	Foya town	Borlilow
Nimba	Dumpa	Zpluapa
	Payee	Karnplay
	Boweh	Gorkor's town
Grand Bassa	Kpelle Town	
Bong	Garmue	Salala
	Bongmines	Zoweitown
	Totota	Sinjay
Total	**10**	**9**

During Q2 of FY15, USAID FED contracted two construction firms—B-COM Construction and SEMOG Group of Companies—to construct nine RBHs. An A&E firm was also contracted to provide quality control oversight to the construction of the additional RBHs.

Figure 7: Construction workers at the RBH site at Sinyea, Bong County.

The construction of the RBHs commenced in August 2015. The nine selected communities have provided local materials valued at approximately US$123,000 as part of their cost-share contribution toward construction. As the communities were contributing local materials such as sand and gravel, delays were experienced in the delivery of their cost-share due to heavy rains during August and September. It is anticipated that the nine RBHs will be completed in November 2015. This delay resulted in USAID FED's inability to complete its target of installing 10,560 metric tons additional milling capacity.

In the first quarter of FY16, USAID FED will equip the RBHs with a rice mill, thresher, de-stoner, and power tillers and provide them with training as well as business development services to ensure that they operate efficiently and profitably.

In addition, one of the FY14 rice business hubs managed by Arise and Shine farmers' association in Totota, Bong County was completed in FY15.

Stimulating private sector investments in commercial rice production

In FY15, USAID FED explored the possibility of supporting large-scale Liberian landowners through cost-share agreements to open up commercial production of paddy rice on their lowlands. A total of six land owners were identified and 861 ha of potential lowlands on their rural farmlands were mapped. However, the majority of these investors could not show proof of capacity to meet their cost share beyond land contribution. Based on USAID FED's assessment, these investors need additional funding from external sources to actually implement commercial rice farming.

Figure 8: Fabrar's CEO Fabio Lavlanet buying rice from farmers in Voinjama, Lofa County.

On April 9, Fabrar Liberia Inc.'s processing facility was officially inaugurated by Her Excellency Madam Ellen Johnson Sirleaf, the President of the Republic of Liberia. This occasion was also attended by Her Excellency Honorable Deborah Malac, the U.S. Ambassador to Liberia, and by high-level USAID Liberia officials, as well as Government officials from the Ministry of Agriculture (MoA), Ministry of Commerce and Industries (MoCI), and representatives of the legislature. During the ceremony, President Sirleaf expressed her gratitude to USAID FED for supporting Fabrar in creating market access for Liberian farmers and adding value to the local rice.

Figure 9: Her Excellency Madam Ellen Johnson Sirleaf, the President of the Republic of Liberia opening the facility.

In FY15, Fabrar Liberia Inc. procured a total of 412 MT of paddy rice valued at US$152,400 from USAID FED-assisted farmers in Bong and Lofa counties. During the same year, Fabrar Liberia Inc. sold a total of 382 MT of milled rice valued at US$283,665 to institutional buyers. For enterprises like Fabrar to compete with imported rice, the pricing of paddy rice landed in his factory would need to reduce from US$20 to no more than US$16.50 per 50 kg bag. Further, the industrial recovery rates during milling and processing will need to be increased from the current 65 percent to ideally 70 percent. This can be achieved through establishing a parboiling system at the mill.

Due to the absence of Weinco's key management personnel during the Ebola Virus Disease outbreak period, discussions on a possible GDA with Weinco was stalled and only resumed in August 2015. Fabrar engaged in discussions with Weinco to explore the possibilities of partnering together to provide embedded services to rice farmers in FY16. Under this arrangement, which is yet to be finalized, it is proposed that Weinco will supply fertilizer to rice farmers through Fabrar, and the farmers will pay back the cost of fertilizer through paddy rice. Fabrar will then pay Weinco for the cost of fertilizer supplied. It is anticipated that a formal agreement will be reached by Q1 of FY16.

Task 1B: Increased Productivity and Profitability of the Cassava Value Chain

Harvest and sales of FY13 cassava crop in FY15

During FY13, a total of 2,074 cassava farmers were assisted by USAID FED to cultivate cassava tubers on 1,037 ha. These farmers commenced harvesting in May 2014 and completed harvesting in June 2015. A total of 18,068 MT was harvested from 968 ha during FY15 (Table 10). This is in addition to 652 MT harvested from 51 ha during the period July to September 2014.

Table 10: FY13 Cassava crop harvests (MT) and area (Ha).

County	Area planted FY13 crop (Ha)	Expected harvest FY13 crop (MT)	Q1 (Oct-Dec)		Q2 (Jan - Mar)		Q3 (Apr - June)		Total Volume harvested of FY13 Crop in FY15 (MT)	Total Area Harvested of FY13 in FY15 (Ha)
			Vol	Area	Vol	Area	Vol	Area		
Bong	33	719	61	3	736	32	0	0	797	35[6]
Nimba	284	6,241	1,945	106	714	40	2340	130	4999	276

[6] Area harvest is higher by two hectares because farmers decided to add more and reported to USAID FED only at harvest.

Lofa	23	504	36	1	493	23	0	0	529	24[7]
Grand Bassa	697	12,818	526	30	903	48	10,314	573	11,743	651
Total	**1,037**	**20,282**	**2,568**	**140**	**2,846**	**143**	**12,654**	**703**	**18,068**	**986**

A total of 16,889 MT of FY13 cassava tubers were sold for US$1,180,024 during the FY15 period (Table 11). This is in addition to 652MT of cassava tuber that was sold for US$89,759 in FY14.

Table 11: Cassava crop sales in volume (MT) and value (US$).

County	**Q1 (Oct-Dec)**		**Q2 (Jan - Mar)**		**Q3 (Apr - June)**		**Total Volume harvested YTD of FY13 Crop (MT)**	**Total sales value YTD of FY13 (US$)**
	Vol	**Value**	**Vol**	**Value**	**Vol**	**Value**		
Bong	61	4,433	580	37,383	0	0	641	41,816
Nimba	1927	247,653	553	71,400	2,340	299,520	4,820	618,573
Lofa	37	2503	13	956	0	0	50	3,459
Grand Bassa	527	35,204	537.3	68,412	10,314	412,560	11,378	516,176
Total	**2,552**	**289,793**	**1,683**	**178,151**	**12,654**	**712080**	**16,889**	**1,180,024**

Harvest and sales of FY14 cassava crop in FY15

In FY14, 12,000 cassava farmers were assisted by USAD FED to cultivate cassava on 2,400 ha using improved technologies. A total of 43,200 MT was expected to be harvested by these farmers (at an average of 18 MT per ha). These farmers commenced harvesting from April 2015 and will continue harvesting through November 2015, for a total of eight months. By the end of September, a total of 21,429 MT was harvested from 1,191 hectares of FY14 crop (Table 12). Grand Bassa recorded the highest harvest (almost 98 percent of its targets) because planting in the county commenced earlier when compared to other counties.

Table 12: FY14 Cassava crop harvests (MT) and area (Ha) harvested.

County	**Area planted (Ha)**	**Expected Harvest (MT)**	**Q2 (Jan-Mar)**		**Q3 (Apr-Jun)**		**Q4 (Jul-Sep)**		**Total volume harvested from FY14 Crop (MT) in FY15**
			Vol	Area	Vol	Area	Vol	Area	
Bong	480	8,640	56	3	557	31	2,795	155	3,408
Nimba	960	17,280	0	0	2,896	161	2,032	113	4,928
Lofa	240	4,320	0	0	142	8	191	11	340
Grand Bassa	720	12,960	1,215	68	6,966	387	4,572	254	12,753
Total	**2,400**	**43,200**	**1,271**	**71**	**10,561**	**587**	**9,590**	**533**	**21,429**

A total of 19,083 MT of FY14 cassava tubers were sold for US$969,418 (35 percent of projected sales value) during the FY15 period (Table 13). Grand Bassa had the highest sales of US$507,850.

Table 13: Cassava crop sales in volume (MT) and value (US$).

County	**Expected sales volume (MT)**	**Expected sales value (US$)**	**Q2 (Oct-Dec)**	**Q3 (Jan-Mar)**	**Q4 (Apr-Jun)**	**Total Sales Volume YTD of FY14 Crop (MT)**	**Total Sales Volume YTD of FY14 (US$)**

[7] Same case as footnote no. 6

			Vol	Value	Vol	Value	Vol	Value	Vol	Value
Bong	6912	552960	0	0	557	39,727	2,771	169,821	3,328	209,548
Nimba	13824	1105920	0	0	1,097	140,816	1,978	95,919	3,075	236,735
Lofa	3456	276480	0	0	141	10,346	62	4,939	203	15,285
Grand Bassa	10368	829440	1215	47,649	6,942	274,441	4,320	185,760	12,477	507,850
Total	**34,560**	**2764800**	**1215**	**47,649**	**8,737**	**465,330**	**9,131**	**456,439**	**19,083**	**969,418**

Cassava in Liberia is harvested on a staggered manner, and some are consumed and given away, while some are sold. Often the reports are understated due to failure to record harvest diligently. To get a more accurate estimate, USAID FED carried out a survey which found that yields range from 18MT to 22MT per hectare. While the reported harvest in FY15 was 39,497 MT, FED estimates that total harvest is at least 43,200 MT based on a conservative estimate of an average yield of 18MT per hectare.

A total of 35,972 MT of cassava tubers were reported sold for US$2,149,442. The rest of the harvest was consumed by the households or given away to neighbors and friends.

Figure 10: One of the cassava screening sites in Lofa.

The production volume in FY15 is up by 131 percent from 18,666 metric tons in FY14 to 43,200 metric tons in FY15. The total gross margin has increased by 77 percent from US$1.29 million in FY14 to US$2.28 in FY15. The gross margin achieved, however, is lower than expected by 15 percent, due to the 23-percent drop in the price of cassava, which is apparently caused by the increased availability of rice within the community. This indicates the need for expansion of the absorptive capacity of the processing segment of the value chain.

Facilitating access to high yielding cassava varieties

In FY15, CARI continued to conduct inspections and monitor the 11 improved varieties imported from IITA in Nigeria on two screening sites in Lofa County. The two sites were planted with 34,000 cuttings while 10,000 cuttings were screened at CARI in Suakoko, Bong County.

CARI conducted two inspections during quarters one and two to test adaptability and susceptibility of the varieties to both biotic and abiotic factors. During the inspections, it was observed that two varieties at the CARI screening sites in Bong County were infected by cassava mosaic disease (CMD). The disease was, however, not observed on USAID FED screening sites in Lofa.

During June of quarter three, CARI officially released nine varieties (i.e. IITA – TMS – 9000583, IITA – TMS – 01/1412, IITA – TMS – 30572, IITA – TMS – 01/0040, IITA – TMS – 980505, IITA – TMS – 950289, IITA – TMS – 920057, IITA – TMS – 961632 and IITA-TMS- 9000581) after they were found to be adaptable and suitable for further multiplication in different Liberia agro-ecological zones. These varieties are resistant to CMD and Cassava Bacterial Blight (CBB) and are high yielding, giving over 18 MT/Ha on average with low cost inputs.

In Q1 of FY15, USAID FED made a determination of the number of cuttings required for distribution to 40 commercial nurseries that were intended to be established in FY15.

Two of the nine varieties—IITA - TMS-IBA-98/0581 and IITA – TMS – 01/1412—are palatable and thus suitable for household consumption by the farmers with the latter being bio-fortified with vitamin A, hence important in the fight against hunger and malnutrition, while the seven are suitable for industrial use and thus important sources of income for the households.

Distribution of improved cuttings to commercial nurseries:

(This is reported under Input Supply)

Linking *kuus* and cassava farmers to commercial nurseries:

During quarter three, USAID FED facilitated meetings between 16 commercial cassava nurseries owners and 196 cassava *kuus* across the four counties. By the end of September, a total of 9,399 bundles valued at US$46,995 had been sold by the commercial nurseries to both FED and non-FED assisted farmers (Table 14).

Table 14: Cassava cuttings sales by commercial nurseries.

County	No. of *Kuus*	Target No. of bundles to be supplied	Q3		Q4		No. of bundles supplied YTD	Value of bundles YTD (US$)
			No. of bundles	Value of bundles (US$)	No. of bundles	Value of bundles (US$)		
Bong	125	1,625	1,625	8,125	15	75	1,640	8,200
Nimba	268	3,484	1,800	9,000	2,067	10,335	3,867	19,335
Lofa	75	975	272	1,360	1,160	5,800	1,432	7,160
Grand Bassa	180	2,340	2,340	11,700	120	600	2,460	12,300
Total	**648**	**8,424**	**6,037**	**30,185**	**3,362**	**16,810**	**9,399**	**46,995**

<u>Enhancing knowledge on improved technologies and varieties</u>

Support 12,960 <u>new</u> farmers in 648 *kuus* for FY15 cassava production:

In Q1 of FY15, USAID FED enlisted 12,960 new cassava farmers in 648 *kuus*. By the end of Q2, all the 648 *kuus* had signed MoUs with USAID FED (Table 15).

Table 15: FY15 new beneficiary recruitment.

County	FY15 farmer targets	Total FY15 farmers identified YTD	Male		Female		No. *kuus* YTD
			No.	*%*	*No.*	*%*	
Bong	2,500	2,500	1,268	51	1,241	49	125
Nimba	5,360	5,360	2,791	52	2,569	48	268
Lofa	1,500	1,500	900	60	600	40	75
Grand Bassa	3,600	3,600	2,356	65	1,244	35	180
Total	**12,960**	**12,960**	**7,333**	**57**	**5,627**	**43**	**648**

By the end of September, the 648 *kuus* had prepared 3,565 ha of new area with mounds and ridges and had completed planting (Table 16). These fields will be ready for harvesting by quarter three of FY16.

Table 16: Land preparation and planting (hectares) for new areas in FY15

County	Target Ha for FY15	Ha planted in Q3	Ha planted in Q4	Total number of Ha YTD
Bong	688	617	71	688
Nimba	1,474	1,474	0	1,474
Lofa	413	6	407	413
Grand Bassa	990	574	416	990
Total	**3,565**	**2,671**	**894**	**3,565**

Train 324 *kuu* leaders on GAP and ISFM and disseminate extension materials:

During Q2, 324 *kuu* leaders (188 men and 136 women) were trained on Good Agricultural Practices (GAP) and integrated soil fertility management (ISFM) as seen in Table 17 below.

Table 17: Cassava Kuu leaders trained in GAP and ISFM.

County	FY15 *Kuu* leaders trained	No. men	Female
Bong	80	47	33
Nimba	85	45	40
Lofa	75	36	39
Grand Bassa	84	60	24
Total	**324**	**188**	**136**

GAPs such as the use of mounds and ridges was discussed. The Integrated Soil Fertility Management (ISFM) approach of intercropping using peanuts was demonstrated to each of the different *kuus*. Each demonstration plot received 13 bundles of cuttings of improved cassava variety for the purpose of demonstrating the improved technologies (Table 18).

Table 18: Demonstration fields established in FY15.

County	Number of Bundles Required	Number of Carica 1 Bundles	Number of Carica 2 Bundles	Number of TMS Series Bundles	Number of demos
Bong	1,625	541	541	541	125
Nimba	3,484	1,162	1,162	1,162	268
Lofa	975	325	325	325	75
Grand Bassa	2,340	780	780	780	180
Total	**8,424**	**2,808**	**2,808**	**2,808**	**648**

In quarters three and four, USAID FED distributed 4,861 kg of peanut seeds to the 648 *kuus* to demonstrate ISFM through intercropping on the demonstration fields (Table 19). The peanuts rejuvenate soil fertility and reduce soil erosion by serving as a cover crop. These peanut seeds were planted on a total area of 162 ha. It is

anticipated that these will produce 130 MT of peanuts, which will be replanted as well as sold to provide a supplementary income of US$260,000 to the groups.

Table 19: Peanuts distribution by County.

County	No. of *kuus*	Vol of peanuts to be supplied (Kg)	No. of *kuus* supplied with peanuts in Q3	Vol. of peanuts supplied in Q3 (Kg)	No. of *kuus* supplied with peanuts in Q4	Vol. of peanuts supplied in Q4 (Kg)	No. of *kuus* supplied with peanuts YTD	Vol. of peanuts supplied YTD (Kg)
Bong	125	938	125	938	0	0	125	938
Nimba	268	2,010	268	2,010	0	0	268	2,010
Lofa	75	563	75	563	0	0	75	563
Grand Bassa	180	1,350	109	855	71	495	180	1,350
Total	**648**	**4,861**	**577**	**4,366**	**71**	**495**	**648**	**4,861**

Contracting of LNGOs:

In Q1 of FY15, five LNGOs were subcontracted by USAID FED to provide technical assistance and monitoring of the implementation of the cassava value chain activities in the four counties. These include TECURD, LIPAS and RAA, CWAP and LYADI in Bong, Nimba, Lofa, and Grand Bassa counties, respectively. They started implementation in Q2 of FY15.

Improving access to market information and markets:

During Q1 of FY15, 17 micro-processors were identified for assistance. They signed MoUs for a partnership with USAID FED. During the same period, 54 staff (43 women and 11 men) from the micro-processing enterprises in the rural areas received training on business development services in Gbarnga, Bong County and Kakata, Margibi County.

In Q1, RASA Liberia Inc., one of the Monrovia-based processors, conducted trial runs in processing cassava chips using tubers sourced from USAID FED farmers from Grand Bassa County. Another trial on fortification was done by RASA Liberia Inc. in July using 6 MT of Carica 2 tubers to determine the efficiency of their processing machines and actual tuber requirements for optimal processing. The results of the trials are yet to be received as analysis is being conducted from an overseas laboratory in India.

Figure 11: Processors and farmers pose for a photo after their meeting in Lofa.

In Q2, USAID FED facilitated meetings between the Monrovia-based processors (Liberia Business Incubator [LBI], FALAMA, YEAHD Agri-Processing and RASA Liberia) and the cassava production groups in Bong,

Nimba, Lofa, and Grand Bassa counties. Information on required volumes and varieties was discussed during the meeting. Agreements on weight, price per metric ton, weekly supply volumes, and payment terms were negotiated. As a result of these meetings, two Monrovia-based processors (RASA Liberia Inc. and LBI) purchased eight metric tons of cassava from USAID FED farmers in Bong and Grand Bassa counties valued at US$810, while FALAMA and YAEHD Agri-Processing Center purchased more than six metric tons from non-FED farmers during that quarter.

Two Monrovia-based processors—Falama Inc. and YEAHD—procured a total of 47 MT valued at US$3,464 of cassava fresh tubers from both FED and non-FED farmers during September. This was processed into products such as *gari*, cassava chips, *fufu*, and flour. The General Service Agency for Ebola holding center, Paynesville Bakery Association, and more than 12 supermarkets are among the buyers of these products.

Facilitating access to financial services for processors

Determine baselines, hardware and financial needs for 16 microprocessors:

In addition to the 16 micro-processors who were assessed to determine their processing capacity across the counties in FY14, 13 more from Bong and Nimba counties were assessed and evaluated in Q1 of FY15, thus bringing the total to 29. These were selected based on their ability to cost-share, coordinate linkage between production, processing, and marketing, and their close proximity to local or regional markets within the cassava production clusters supported by USAID FED. Twenty-two of them qualified for small asset assistance.

Procure and distribute processing equipment for 22 micro/ small processors on cost share:

A total of 22 micro-processors supported by FED in FY15 received modern processing equipment in Q2 valued at US$107,100 to upgrade their processing capacities and all these had been installed and were operational by July of Q3. These included motorized graters, double screw presses, *gari* dryer beds and 100 Kg suspension weighing scales. To help in the installation, in addition to the USAID FED Agro-Technician, two additional mechanical technicians were hired in July to expedite the process.

Table 20: List of processors with expanded capacities.

County	Number of processors	Number of processors supplied with modern equipment
Bong	11	11
Nimba	6	3
Lofa	3	3
Grand Bassa	3	2
Montserrado	6	3
Total	**29**	**22**

Three out of the four medium-sized Monrovia-based processors also received modern equipment to increase their processing capacities. This included 100 Kg digital weighing scales, motorized graters, 15KVA generators, cassava peelers (petrol 75hp), hammer mills, cassava roasters for *gari* production, cassava dryers (#12 tray size), ag stitching machines, impulse sealers for polyethene bags and cassava sifters c/w 4 graded. All the different pieces of equipment are provided on a cost-share arrangement. Total cost of the equipment funded by USAID FED reached

US$164,700. For their part, the processors provided the building structure, outfitting, and water supply. All these processors also received technical and business advisory support to improve the profitability of their operations.

The Liberia Business Incubator (LBI) was inaugurated on May 20 by Government of Liberia's Speaker of the House Alex Tyler and H.E. U.S. Ambassador Deborah Malac. LBI invested US$35,760, while USAID FED provided US$44,950 worth of processing equipment.

Link processors to financial service providers

The capital needs of 29 micro-processors were assessed in Q2. Twenty-five microprocessors were linked to LEAD, a microfinance institution, for possible financing toward expansion of their facilities. Seven processors applied for loans and only one of them from Nimba County got a loan of US$5,000. The other six did not qualify. LEAD is yet to submit a detailed report on why the six processors failed the due diligence.

Monitor efficiency of operations and profitability of processors

By the end of September, 19 processors (three micro-processors and 16 small processors) are actively procuring and processing cassava tubers from both USAID FED and non-FED farmers. Raw cassava tuber procurement by the processors has increased 144 percent from 20.4 metric tons before FED's assistance to 49.7 metric tons five months after the upgrading of their facilities. Employment has also increased by an additional 53 jobs, from 16 laborers to 69 laborers at the end of September 2015. By the end of September 2015, the volume of processed cassava products from USAID FED-assisted processors based in the counties has reached 95 MT valued at US$14,202. However, it was observed that there was a drop in volume of cassava tubers procured for processing over the last quarter of FY15. This is attributed to the heavy rains that made it hard for processors to dry the processed cassava products like flour, *fufu*, and *gari*. However, the drop in volumes of supplies is compensated for by an increase in the prices reaching up to US$19 per 70 kg, where it used to be only US$5.3 per 70 kg bag.

However, all the cassava presses supplied to the microprocessors had to be recalled as they were found to be defective during processing. The vendor sent out a team of technicians in September to repair the presses at his own cost based on existing warranty on the equipment. It is anticipated that all the repairs on all 22 presses will be completed and equipment returned to beneficiaries before the end of October. This will also increase the capacity of the press from 0.5 to 1 MT.

The cassava presses augment the current processing capacity of the processing centers. The mechanized graters have substantially increased *gari* output by 200–300 percent. By manual grating, the *gari* produced is only 1 MT every 2-3 weeks, while with the mechanical grater, production is 5 MT per week given that the processing center will operate five days a week, hence increasing gross income fivefold.

Also, other workers at the processing centers were trained to operate the machines. In this way, there is continuity in operations of the grater. However, the center faces challenges in raw material procurement because of the rains. The difficulties of harvesting and transporting the fresh tubers from the farm to the centers discouraged farmers from harvesting their crop.

Reducing post-harvest losses in the cassava value chain

Train 648 *kuu* leaders and 33 processors on post-harvest management practices:

During Q4, 280 lead farmers (142 men and 138 women) plus four processors were trained on post-harvest management practices. The trainings were conducted by the five LNGOs contracted by USAID FED to

implement the cassava value chain activities in Bong, Nimba, Lofa, and Grand Bassa counties, and it is anticipated that with time, post-harvest losses will drop. A survey will be done in FY16 to determine the reduction in post-harvest losses. Post-harvest losses are due mainly to farmers' inability to transport their cassava from the farm to the market and or inability to sell their cassava once they are harvested. Cassava tubers kept in the ground normally stays fresh even up to two years.

Task 1C: Increased Productivity and Profitability of the Vegetable Value Chain

During FY15, USAID FED's principal objectives under increased production and profitability of the vegetable value chain were as follows:

- To support 4,250 new and continuing vegetable farmers in the production of local vegetables and high value vegetables (HVV) through the application of improved practices and technologies demonstrated in FY14.
- To link these farmers to traders' associations as well as to institutional markets in the program's target counties and Monrovia, to reduce post-harvest losses, contribute to continuous supply of quality and competitively priced vegetables, and improve the income of farmers and other key players in the vegetable value chain;
- To develop a vegetable production-market model that links institutional buyers and enterprises and improves value chain performance for high value vegetable markets both local and export;
- To identify and strengthen agribusiness enterprises and organizations that provide value chain services and develop relationships with key players to ensure continuous learning, technology transfer and value chain collaboration beyond the life of project.

Improving access to affordable seeds of improved vegetable varieties

Identify potential agro-dealers to invest in inputs and embedded services:

In FY15, USAID FED's Input Supply Subcomponent identified 27 agro-chemical and inputs retailers/dealers across five counties. These agro-dealers are retailers of seeds, fertilizers, agro-chemicals and garden tools and equipment for the production of vegetables and other types of crops. These inputs are largely imported from neighboring countries such as Guinea and the Ivory Coast, as well as Europe and the United States.

These dealers will be screened and selected based on their willingness to be involved in the program, strategic location, business enterprise capability to sustain their operation, and span of market coverage, among other factors. Aside from providing the inputs for production, they will extend technical services and education and develop possible production and marketing partnerships with farmers.

Train agro-dealers in collaboration with existing agro-input supplier companies:

USAID FED's Input Supply Subcomponent trained six agro-dealers in FY14 and linked them to HVV farmers in Montserrado and Margibi. They underwent a vegetable voucher program for six months. However, this was not successful and resulted in only 28 percent redemption of vouchers. The voucher package made up of selected imported inputs was not attractive to the farmers because of relatively high cost. Although USAID FED's supported agro-inputs are USAID PERSUAP compliant, farmers prefer to use the cheaper inputs imported from Guinea and the Ivory Coast.

With very low demand for these inputs, agro-dealers were not motivated to invest in these inputs and dropped out of the program. In FY15, they continued to supply farmers with cheaper Guinean and Ivory Coast inputs.

Identify financing needs of continuing and new farmers:

During Q2, USAID FED assessed the financing requirements of 20 HVV clusters for production expansion and linked them to LEAD. As a result some were able to avail agricultural loans from the bank.

Link farmers to financial service providers and identified agro-dealers:

During Q2, LEAD conducted due diligence of the 20 HVV clusters; 14 vegetable clusters met the requirements for loans. In March, three clusters (Low Cost Village, CGCYEP, and Mawah clusters) were recipient of loans valued at US$4,770 after successfully qualifying for assistance. These were used in the procurement of inputs for vegetable production from agro-dealers. USAID FED has yet to receive feedback from LEAD of the status of the loan applications of the other HVV clusters.

In addition, 74 vegetable clusters from FY13 and FY14 with a total of 1,940 members benefited from VSLAs with the technical assistance of USAID FED's Component 2.

Promoting Integrated Pest Management (IPM) practices

Identify 3,750 farmers and establish 18 demonstration plots in six counties:

By the end of Q2 of FY15, USAID FED had identified 188 clusters with 3,757 vegetable farmers (2,209 men and 1,548 women) across the six counties (Table 21).

Table 21: Horticulture beneficiaries signed up for FY15 production.

County	FY15 Farmers			Farmers by Genders			
				Male		Female	
	Target	Actual		No	%	No	%
Montserrado	967	1,040		620	17	420	11
Margibi	777	740		422	11	318	8
Nimba	569	686		432	11	254	7
Lofa	509	485		221	6	264	7
Grand Bassa	379	391		285	8	106	3
Bong	549	415		229	6	186	5
Total	**3,750**	**3,757**	**2,209**	**59**	**1,548**	**41**	

By the end of September FY15, these 188 clusters were cultivating both high value and local vegetables on 125 ha of land (Table 22).

The local vegetables grown were bitter ball, chili pepper, eggplant, kale, and local variety of okra. The HVVs cultivated were cabbage, lettuce, and watermelon, okra (Clemens spineless - export variety), cucumber, and tomatoes.

Table 22: Total land area under production.

County	FY15 Ha under cultivation
Montserrado	31.00
Margibi	25.00
Nimba	20.00
Lofa	17.00
Grand Bassa	13.00

Figure 13: Demonstration site at Mensah Cluster, Montserrado County.

Bong	19.00
Total	**125.00**

USAID FED established 188 demonstration sites with an aggregate area of 47 hectares to showcase improved technologies for USAID FED and non-FED-assisted farmers. Figure 13 shows a cabbage vegetable demonstration site of Mensah Cluster at Montserrado County.

Provide improved seed and pesticides to demonstrate IPM practices:

During Q3, USAID FED distributed seeds, chemicals and pesticides to the 188 demonstration sites. (Table 23). Five types of vegetable seeds and four types of agrochemicals were distributed.

Farmers in Montserrado and Magibi received only chili seeds and those in Lofa only vegetable seeds. All counties received watermelon, cucumber, and African eggplant seeds except for Nimba, which did not receive cucumber. The total distributed seeds was 256.61 kilograms. Figure 3 shows a FED technician allocating the seeds for distribution.

FED supplied agrochemicals to all counties. These included two types of fungicides (copper oxide and metalaxyl), one insecticide (deltamethrin) and one herbicide (glyphosate). The vendor imported these agrochemicals with the assistance of USAID FED. Fungal and insect infestation of vegetables in the field is common in Liberia and usually happens during the onset of the rainy season and early part of the dry season. Protection from these attacks is necessary to prevent losses during growing and before harvesting.

Table 23: Vegetables seeds and agrochemicals distributed by county.

	Unit	Counties						Total
		Montserrado	Margibi	Bong	Nimba	Lofa	Grand Bassa	
Vegetable Seeds								
Chilli Pepper	Kgs	20.40	8.46	0	0	0	0	28.86
Watermelon	Kgs	9.30	8.40	1198	12.38	11.18	7.58	60.88
Cucumber	Kgs	9.60	17.38	17.40	0	16.27	11.33	71.98
African eggplant	Kgs	20.40	8.46	11.98	12.38	11.18	7.58	71.98
Cabbage	Kgs	0	0	0	22.91	0	0	22.91
Agrochemicals								
Copper Oxide	Kgs	9.00	8.00	6.50	6.50	6.00	4.00	40.00
Metalaxyl	Kgs	0.95	0.85	0.70	0.65	0.50	0.35	4.00
Deltamethrin	Liter	20	18	14	15	13	8	88
Glyphosate	Liter	20	18	14	15	13	8	88

Train 188 lead farmers on GAP and IPM:

In FY15, USAID FED contracted three LNGOs—the Human Development Foundation (HDF), TECURD and Gborkwado—to support the implementation of vegetable value chain activities. The task of HDF is to provide technical assistance to USAID FED-assisted farmers at Montserrado and Margibi counties. TECURD and Gborkwado are to extend technical assistance to farmers at Bassa and Lofa counties, respectively. These LNGOs created a total of 30 jobs that will last until the end of the project.

From March 30 to April 3, USAID FED conducted a trainers-training on GAP and IPM for two MoA extension staff, 26 LNGO staff, seven USAID FED extension officers and one extension staff for a total of 35 participants. This training used practical and hands-on methods, focusing on Agro Eco System Analysis

approach. The trainees imparted their learned knowledge, skills, and techniques to 188 vegetable lead farmers in field extension services consisting of five sessions.

Table 24: USAID FED GAP and IPM Training participants, March 30 to April 03, 2015.

Name of Organization	Number	Male	Female
Gborkwado Development Association	4	4	0
Human Development Foundation	17	16	1
TECURD	4	4	0
VADEMCO	1	1	0
MoA	2	2	0
USAID FED	7	6	1
Total	**35**	**33**	**2**

Recruit Horticulture PUA Specialist (STTA):

In January 2015, USAID FED deployed a Horticulture Specialist, Mr. Emmanuel Owusu, to train the extension staff and provide technical assistance in the implementation of activities for 188 vegetable clusters. These include:

1. Providing training on IPM and GAP to USAID FED and LNGO extension staff, 25 youth extension aides, and 25 peri-urban agribusiness enterprises;
2. Field monitoring and control of pests and diseases;
3. Assisting in planning and setting up of temporary cold storage equipment such as zero-energy coolers, charcoal coolers, and refrigerated containers, and their subsequent performance assessment; and
4. Coordinating selected vegetable clusters in producing okra for possible export.

Figure 14: Horticulture specialist training lead farmers on nursery preparation.

<u>Reduce harvesting and post-harvest losses</u>

Train 188 lead farmers on production planning and appropriate harvesting of vegetables:

This was part of the training package for USAID FED extension staff, LNGO extension staff, and lead farmers. The objectives were to increase productivity through the adoption of better quality inputs, improved production and postharvest practices, and better technology.

Identify five new traders' associations:

At the end of Q3, FED identified five new vegetable traders' associations in five counties and the Monrovia Vegetable Traders Association (MVTA) as possible market linkages for USAID FED-assisted farmers. The county vegetable traders' associations include Bong County Marketing Association Vegetable Sellers in Bong, Ganta Marketing Association Vegetables Sellers Unit in Nimba, Buchanan City Marketing Association Vegetables Sellers in Grand Bassa, Kakata Marketing Association Vegetable Sellers in Margibi, and Voinjama Vegetable Marketing Association in Lofa. These associations have 143 vegetable traders, including 114 women.

Table 25: Vegetable traders' associations supported by FED in FY15.

County	Trader Association	Members	Male	Female
Montserrado	Monrovia Vegetable Traders Association	28	10	18
Margibi	Kakata Marketing Association	30	5	25
Bong	Gbarnga Marketing Association	28	6	22
Nimba	Ganta Marketing Association	24	8	16
Lofa	Voinjama Marketing Association	15	0	15
Grand Bassa	Buchannan Marketing Association	18	0	18
TOTAL		**143**	**29**	**114**

Train lead farmers and trader associations on handling, packaging, storage, and transport methods:

During Q3, USAID FED trained a total of 69 lead farmers (60 males and nine females) and 42 traders (17 males and 25 females) on how to properly handle, pack, store, and transport vegetables to reduce post-harvest losses (Tables 26 and 27). A total of 93 participants were trained in two separate workshops conducted on June 9-10 in Montserrado and on June 25 in Margibi County.

Table 26: USAID FED-assisted lead farmers trained on packing, storage and transport of vegetables.

County	Number of lead farmers	Male	Female
Montserrado	24	21	3
Margibi	45	39	6
TOTAL	**69**	**60**	**9**

Table 27: USAID FED-assisted vegetable traders trained on packing, storage and transport of vegetables.

County	Number of Traders	Male	Female
Montserrado	24	13	11
Margibi	18	4	14
TOTAL	42	17	25

Identify financing requirements for trader associations and private sector firms toward establishing cold storage facilities:

In FY15, USAID FED linked the six trader associations to LEAD for possible financing to assist them to improve their business operations. Only MVTA passed the due diligence conducted by LEAD and received a loan of US$9,000. The other traders' associations failed to pass the screening process because, according to LEAD, they lacked the required level of operational and legal personality. In FY16, USAID FED will work with the BSPs of Component 2 to strengthen the structural and operational performance of these associations to make them eligible for LEAD loans.

Provide lead farmers and traders with packing crates for transportation of vegetables:

One of the causes of high post-harvest losses in vegetables is the type of packing materials used. Traditionally farmers make use of sacks and other native materials as packaging, which has been proven to lead to high postharvest losses in handling, transport, and storage.

In May 2015, FED distributed a total of 940 plastic crates to the 188 clusters and 250 plastic crates to the five traders' associations (Tables 28 and 29). The use of plastics crates intends to reduce losses from physical damage due to handling and transport as well as from heat buildup common in sack-packed vegetables. It has also facilitated the sorting and classification of produce during and after harvest.

Table 28: Distribution of crates per county.

County	Number of clusters	Number of crates per cluster	Total Number of crates distributed per county
Montserrado	51	5	255
Margibi	38	5	190
Bong	27	5	135
Nimba	28	5	140
Lofa	25	5	125
Bassa	19	5	95
Total	**188**		**940**

Table 29: Distribution breakdown of packaging crates to trader associations.

County	Number of Association	Number of crates distributed per Association
Margibi	1	50
Bong	1	50
Nimba	1	50
Lofa	1	50
Bassa	1	50
Total	**5**	**250**

Provide six trader associations with low-cost charcoal cooler technologies:

By the end of September, two zero-energy coolers and six charcoal coolers had been constructed. In Q3, the zero-energy cooler at the Red Light market in Monrovia was tested for its effectiveness in preserving vegetables over a period of seven days. The cooler demonstrated a reduction of temperature by 3 to 5 degrees compared with the outside ambient temperature. The Monrovia Vegetables Trader Association (MVTA) will use, operate, and maintain the cooler. USAID FED will monitor the performance and operation of the cooler in its period of utilization. Figures 15 and 16 show the zero-energy coolers at Red Light, Monrovia, and at Kakata, Margibi.

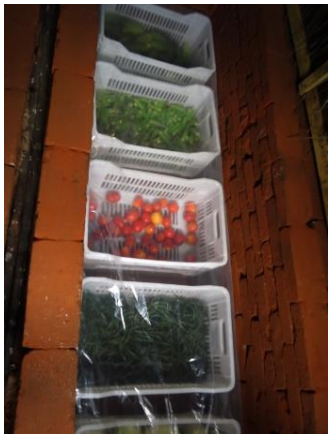

Figure 15: Zero- energy cooler in

As a follow up to the zero-energy cooler project at Red Light, USAID FED met with the MVTA in June to address issues in management and operation. One main issue raised was the inadequate capacity of the cooler to handle the volume of vegetables traded by members.

In this meeting, MVTA agreed to allow four selected retailer members to use daily the zero-energy cooler. The capacity (i.e., 12 crates) of the cooler was equitably allocated at three crates to each trader for a fee of LD$500 per month. MVTA also agreed to provide a site and construct another cooler at its own expense at Red Light market. The new cooler

Figure 16: Zero-energy cooler being constructed in Kakata, Margibi County.

will have a capacity of 200-250 crates. USAID FED will provide technical assistance.

In September, the MVTA removed the cooler upon instruction of the landowner of the site. The landowner wants to use the site for another purpose. Moreover, the traders using the equipment failed to pay the monthly dues for its usage. Faced with this problem, MVTA also has not initiated any action on how to proceed with the new proposed cooler.

In FY16, USAID FED will reassess its strategy of implementing the zero coolers from the business and cold chain perspectives. This will also include the coolers that will be constructed at the county level. Collaboration with the C2 component will be done for this purpose.

Figure 17: Charcoal cooler constructed at Mensah farm, Montserrado County.

In Q3, USAID FED trained a total of eight carpenters (all men) from Bong, Nimba, Lofa, and Grand Bassa counties on how to construct zero-energy and charcoal coolers. The carpenters were trained to ensure that construction of the technologies could be completed across the counties simultaneously. The training was conducted July 9–10 in Kakata, Margibi County, by a master carpenter contracted by USAID FED.

The USAID FED county offices will identify the recipients of the coolers, strategic locations, and the value chain that they will serve. Technical assistance will be provided in the selection of the site and during construction. The target is to construct the 14 charcoal coolers by Q1 of FY16.

Establish cold storage facilities with two private sector firms:

In August, the three refrigerated containers for the development of a vegetable cold chain arrived in Liberia. FED signed the MOUs for the operation, utilization, and management of the reefer containers with ROSNA Inc. and Gbomai Farms Inc. These are two private enterprises engaged in the production and distribution of vegetables in the local markets.

The enterprises will cost share 50 percent of the value of the two reefer containers, linked with USAID FED- and non-FED-assisted farmers in production, marketing, and development of a cold chain, and extend technical services in vegetable production and postharvest practices. USAID FED will assist them in the development and operation of their cold chains through contract growing arrangements with farmers, technical assistance in handling, sorting, grading, and packaging, and linking zero-energy coolers and charcoal coolers with the chain.

The ROSNA cold chain and packing facilities are located at Yekepa, Nimba and Buchanan, Grand Bassa. The location of Gbomai Farm's facility is near the Roberts International Airport at Monrovia. The enterprises provided the mounting and shed to house the reefer container and a generator for the power supply. They will operate, manage, and maintain the cold storage and packing facility. Installation will be completed by October 2015.

Farmers produce vegetables for the market during the dry and wet seasons

Distribute 360 drip irrigation kits to high value vegetable producers:

In June, 18 HVV clusters in Montserrado, Margibi, Nimba, and Grand Bassa counties received 360 drip irrigation kits in preparation for the next dry season production starting in October (Table 30) and into the succeeding months.

Table 30: Drip irrigation kits distributed to clusters.

County	No of high value vegetable clusters	No of farmers for high value vegetable sites	No of kit per cluster
Montserrado	6	120	120
Margibi	5	100	100
Bong	2	40	40
Nimba	3	60	60
Lofa	0	0	0
Grand Bassa	2	40	40
Total	**18**	**360**	**360**

Distribute motorized pumps to vegetable farmers:

Complementing the distribution of drip systems, the 188 vegetable clusters each received one water pump. This is to help farmers in the clusters to have sufficient irrigation water in the coming dry season.

Table 31: Water pumps distributed to the counties.

County	Clusters per county	No of pumps per cluster
Montserrado	51	51
Margibi	38	38
Bong	27	27
Nimba	28	28
Lofa	25	25
Grand Bassa	19	19
Total	**188**	**188**

Distribute vegetable seeds, agrochemicals and farm tools to HVV farmers:

In April 2015, Gro-Green, a local agricultural input supplier, delivered to USAID FED varying quantities of five types of agrochemicals (Table 32). This is connected with FED's IPM outreach to its assisted farmers as previously indicated. These are distributed on a per-need basis, that is, at economic threshold level of pests and diseases infestation. Copper oxide and metalaxyl are for fungal attack control, while Deltamethrin is a broad spectrum insecticide. Glyphosate is for weed control.

Table 32: Pesticides procured for controlling weeds, vegetable pests and diseases.

Description	Quantity	Unit
Copper Oxide	80,000	Grams
Metalaxyl	800	Liters
Deltamethrin	118	Liters
Glyphosate	118	Liters

Improve wet season production through protected cultivation:

FY14 rain shelters

USAID FED-assisted vegetable production clusters continued to use the FY14 20 rain shelters (RHs) through FY15. However, due to their less-ideal orientation, hot spots form at the middle areas in the enclosure. This

has resulted to less than normal growth of vegetables. Opening both doors improves air circulation and cooling but allows the entry of insects and pests. USAID FED installed vegetable white net curtain to cover the doors when opened to solve this problem.

Eight of the rain shelters were planted with Okra (i.e. Clemens spineless, Indiana, Sahari F1, and Shankar F1) from July 4 to August 4 for the export trial shipment to Paris, France, for institutional buyers such as supermarkets. Figure 18 shows sample of okra fruits harvested from the rain shelters.

Figure 18: Okra harvested from the rain shelters.

The volume per harvest of the trial production ranges from 3 to 5 kilograms. USAID FED offered the okra for sale to supermarkets in Monrovia to determine their acceptance of the product. One supermarket, the Era Supermarket, expressed its intention of buying a higher volume.

FY15 rain shelters

In FY15, USAID FED distributed 18 additional RHs for high value vegetable clusters (Table 33). Montserrado (6) and Margibi (5) received 11 of the 18 RHs. Except for Lofa, all the other counties received the new RHs.

Table 33: Rain shelters installed in FY15 sites.

County	Number of high value vegetable sites	Number of rain shelters established
Montserrado	6	6
Margibi	5	5
Bong	2	2
Nimba	3	3
Grand Bassa	2	2
Total	**18**	**18**

All the rain shelters have been put under cultivation for tomatoes, cucumber, cabbage, lettuce, and sweet pepper. The production of these vegetables under RHs is successful. Farmers who used the RHs were able to plant and harvest vegetables in spite of the high rain intensity and frequency during August and September.


Figure 19: Tomatoes production under RH in Brewerville, Montserrado County.

One women farmer of the CGC production cluster at Mount Barclay who planted two beds of lettuce generated revenue of LB$6,000 from the sale of the harvest in August. The RHs also allowed farmers at Brewerville at Monserrado County to plant tomatoes, which are susceptible to high soil moisture content during the rainy months (Figure 19).

<u>Enhancing linkages with local and high value vegetable markets</u>

FY15 vegetable harvest and sales from FY14 and FY15 sites:

By the end of September 2015, all of USAID FED vegetable clusters had harvested a total of 1,368 metric tons with a total estimated value of US$1.92 million and sold 1,117 metric tons of vegetables worth US$1.57 million (Tables 34).

Table 34: Vegetable production and sales from FY14 & FY15 clusters.

vegetable	Area	Ave. Yield (MT/ha)	Total yield (MT)	Sales Volume (MT)	Sales Value (US$)
watermelon	21	7.665	159	145	87,000
cucumber	19	8.16	152	112	100,800
chili-local	74	5.715	425	335	479,050
bitterball	45	6	268	223	111,500
eggplant	22	3.7135	83	112	123,200
lettuce	16	5.8	93	56	32,480
okra	16	9.4408	147	78	101,400
tomato	7	5.85	41	56	537,600
Totals	219		1,368	1,117	1,573,030

The harvest volumes in September dropped from 73MT in August to 57.5MT in September (a 25 percent decrease) due to the high frequency and intensity of rainfall in some of the counties.

Youth Group Vegetable harvest and sales:

In FY15, the 25 peri-urban agribusiness vegetable pilot farms in Montserrado and Margibi harvested a total 28 MT of assorted vegetables and earned a total of US$56,602.38 year to date from the sale.

Table 35: FY15 Sales from Youth groups.

County	**Q1**		**Q2**		**Q3**		**Q4**		**YTD**	
	Vol (kg)	**Value (US$)**	**Vol (kg)**	**Value (US$)**	**Vol (kg)**	**Value (US$)**	**Vol (kg)**	**Value (US$)**	**Vol (kg)**	**Value (US$)**
Montserrado	0	$0	0	$0	78	$129	25,685	$52,189	25,763	$52,318
Margibi	0	$0	0	$0	0	$0	2,411	$4,285	2,411	$4,285
Total	**0**	**$0.00**	**0**	**$0.00**	**78**	**$129.00**	**28,096**	**$56,474**	**28,174**	**$56,603**

Pilot Vegetable Export Program

In June, USAID FED, ROSNA and Brussels Airlines agreed to pilot a trial shipment to VS.CO in July. Under this agreement, USAID FED was to provide 10 kg of okra and 5 kg of chilies to be shipped, ROSNA was to provide the shipping boxes, and Brussels Airlines would ship the samples to Paris via Brussels at no cost to USAID FED and ROSNA. Unfortunately, the okra plants were affected by heavy rains, thus adequate volumes of okra could not be obtained. It is anticipated that the trial shipment will be conducted in Q1 of FY16 when the rains have tapered off. FED will also provide technical assistance to beneficiaries with the FY14 rain shelters in order to assist them in growing okra under sheltered conditions. USAID FED will facilitate contracts between these beneficiaries and ROSNA as well as establish linkages to supermarkets as an alternative market.

Overall performance of the vegetable value chain and next steps for FY16

The overall performance of the vegetable value chain was very successful with production increasing by 155 percent from 536 metric tons in FY14 to 1,368 metric tons in FY15, and gross margin increasing by 1,027

percent from US$140,306 in FY14 to US$1.58 million in FY15. Gross margin per hectare has increased by 500 percent from US$1,207 in FY14 to US$7,245 in FY15. Gross margin per kilogram has increased by 334 percent from US$0.26 in FY14 to US$1.16 in FY15. This significant increase in gross margins can be attributed to increased productivity as well as the increase in price per kilogram of produce due to the higher value (species, variety and quality) of the produce that USAID FED beneficiaries were growing in FY15. The average price per kilogram of vegetables produced in FY14 was US$0.49, while in FY15 a kilo fetched a price of US$1.41. This increase in value per unit of produce is also attributable to production during the off-season that was made possible by the various technologies that USAID FED has introduced, such as the rain shelters for the very wet months and the pumps and drip irrigation for the dry months. Additionally, post-harvest losses have been reduced by 7.3 percent from the baseline of 45 percent in 2012 to the current 37.7 percent. Reduction in post-harvest losses can be attributed to the combination of improved harvesting, packaging, handling, and storage technologies and practices.

As production of high-value vegetables ramped up, interest from institutional buyers also increased. In FY 16, it is important for USAID FED to set up the mechanism for farmers to organize and manage their production themselves, without relying on USAID FED. To achieve this, USAID FED will focus on organizing the farmers into production units with clear organizational structures and leadership, with specific individuals assigned to marketing and selling, and management of the production areas, especially the rain shelters. Business-to-business (B2B) relationship between the farmers' production units and the buyers will need to be formalized through a contracting mechanism. Several modalities could be adopted, such as:

1. Buyers could appoint supply development officers who will ensure the production scheduling, provide extension support, and manage the logistics arrangement of transporting the produce from the farm to the buyer's packing center.
2. USAID FED Extension Officers could turn into traders and serve as integrators managing the backward and forward links in the chain.
3. Farming clusters could organize into cooperatives or associations and adopt a farm production and marketing structure.

Task 1D: Increased Productivity and Profitability of the Goat Value Chain

During FY15, USAID FED's principle objectives pursued under increased production and profitability of the goat value chain were as follows:

- Provide technical assistance to 2,060 goat farmers in 103 production intensification sites established in FY14 to ensure that they continue to apply new technologies and management practices. This will include technical assistance to 2,090 indirect beneficiaries from satellite communities.
- Provide technical assistance to 1,545 new beneficiaries in 77 new goat production intensification sites to assist them to establish goat shelters and to apply improved herd management practices. This will include technical assistance to 2,310 indirect beneficiaries from satellite communities.
- Provide technical assistance to 206 CAHWs from FY14 and 154 new CAHWs in FY15 to ensure that they provide fee-based veterinary services to goat production intensification sites.
- Provide technical assistance to eight agro-pharmacists from FY14 and eight new agro-pharmacists in FY15 to ensure that they create access to veterinary drugs.
- Establish goat marketing hubs and to provide marketing support, business management training, and hold marketing summits within the counties.
- Assist CARI in establishing a nucleus breeding herd at their facility in Bong County. The nucleus breeding herd of approximately 100 imported superior breeding goats will be the basis for future goat distribution to Liberian goat producers.

FY14 Goat production sites - kidding and mortality rates:

In FY15, USAID FED continued to provide technical assistance to 2,060 goat farmers (1,260 men and 800 women) from 103 goat production intensification sites (Table 36). These farmers are from 19 sites from FY13 and 84 sites from FY14.

Table 36: FY13 and FY14 farmers receiving technical assistance.

County	Number of sites	Number of farmers supported in FY14	Number of Males	Number of Females
Nimba	35	637	341	296
Grand Bassa	16	277	166	111
Bong	27	672	493	179
Lofa	25	474	260	214
Total	**103**	**2,060**	**1,260**	**800**

In FY15, USAID FED provided technical assistance to 1,836 targeted farmers (1,239 men and 597 women) and 2,500 farmers from satellite communities in 77 additional goat production intensification sites. This means that the project exceeded by 19 percent the target of 1,545 new farmers to be assisted in FY15. (Table 37).

Table 37: Herd size statistics for FY15 sites.

County	Farmers target by county	Number of farmers in FY 15	Number of Male famers	Number of Female farmers	Total number of Goats in herd YTD	Number of Does	Number of Bucks	Number of kids	Number of farmers supported from satellite communities	Number of Male famers from satellite communities	Number of women famers from satellite communities
Nimba	522	522	316	206	1599	973	287	339	840	610	230
Grand Bassa	201	268	168	100	494	316	11	167	740	389	351
Bong	441	625	478	147	1954	735	387	832	620	431	189
Lofa	381	421	277	144	1803	567	775	461	300	202	98
Total	**1,545**	**1,836**	**1,239**	**597**	**5,850**	**2,591**	**1,460**	**1,799**	**2,500**	**1,632**	**868**

In FY14, these sites recorded a herd size of 7,362 animals (5,029 does, 1,507 bucks and 826 kids). The herd size grew by 47 percent to 10,815 animals (5,029 does, 1,507 bucks and 4,297 kids) in FY15. The number of kids recorded in FY15 was 518 percent higher than that reported in FY14 from the same sites. This can be attributed to the continued application of improved technologies and management practices such as shelters and herd management (Table 38).

Table 38: Herd size statistics for FY14 sites in FY15.

County	Number of sites	Number of Does	Number of Bucks	Total number of Kids Recorded Q1	Total number of Kids Recorded Q2	Total number of Kids Recorded Q3	Total number of Kids Recorded Q4	Total number of kids born FY15	Total number of Goats in herd YTD
Nimba	35	644	384	450	239	113	134	936	1,964

Grand Bassa	16	1,022	54	46	50	98	109	303	1,379
Bong	27	1,762	359	702	322	391	433	1848	3,969
Lofa	25	1,601	710	163	670	209	150	1192	3,503
Total	**103**	**5,029**	**1,507**	**1,361**	**1,281**	**811**	**826**	**4,279**	**10,815**

By the end of September FY15, a total of 3,184 kids (1,595 males and 1,589 females) that were born in FY15 were weaned (or 98 percent of the total) and added to the does and bucks statistics; 73 kids died (2 percent) while 1,095 kids are less than 3 months old.

FY15 Goat production sites - kidding and mortality rates:

At the start of FY15, the herd size was 5,540 animals (2,890 does, 1,169 bucks and 1,481 kids) on these new FY15 sites. By the end of September 2015, the herd size in the new sites grew by 6 percent to 5,850 animals (2,591 does, 1,460 bucks and 1,799 kids). A total of 2,982 kids were born (Table 39).

Table 39: Herd size statistics for FY15 sites.

County	Number of sites	Number of Does	Number of Bucks	Total number of Kids Recorded Q2	Total number of Kids Recorded Q3	Total number of Kids Recorded Q4	Total number of kids born FY15	Total number of Goats in herd YTD
Nimba	26	973	287	347	276	63	686	2632
Grand Bassa	10	316	11	34	99	68	201	528
Bong	22	735	387	374	240	592	1206	2328
Lofa	19	567	775	428	315	146	889	3120
Total	**77**	**2,591**	**1,460**	**1,183**	**930**	**869**	**2,982**	**8608**

By the end of FY15, a total of 1,183 kids born in the FY15 period reached maturity (i.e., 100 percent survival rate) and were added to the does and bucks statistics.

Goat mortality in FY14 and FY15 sites

During FY15, a total of 159 goats were reported dead from the FY14 goat production intensification sites (Table 40). In Lofa County, the high number of deaths was attributed to an outbreak of PPR. In other counties, the deaths were attributed to various causes such as diarrhea, pneumonia, and snake bites, as well as consumption of plastics. In total, there was 1.5 percent mortality in the herds.

Table 40: Goat mortality in FY14 sites.

County	Mortality recorded in Q2	Total Mortality Q3	Total Mortality Q4	Total Mortality YTD
Bong	8	5	2	15
Nimba	2	7	23	32
Lofa	17	66	8	91
Grand Bassa	8	6	7	21
TOTAL	**35**	**84**	**40**	**159**

During FY15, a total of 266 goats were reported to have died from the FY15 goat production intensification sites (Table 41). In Lofa County, the high number of deaths was attributed to an outbreak of PPR. In other counties, the deaths were attributed to various causes such as diarrhea, pneumonia, snake bites, and motor accidents. In total, there was 3 percent mortality in the herds.

Table 41: Goat mortality in FY15 sites.

County	Mortality recorded Q2	Total Mortality in Q3	Total Mortality in Q4	Total Mortality YTD
Bong	8	8	7	23
Nimba	4	3	19	26
Lofa	29	128	44	201
Grand Bassa	2	11	3	16
TOTAL	**43**	**150**	**73**	**266**

Access to veterinary health care

FY14 goat production sites:

By end of FY15, a total of 5,284 animals from the goat production intensification sites received veterinary treatment from 197 CAHWs in Bong, Nimba, Lofa, and Grand Bassa (Table 42). A total of US$1,001 was generated by the CAHWs from fee-based services.

Table 42: Animals treated by CAHWs in FY15.

County	Number of animals treated in Q2	Number of animals treated in Q3	Number of animals treated in Q4	Total number of animals treated YTD
Nimba	144	1,027	720	1,891
Bong	375	247	0	622
Lofa	29	406	376	811
Grand Bassa	254	847	859	1960
Total	**802**	**2527**	**1955**	**5,284**

FY15 goat production sites:

Promote Goat Shelters

In FY15, USAID FED identified 77 lead farmers (69 men and eight women) from 77 goat production intensification sites in Bong, Nimba, Lofa and Grand Bassa (Table 43).

Figure 20: CAHW [Miss Penny Kpleh] treats Goat in Gbangee town, Grand Bassa County.

Table 43: Lead farmers identified by county.

County	FY15 Lead Farmer Targets	Total Lead Farmers Identified YTD	# of Male Lead Farmers	# of Female Lead Farmers
Bong	22	22	22	0
Nimba	26	26	23	3
Lofa	19	19	15	4
Grand Bassa	10	10	9	1
Total	**77**	**77**	**69**	**8**

In addition 125 cattle chairmen from 125 satellite communities were identified from satellite communities (Table 44).

Table 44: Cattle chairmen from Satellite communities.

County	Number of cattle chairmen trained	Male	Female
Nimba	42	42	0
Bong	37	33	4
Grand Bassa	15	11	4
Lofa	31	23	8
Total	**125**	**109**	**16**

USAID FED also contracted four LNGOs to support implementation of goat value chain activities in the four counties. These included Gborkwadoe in Nimba, Liberia Integrated Professional Agricultural Services (LIPAS) in Lofa, Human Development Foundation in Bong, and Community Youth Network in Grand Bassa. These LNGOs added 93 full-time jobs (35 sawyers, 45 carpenters and 13 Extension Officers).

Figure 21: Sawyer cutting wood for goat shelter construction in Carpenta, Bong County.

Determine shelter material requirements for 77 shelters:

By the end of Q2, USAID FED had completed the determination of materials needed to construct the shelters. The materials included galvanized fence wire, wire nails, zinc, drinkers, and hinges.

Under the supervision of the LNGOs, a total of 35 sawyers were contracted in FY15 (Table 45). By the end of Q3, they had sawed wood sufficient for the construction of 77 shelters.

Table 45: Sawyers contracted by County.

County	Number of Sawyers recruited	Male	Female
Nimba	12	12	0
Bong	6	6	0
Grand Bassa	10	10	0
Lofa	7	7	0
Total	**35**	**35**	**0**

Contract and train carpenters on shelter construction:

Under the supervision of the LNGOs, a total of 45 carpenters were contracted in FY15 (Table 46). These carpenters were trained on shelter construction for a period of two days. By the end of August, they had cut wood sufficient for the construction of 77 shelters.

Table 46: Carpenters contracted by County.

County	Number of carpenters recruited	Number of men carpenters	Number of women carpenters
Nimba	14	14	0
Bong	11	11	0
Grand Bassa	10	10	0
Lofa	10	10	0
Total	**45**	**45**	**0**

Procure and distribute shelter construction materials to 77 goat sites:

The 77 goat production sites invested a cumulative total of US$159,005 on local materials to be used for the construction of the shelters. These local materials (wood) were provided by the beneficiaries as their contribution.

Toward constructing goat shelters at the 77 goat production intensification sites in the four counties, USAID FED invested a cumulative total of US$142,489.

Table 47: Materials provided by USAID FED.

County	# of sites	Galvanize Fence Wire (75ft Long and 8ft wide rolls)	Drinkers	Hinges (pieces)	14 Gauge Zinc bundle	2" wire nails	3" wire nails	4" wire (Nail)	5" Wire Nails	Zinc wire nails
Lofa	19	266	57	190	114	38	38	38	38	38
Nimba	26	364	78	260	156	52	52	52	52	52
Bong	22	308	66	220	132	44	44	44	44	44
Grand Bassa	10	140	30	100	60	20	20	20	20	20
Grand Total	**77**	**1,078**	**231**	**770**	**462**	**154**	**154**	**154**	**154**	**154**
Cost of materials		**$ 102,410**	**$ 1,155**	**$ 732**	**$ 24,948**	**$ 2,310**	**$ 2,310**	**$ 2,310**	**$ 2,310**	**$ 4,004**

Construct 77 shelters through cost-share:

By the end of September 2015, the carpenters had constructed a total of 70 shelters across the four counties (Table 48).

Table 48: Shelters constructed.

County	Number of shelters required	Number of shelters built YTD	Shelters outstanding for completion
Nimba	26	26	0
Bong	22	18	4
Grand Bassa	10	7	3
Lofa	19	19	0
Total	**77**	**70**	**7**

Figure 22: Goat shelter in Mahn-Ta, Bong County.

Develop smaller shelters that are either individually owned or in partnership:

There are local materials available to construct a small shelter that a farmer can own and maintain. In FY15, USAID FED took a tour in the counties and found that the shelter in figure 23 is easily constructed by farmers. One major challenge is that the roof is not long lasting. The roof sometimes last for a month or two; therefore, farmers will be required to occasionally change the roof. In FY16, USAID will monitor how many farmers have adopted this type of shelter.

Figure 23: Small shelter to be adopted by beneficiaries.

Train farmers on shelter management, improved forage feeders, salt/mineral block fabrication, and breeding:

In FY15, a total of 77 lead farmers (67 men and 10 women) were trained on goat-herd production; shelter management and mineral/salt lick fabrication. These trainings took place during Q2 and were conducted by USIAD FED's goat officers. These lead farmers in turn trained 1,759 goat farmers on their production intensification sites.

Table 49: Lead farmer training Participants' statistics.

County	District	# of Lead Farmers	Male	Female
Nimba	Yarwin Mesonoh	9	7	2
	Saclepea Mah	10	10	-
	Sanniquellie Mah	4	3	1
	Tappita	3	3	-
Grand Bassa	#2	2	2	-
	#3	3	2	1
	#4`	5	4	1
Lofa	Voinjama	7	5	2
	Foya	5	4	1
	Quardi Gondi	2	2	-
	Kolahun	2	2	-
	Zorzor	2	2	-
	Salayea	1	-	1
Bong	Kpaai	5	4	1

	Jorquelleh	8	8	-
	Yelequelleh	6	6	-
	Panta	3	3	-
TOTAL		**77**	**67**	**10**

In addition, 125 cattle chairmen from satellite communities were trained on how to fabricate mineral/salt lick using oyster shells, salt, and cement. These cattle chairmen in turn trained 2,500 goat producers in their communities.

Figure 24: Chairmen at Melekie Goat site during the mineral/saltlick training in Bong County.

Table 50: Cattle chairmen trained on mineral/salt lick fabrication.

County	Number of livestock chairmen trained	Male	Female
Nimba	42	42	0
Bong	37	33	4
Grand Bassa	15	0	4
Lofa	31	11	8
Total	**125**	**86**	**16**

National PPR Campaign

USAID FED was to finance a PPR vaccination campaign in Bong, Nimba, Lofa and Grand Bassa at the request of the MoA during Q1 of FY15. As a result of the Ebola virus disease outbreak, the PPR vaccination campaign could not be conducted at the planned period. During Q2, the MoA instructed USAID FED not to conduct the vaccination campaign without testing the antibody levels of previously vaccinated animals using an ELISA reader. USAID FED imported an Elisa Reader for this purpose. USAID FED also imported 108,000 doses of the vaccine, which were handed over to the MoA for storage.

However a PPR outbreak was reported in Nimba and Lofa counties in April 2015. A total of 68 animals died as a result of this disease in USAID FED-assisted sites and 565 from non-FED sites. USAID FED assisted the MoA in providing supportive treatment to affected animals. Out of 406 animals treated, all survived.

In August, experts from the FAO Office in Rome carried out an assessment of the impact of the PPR in Liberia and recommended to the MoA to allow USAID FED to immediately carry out the vaccination against the PPR. In September, the MoA officially provided USAID FED with the go-ahead to conduct the PPR vaccination campaign in the four counties from October to December 2015.

USAID FED will contract BRAC to conduct the vaccination campaign in close collaboration with FAO Office in Rome. It is anticipated that 108,000 shoats will be vaccinated during the period. The FAO will provide additional funding for vaccinations that will be conducted outside of USAID FED-supported counties. USAID FED is providing the necessary information to the FAO Office in Rome for them to package a proposal and budget for the vaccination to be done in counties outside of FED's four core counties.

Access to Veterinary Treatment and Drugs

Identification of 154 CAHWs among new Lead Farmer Groups:

In FY15, USAID FED identified 154 CAHWs (all women) from the 77 new goat production intensification sites (Table 51).

Table 51: CAHWs recruited by County.

County	FY15 CAHWs target	Total # of women CAHWs identified YTD
Nimba	52	52
Grand Bassa	20	20
Bong	44	44
Lofa	38	38
Total	**154**	**154**

Training of CAHWs on basic goat health care:

USAID FED recruited a total of 154 goat producers—two per group from the 77 goat producer groups—to serve as community animal health workers (CAHWs). It can be recalled, in FY14 a total of 206 CAHWs were recruited and trained. These individuals are providing healthcare delivery to goat producers' goats for fees. However, the profitability level of the FY14 CAHWs remain unknown, as such, USAID FED hired a special studies consultant to conduct a survey so that result of the survey will determine whether training the FY 15 CAHWs was necessary. Though the results of the survey showed that the CAHWs are making profits, the 154 CAHWs could not be trained since the survey results were released late September. Therefore, the 154 CAHWs will be trained in FY16.

Identify eight new agro-pharmacists and acquire MoA authorization for them to stock veterinary drugs:

In FY15, eight agro-pharmacists (two per county) were identified across the four counties (Table 52). A meeting was held with the Ministry of Agriculture to give USAID FED the green light that if these agro-pharmacists are trained, the Ministry would assume the responsibility of arranging for documentation so that they carry/stock veterinary drugs.

Table 52: Recruitment of Agro-pharmacist by county.

County	FY15 Agro pharmacist target	Total # of men Agro pharmacist	Total # of women Agro pharmacist identified YTD
Nimba	2	1	1
Grand Bassa	2	2	0
Bong	2	0	2
Lofa	2	2	0
Total	**8**	**5**	**3**

Train eight new agro-pharmacists in the use of goat veterinary drugs:

In FY 15, a meeting was held with the Ministry of Agriculture to give USAID FED the green light that if these agro-pharmacists are trained, the Ministry would assume the responsibility of arranging for documentation so that they carry/stock veterinary drugs without hindrance. In the meeting, USAID FED requested a written communication from the MoA as in the case with the PPR campaign to conduct the training; however, the MoA has since not sent in the written communication, therefore, it is anticipated that this activity will be implemented in FY16.

Implement a voucher program with agro-pharmacists providing drug kits to CAHWs:

This task will be implemented when the above task is completed.

Establishment of Nucleus Breeding Herd

In FY15, it was anticipated that a nucleus breeding herd would be established at CARI in Bong County in partnership with CARI and Land O' Lakes (LOL). Under the partnership, USAID FED was to provide infrastructure development support toward the establishment of a facility, while LOL was to import goats that will comprise the nucleus breeding herd.

However, the leadership of the USDA/LOL project was evacuated in August due to the Ebola virus disease outbreak, and the project was temporarily shut down. On May 28, USAID FED participated in an evaluation mission organized by USDA to conduct a performance review of Land O' Lakes Food for Progress program in Liberia. In July, USDA informed CARI and USAID FED that Land O'Lakes would be resuming project activities in Liberia. Land O' Lakes has committed to providing 100 goats of improved genetic stock for the Nucleus breeding herd by the first quarter of calendar year 2016.

With the approval for LOL to resume programming, USAID FED decided to also resume plans to rehabilitate the quarantine facility to house the nucleus breeding herd. In August 2015, USAID FED's Senior Engineer conducted an assessment of the quarantine facility at CARI to determine what renovations were required to covert the facility to a nucleus breeding herd center. Renovations of the facility will commence in November 2015.

USAID FED is also collaborating with USAID's Farmer-to-Farmer project for the deployment of a technical expert to assist CARI in developing a manual for the management of the nucleus breeding herd.

Formalizing Livestock Marketing

In FY15, FED developed a database of 71 live goat traders located in various urban and local areas within various counties; these traders will be informed via radio announcement whenever goat-marketing events were conducted (Table 53).

Table 53: Identified traders by County.

County	District	#of trader	Male	Female
Bong	Jorquelleh	7	7	0
	Panta	4	2	2
	Suakoko	3	2	1
	Yellequelleh	4	2	2
Nimba	Sanniquelleh Mah	8	3	5
	Tappita	4	3	1
	Saclepea mah	4	2	2
	Zoe-Geh	4	3	1
Grand Bassa	#3	5	1	4
	#4	2	1	1
	#1	2	0	2
	#2	2	1	1
Lofa	Voinjama	5	1	4
	Kolahun	3	0	3
	Foya	4	2	2
	Zorzor	3	1	2
Montserrado	#11	2	2	0
	#6	5	5	0
Total		**71**	**38**	**33**

Identify BRAC and Samaritan Purse goat farmers willing to participate in market events:

USAID FED received a database of 82 farmers located in Bong, Nimba, Lofa, and Grand Bassa supported by BRAC; these farmers were also informed via radio announcements to participate in the goat marketing events.

Figure 25: Traders and goat farmers at the marketing event in Melekie, Bong County.

Train goat farmers on selection of animals for sale and fattening techniques:

Ahead of the marketing events, USAID FED hired a trader consultant to train farmers on fattening; selection of healthy goats especially bucks of marketable size to meet traders' demand. The trader consultant trained a total of 80 goat producers and 52 goat producers from satellite communities to select animals for pricing based on girth.

Identify location venues for goat marketing events at county and cluster level:

In FY15, USAID FED promoted the business approach to goat farming where buck-to-doe ratio is maintained at optimum preferably one buck to 10 does (1:10). Later, when buck quality is improved, it can even be increased to 1:15, i.e., one buck for every 15 does. This means that more bucks can be sold. Ahead of the marketing events, USAID FED identified locations for the marketing events on the basis of excess buck population in herds. Farmers were then trained to fatten the animals that they intend to sell to fetch a better price.

Table 54: Locations and animal statistics.

County	Event location	Number of bucks available ahead of the marketing events	Planned date
Bong	Melekie	40	May 22,2015
Nimba	Ganta	50	May 26,2015
Lofa	Voinjama	80	May 29,2015
Grand Bassa	Gia Town	32	May 28,2015
Total		**202**	

Ahead of each marketing event, USAID FED contracted radio stations in each county aired the marketing events so that farmers as well as traders are aware of the venues and dates of the events. Radio Stations that aired the events were: Super Bongese Radio (Bong County), Radio Kergemah (Nimba) and Radio Gbezohn (Grand Bassa).

In FY15, USAID FED initiated goat-marketing platforms at selected sites in Bong, Nimba, and Grand Bassa counties. Three marketing events were conducted. These marketing events were also attended by traders who were identified and invited by USAID FED. In total, 141 goats (129 bucks and 12 does) were sold for US$10,685 (at an average of US$76 per animal). One of USAID FED's aims for FY15 was to standardize pricing of animals based on weight or size. Farmers are now using the measurement of the girth to determine the prices of animals. Previously, farmers used to earn an average of US$40 through eyeballing by traders and not by the quality of the animal. With the product standardization and the fattening of the animals, farmers were able to sell their goats at an average price of US$58/animal for mature animals.

Goat Sales

In FY15, a total of 6,049 goats from the FY14 and FY15 goat production intensification sites were sold for US$346,214. (Table 55). This is 7 percent higher than the planned sales target for FY15 of US$322,768.

Table 55: Goat sales.

County	FY15 Goat sales target	FY15 Goat Sales Target (US$)	Number of goats sold Q1 FY 15	Value of goats sold Q1 FY15	Number of goats sold Q2 FY 15	Value of goats sold Q2 FY15	Number of goats sold Q3 FY 15	Value of goats sold in Q3 (US$)	Number of goats sold Q4 FY 15	Value of goats sold in Q4 (US$)	Number of goats sold YTD	Value of goats sold (US$)
Nimba	932	$65,280	142	$6,396	486	$25,301	220	$12,033	135	$8,171	983	$51,901
Grand Bassa	330	$23,040	133	$8,475	133	$7,620	178	$11,570	343	$22,861	787	$50,526
Bong	795	$55,680	388	$32,070	628	$42,206	429	$36,110	598	$44,805	2043	$155,191
Lofa	686	$48,000	310	$13,177	1156	$39,150	506	$24,644	264	$11,625	2236	$88,596
Total	**2,743**	**$192,000**	**973**	**$60,118**	**2,403**	**$114,277**	**1,333**	**$84,357**	**1340**	**$87,462**	**6049**	**$346,214**

Improved Nutrition for Higher Livestock Value

Toward providing forages that will provide the needed animal nutritional requirements that goat farmers can benefit from, USAID FED recruited a Forage Production Expert, Mr. Samuel Tucker, to assist with the identification and selection of appropriate forages as well as training of farmers on which forage species are the best for herd health and fattening.

During his assignment, Mr. Tucker identified nine different forages to select from. These include *Brachiaria, Panicum maximum, Pennisteum, purpureum, Leucaena, Stylosanthes, Soybean, Moringa, Centrocema* and *Kudzu*. Among the nine forages identified, Mr. Turker recommended three forages suitable for cultivation based on the nutritional level, ease of propagation, fast growth, and PERSUAP compliance (Table 56).

Table 56: Recommended forages.

No.	Name of forage Recommended	Nutritional level	Method of Propagation
1.	Pennisteum purpureum/Elephant/Napier grass	12-24% protein	Cuttings
2.	Centrocema	18-19% protein	Seeds
3.	Moringa /Radish tree	Vitamins C,B,K	Seed& Cuttings

Test cultivation of selected forages to determine which ones have highest yields and rates of success:

Prior to hiring Mr. Samuel Turker, he had worked with the Central Agricultural Institute (CARI) in Bong County where these forages have been tested and found suitable as forage for goats. In addition, Mr. Turker was hired by Land O' Lakes as a forage expert and supervised the feeding of animals imported by Land O' Lakes; therefore, testing of the same forages was not necessary.

Train farmers in growing selected forages and using forages in feeding:

During the forage expert's assignment, Mr. Turker trained a total of 34 goat producers in Bong, Lofa, Nimba and Grand Bassa counties on the cultivation of forages and use (Table 57).

Table 57: Farmers trained on forage cultivation and use.

No.	County	# of farmers trained on forage cultivation and use	Male	Female
1.	Nimba	10	7	3
2	Bong	9	5	4
3	Lofa	8	5	3
4	Grand Bassa	7	5	2
Total		**34**	**22**	**12**

Provide cuttings of successfully cultivated forages to farmers:

The recommended forages are abundantly available in the USAID FED counties of operation and FED-supported goat producers have access to harvesting and cultivating these forages; therefore, USAID FED could not provide the cuttings to these farmers.

Sub Task 1.1 Special Studies and MoA Data Collection System Development

Equipment available and delivered to MoA for effective monitoring

In FY15, USAID FED support to the MoA in establishing a data collection system focused on piloting system establishment at the MoA Office in Bong County. The main objectives of the pilot activity are to:

- Use efficient and cost-effective means to equip the Bong County MoA office.
- Develop Government-decentralized skills, including M&E networking and tools, to collect gender-disaggregated data; analyze, disseminate,
- Update surveys and design and implement studies that are needed for upgrading the performance of the four value chains with regard to the LASIP.
- Provide support to the Ministry's monitoring and evaluation capacity in data management system, reporting while enabling extension officers in the utilization of tools to support reports to inform decision makers.

By the end of March 2015, USAID FED facilitated the transfer of all the donated equipment to the MoA Bong County office. The equipment included one Yamaha motorbike, four HP Elite book 840 laptops, one HP printer, four eTrex Vista Garmin GPS devices, three Personal Digital Assistants (PDA) and four internet modems. Monitoring and reporting tools have been developed. Training of the District Agriculture Officers (DAOs) and the County Agriculture Coordinator (CAC) on these tools have been carried out.

Figure 26: Dr. Charles McLain cutting the ribbon during the MoA Bong County Pilot program kick-off in Suakoko, Bong County.

Seven persons participated in the training (including the CAC, five DAOs and one warehouse staff). As a result of the training and provision of equipment, the DAOs now use electronic devices, such as GPS units and computers for data collection and processing. However, the DAOs don't have access to the PDAs that were supplied. Even though indicators were not built in the PDAs, they could be used for collection of photos agriculture activities in the field. Four DAOs are currently involved with data collection.

Additionally, DAOs are still not using the tools for data collection and processing because these have not been endorsed through the organizational chain of command of the MoA. The MoA Central Office in Monrovia should send the tools to the county and ensure that data is collected through the use of the tools. While awaiting the transmission of tools to the field by the MoA, USAID FED prepared another tool with the intent of facilitating the mapping of partners and their profile data. The county profile form was also not used by DAOs because they said that the forms were not available to them. Again, this indicates the need for the Monrovia MoA Office to take a more active role in order for this activity to be successful.

One of the issues that the Ministry faced was the absence of an M&E Director. When the pilot was started, the former M&E Director, Harry Stays, was actively involved. When Mr. Stays left, no one replaced him. The data flow still follows the chain prior to FED training. However, the M&E Department at the Ministry is not involved with the processing and receipt of data from the field to the Department of Extension, which is the repository of reports from DAOs.

The Liberia Agriculture Sector Investment Program (LASIP) meetings are coordinated through the Agriculture Coordinating Committee (ACC). The ACC is chaired by the CAC and holds a monthly meeting every last Friday of the month. On average, 12 organizations attend the meeting. The USAID FED Bong County Office heads the secretariat. In the light of personnel limitations, USAID FED proposed to use the Agriculture Coordination Committee (ACC) as platform for data gathering. This appears to work well. However, a closer collaboration between the CAC and the Ministry of Internal Affairs (MIA) has to be fostered since the MIA has more DAOs and they also have Clan Agriculture Technician, hence more data in agriculture, especially the upland rice. They can be leveraged for better and wider data coverage. This means that they will need to be included in trainings that USAID FED is providing.

Computer Skills training has also been identified as necessary to fully utilize the equipment for effective data processing.

Overall, in spite of the several areas for improvement, the pilot activity showed a lot of potential in helping build the MoA's capacity to monitor activities in agriculture and progress of the implementation of the LASIP. However, the MoA will need to show commitment to this initiative and take the lead in its implementation. USAID FED will come up with a proposed plan for the scaling up of the pilot activity to Lofa, Nimba, and Grand Bassa counties for implementation during FY16. A requirement for this to be implemented, however, is a letter of concurrence with the plan and commitment to the initiative from the highest leadership of the MoA. A Director for the M&E Department of the MoA will also need to be appointed.

USAID FED online database available and operational

Recruitment of data repository system consulting firm:

In FY15, USAID FED contracted a local system design firm, HAK Technology, to develop a web-deployed database repository to enhance USAID FED. This data repository is being used for storing/retrieving information to track changes on the program implementation related to the four value chains. The USAID-FED Data Repository (USAID-FEDR) is a searchable database providing data in real time on indicators in relation to the Performance Management Plan (PMP), Feed The Future Monitoring System (FTFMS), Fiscal Year Plans (FYP) and other process indicators planned and formulated accordingly.

Figure 27: USAID FED online database.

How the System Works:

The system is a user-friendly web-based data storage that is viewed via a web browser and hosted on the internet. It can also be configured to work on a LAN (Local Area Network) or WAN (Wide Area Network). The system contains:

A. Graphic User Interface (GUI); making it easy for users to easily manipulate the system.
B. Authentication Screen; securing all data from unauthorized users.
C. User Control system; each user to the system is given certain user rights based on policies.
D. Data collection, processing, synchronization and reporting are enhanced through proper user policies set to given users by a system administrator.
E. Data mining is simultaneous.
F. Reporting is instant and simultaneous.
G. System is enhanced with three user type at each level (county, head office, etc.) as defined by the administrator.
H. Data processing regulation is set to a given period of time, thus disabling certain users from processing when a given period has expired.
I. Traceability of systems users of every data manipulation performed.
J. Atomization of report (aggregating and disaggregating reports based on users choice).
K. System branding enhanced to user choice.

HAK Technology conducted a final presentation and series of trainings for USAID FED staff both at the Monrovia and county level, including the Chief of Party, Component Leads, Activity Managers, and County Managers & County M&E Coordinators. During the training, HAK Technology taught the selected staff in the use of the entire system, which includes the data processing circle, administrative/profile management, approval rights, data verification and validation, among others. The system will be fully operationalized by USAID FED staff in FY16.

Piloting/quality assurance of the database system design:

A user's training manual was developed and training was conducted by HAK Technology for USAID FED staff who will be working directly with the online data repository. To date, USAID FED has hired two Independent Consultants (ICs) to ensure that full coverage of primary data points is completed for each designated fiscal year. Primary data will be classified by the ICs for each indicator at the county offices, and once the data is validated by the County Manager and M&E Coordinator, it will be entered onto the online data repository. The system developers, HAK Technology and USAID FED, will together ensure that the system meets all of the desired specifications for the system to function effectively and efficiently. This system piloting effort will be completed by December 31, 2015.

Figure 28: Cross Section of Bong County District Agriculture Officers during the M&E Training

Assessment of the training capacity needs for technical and M&E Staff Capacity:

During Quarter 1 of FY15, a needs assessment was conducted for staff of MoA Bong County Office to identify their general and technical M&E capacity (data collection and reporting processes). Generally, the assessment reviewed the capacity and availability of the relevant

personnel to carry out M&E functions, the adaptability of logistical and administrative tools to enhance M&E functions, and the current structures, functions, and coverage in terms of M&E at the MoA Bong office.

The assessment was aimed to shed light on the information, technology, and training needs of DAOs and CACs to perform their roles and also deliver information effectively back to the MoA. The outcomes of this assessment showed the need for technical M&E training, staff, refining of data collection tools, improving data collection systems and methods for data collection, data management and reporting, and tailoring of FED activities to correspond with MoA monitoring and evaluation (LASIP) support.

During the reporting year, seven staff from the MoA Bong County Office, including the County Agriculture Coordinator, received M&E training in four different modules, with Module I–Overview of Monitoring and Evaluation, Module II—Overview of the Data Management, Analysis and Reporting, Module III—Simple Descriptive Statistics Using Microsoft Excel Data Sheets and, Module IV—Procedures for Data Collection and Reporting. MoA Bong staff were also trained in the usage of advance computer software for analysis and reporting purposes. The training was conducted from June 3-5, 2015, in Bong County.

Figure 29: Participants during the training of USAID FED Extension Officers, LNGOs and Enumerator for Special Studies implementation.

As a result of this training and pilot monitoring system, MoA staff have begun structuring their data collection systems and have an established platform for information sharing. Additionally, the Bong County Office has a developed a list of partners and stakeholders within the agriculture sector, showing which partner/stakeholder is doing what and where. USAID FED M&E Office continues to provide mentorship and follow-up actions with ongoing activities in conjunction with the MoA M&E Central Office.

Program Indicator Surveys Conducted

In FY15, USAID FED hired two international STTAs as Special Studies Advisors, namely, Justices Djokoto and Asnakew Negash who worked alongside USAID FED Monitoring and Evaluation Team to conduct 11 special studies simultaneously in July–August 2015 in the four core counties—Nimba, Grand Bassa, Bong, and Lofa. Questionnaires were developed, pre-tested and validated in consultation with FED Technical Team Members. A two-day training was organized and conducted with USAID FED Extension Officers, LNGOs, and Enumerators to ensure that the objectives of each survey or study was met, that the survey methodology was understood, and that the sampling frame was cleared. There were 55 people (five women and 50 men) who received training specific to several special studies and also benefitted from basic monitoring and evaluation mentoring. The M&E Team and the Special Studies Advisors provided technical backstop and quality assurance throughout the field implementation and data collection exercises. Data were collected using the Personal Digital Assistants (PDAs), which allowed daily review of the information at different levels—field supervisor level, M&E Team level and Special Studies Advisors level—to ensure that the data met quality standards.

These special studies were intended to gather data that would inform management decisions, fill data gaps within USAID FED Program and value chains, and assess the outcomes of USAID FED-supported programs.

Special Studies Advisor I, conducted the following studies:

1. Dietary diversity.
2. Post-harvest losses of vegetables and rice.
3. Impact of increase in rice production on household economics.
4. Adoption(Application) of technologies introduced by FED.
5. Impact of VSLA on beneficiaries .

Studies Advisor II also conducted the following studies:

6. Determining effectiveness of FED's extension delivery.
7. Impact of use of shelters in goat production.
8. Effectiveness of Community Animal Health Workers.
9. Rice seed demand among FED-supported rice farmers.
10. Impact of the Rice Business Hubs in the communities.
11. WEAI three years after USAID FED.

The initial findings of these special studies were presented to USAID and the MoA and other stakeholders on September 29, 2015. Additionally, draft reports on the results of the special studies have been circulated among the FED Technical Team for comments and inputs. Final reports will be validated by the third week of October 2015. USAID FED has made significant efforts in achieving its special studies mandate under Section C of the Contract. Outstanding studies will be mainstreamed in the FY16 work plan.

Table 58: List of special studies contractual obligations.

Deliverable	Contractual Target	Achievements
Sector surveys and analysis for selected value chains (Objective 1, Task 1.1)	4 value chain analysis - 16 by end of FY15	16 Sector surveys and analysis for selected value chains (Objective 1, Task 1.1) done by the end of FY15
Baseline surveys, gender integration plan	1 baseline survey 1 gender integration plan	6 baseline surveys completed 1 gender integration plan completed
Upgrading strategies for selected value chains, including prioritized infrastructure needs (Objective 1, Task 1)	4 value chain upgrading strategies	• 2 upgrading strategies completed with reports for rice and goats • 2 upgrading strategies developed for cassava and vegetables are mainstreamed in the work plans, but will need to be packaged as separate documents.
Studies of ways to transform the agricultural sector (Objective 1, Sub-Task 1.1)	16 special studies	24 Studies of ways to transform the agricultural sector done by the end of FY15

Sub Task 1.2 Improved Access to Agricultural Inputs

During FY15, USAID FED's principle objectives pursued under improved access to agricultural inputs were to:

1. **Improve access to good seeds and other planting material for at least 100,000 farmers by the end of project.**
    - This would be achieved by ensuring that Liberia has developed the capacity to produce good seeds of improved varieties and disease-free cassava planting materials of varieties required by buyers.
2. **Improve access to fertilizer and other inputs for farmers.**

- This would be achieved by awareness campaigns, adoption of optimal packaging, embedded financing, and supporting group and bulk procurement.

3. Introduce and promote efficient inorganic fertilizer use and organic fertilizer mix.

- This would be achieved through promotion of integrated soil fertility management (ISFM) and organic fertilizer mix through crop rotation and intercropping with legumes that also have good market potential in Liberia (such as peanuts and cowpeas);
- Scaling up demonstration of UDP to showcase a more efficient way of using fertilizer to more farmers,
- Adoption of optimal fertilization based on soils analysis, soils testing and zoning of areas based on fertilizer recommendations;
- Adaptive research trials on integrated UDP+SRI techniques with the aim of determining the impact of combining UDP with the SRI technology on profitability of rice farming; and
- Demonstrating the effect of using crop residues and animal refuse on yield and profitability through composting at farm level.

Improving access to good seeds and other planting materials

In FY15, a total of 401 MT of improved rice seed was produced from 22 rice seed multiplication (RSM) sites established on 160 ha in FY14 (Tables 59 and 60). The upland sites were planted with Nerica 14 and lowland sites with Nerica L-19.

Table 59: Rice seed production in Upland RSM sites.

County	Total area planted (Ha)	Number of sites	Yield in MT
Bong	90	9	180
Nimba	10	1	20
Lofa	10	1	20
Grand Bassa	10	1	20
TOTAL	**120**	**12**	**240**

Table 60: Rice seed production in Lowland RSM sites.

County	Total area planted (Ha)	Number of sites	Yield in MT	
Bong	20	5	81	
Nimba	16	4	64	
Lofa	4	1	16	
Grand Bassa	0	0	0	
TOTAL	**40**		**10**	**161**

Continued support for the 17 rice seed inspectors:

Out of the 17 rice seed inspectors trained in FY14, 15 were contracted by USAID FED to conduct inspections on the 22 RSM sites as per the certified rice seed protocols. Two inspectors were not available to be contracted as they had secured other jobs. The 15 seed inspectors were deployed in June 2015 when planting commenced on the upland sites. Each of the seed inspectors will conduct a minimum of six field inspections between June 2015 and January 2016. By the end of September 2015, the 15 seed inspectors had each conducted four inspections on the upland sites and two inspections on the lowland sites.

AfricaRice will conduct at least three inspections on USAID FED's rice seed multiplication sites in FY16 to check whether these sites are conforming to certified rice seed multiplication protocols. It is anticipated that the 15 trained seed inspectors will be hired by AfricaRice in FY16 as they implement the establishment of certified seed infrastructure for Liberia.

Support to private sector firm for commercial production and marketing of rice seed:

In FY15, USAID FED held discussions with several private sector firms to explore their interest in investing in commercial production and marketing of rice seed. These efforts were however not fruitful as the firms perceive such a venture highly risky, taking into consideration that donors were importing large volumes of rice seed and distributing these to farmers for free[8]. In addition, many farmers continue to use rice seed from previous harvests to plant follow-on rice crops. The demand for commercial rice seed by farmers at this stage is thus very low. To stimulate demand and grow commercial rice seed brands, development partners will have to stop subsidizing and distributing seed as is currently happening now.

Support rice seed outlets at the community level (proper processing, storage, packaging and selling):

In addition to the challenges in establishing commercial production and marketing of rice seeds, it was observed by the USAID FED Input Supply team during field visits that most farmers who produced rice seed held these in store as a bank and only sold the seeds to other farmers or buyers when they either received very high prices or when they needed money urgently.

Figure 30: Lowland RSM site in Welekermah Farmers Group in Doetain-Ta, Kpai district, Bong County.

Further, as part of the World Bank's rapid Ebola response, the MoA was provided with 2,000 MT of imported foundation seed. A further 8,000 MT of foundation seed was provided by JICA. These seeds were distributed to farmers at no cost. This subsidized distribution had a knockout effect on convincing farmer groups to consider processing and sale of the rice seed that they produced. This situation can be reversed if development partners stop distributing seed to farmers for free.

Pilot group marketing of rice seeds by farming groups:

During March of FY15, a farmer group from Allan Gausi Farm in Nimba County entered into a credit agreement with a trader to sell 3.4 MT of their rice seed as a group. The agreed price was US$24 for a 50 kg bag. The trader only started to make payments in July and changed his commitment to US$20 per bag. By the

[8] These challenges and difficulties were acknowledged as an area of concern by stakeholders during a workshop organized by Africa Rice and USAID's Bureau of Food Security on April 9 - 10, 2015.

end of September, the trader had not completed making payments to the group. This has become a disincentive for farmers in the area to market rice seed unless payments are made upfront. In addition to the challenges faced with subsidized rice seed coming from development partners, farmers prefer to hold their seed as inventory.

Development of additional sites for rice seed production and training of new seed producers:

In FY15, USAID FED supported the establishment of 48 new rice seed multiplication sites in the lowlands. No new sites were established in the upland. Ninety-six new lead farmers were trained on rice seed multiplication. The number of rice seed multiplication sites established in FY14 and FY15 is now 70 (120 ha in the uplands and 316 ha in the lowlands).

By the end of September, a total of 120 ha of upland sites (100 percent of the total) had been planted with Nerica 8 and 253 ha of lowland sites (80 percent of the total) had been planted with Nerica L-19 (Tables 61 and 62). Due to the high rainfall, plowing was difficult in the lowlands as the fields had to be drained manually on a regular basis. It is anticipated that planting on the pending 63 ha of lowland will be completed in October 2015. The 70 sites are anticipated to yield approximately 1,474 MT of rice seed in FY16.

Table 61: FY15 Upland RSM sites under production.

County	Target upland RSM area for FY15 (Ha)	Number of sites	Planting in June (Ha)	Planting in July (Ha)	Total area planted YTD (Ha)	Total seed used (MT) Nerica 8
Bong	90	9	90	0	90	4.5
Nimba	10	1	10	0	10	0.5
Lofa	10	1	5	5	10	0.5
Grand Bassa	10	1	10	0	10	0.5
TOTAL	**120**	**12**	**115**	**5**	**120**	**6.0**

Table 62: FY15 Lowland RSM sites under production.

County	Target lowland RSM area for FY15 (Ha)	Number of sites	Planting in July (Ha)	Planting in August (Ha)	Planting in September (Ha)	Total area planted YTD (Ha)	Total seed used YTD(MT) Nerica L-19
Bong	124	20	12	11	87	110	3.5
Nimba	60	9	1	29	12	42	1.3
Lofa	108	25	8	31	46	85	2.7
Grand Bassa	24	4	7	3	5	16	0.5
TOTAL	**316**	**58**	**28**	**74**	**198**	**253**	**8.0**

In addition, USAID FED provided mechanized assistance to an additional 164 ha of lowland RSM sites in Nimba County through power tiller entrepreneurs. This was at the request of Africa Rice. These sites will produce approximately 650MT of rice seed in FY16.

In June, registration of the 70 RSM sites and seed growers was completed in accordance with the Seed Certification manual developed by FED, CARI, and AfricaRice in FY14.

Collaboration with West Africa Agriculture Productivity Program (WAAPP) and USAID West Africa Seed Project (WASP) in developing the rice seed industry in Liberia:

During June 2015, FED received 10 MT of Nerica L-19 foundation seed for the Lowland and 6 MT of Nerica 8 foundation seed for the upland from Africa Rice through WAAPP. The foundation seeds were distributed to the rice seed multiplication sites for planting.

In FY15, FED collaborated with the MoA, WAAPP, and WASP to support the drafting of the Liberian national seed regulations, the Liberian national pesticide regulations, and the Liberian national fertilizer regulations, which were submitted to the Government of Liberia. This is done with the assistance of USAID FED's Component 2. These regulations once gazetted will enable Liberia to harmonize its internal regulations with other ECOWAS countries.

Support to commercial production and marketing of cassava cuttings

In FY14, USAID FED in collaboration with the MoA imported 44,000 cuttings of 11 improved cassava varieties from the IITA in Nigeria for screening and possible multiplication in Liberia. 34,000 of these cuttings were screened on two USAID FED supported sites in Lofa County and 10,000 cuttings at CARI in Bong County. CARI provided oversight to the sites in Lofa.

After screening, nine out of the 11 varieties were officially released by CARI in June 2015 (Table 63) as available for commercial production. Two varieties—IITA-TMS-01/1371 and IITA-TMS-01/1368—were not released as they exhibited symptoms of cassava mosaic virus on varieties planted at CARI's screening site. These symptoms were not observed on the same varieties at USAID FED's Lofa screening sites.

Table 63: Improved varieties released for multiplication by CARI.

Varieties released
IITA-TMS-9000581
TME419
IITA-TMS-IBAO11412
IITA-TMS-IBA30572
IITA-TMS-IBA010040
IITA-TMS-IBA-980505
IITA-TMS-IBA950289
IITA-TMS-IBA920057
IITA-TMS-IBA961632

Figure 31: Cassava cuttings Lofa County.

From April 28 to May 1, USAID FED, CARI, and IITA trained 40 commercial nursery owners on how to conduct rapid multiplication of cassava cuttings through efficient production and handling of cuttings. This training was also attended by eight USAID FED and five LNGO extension staff (Table 64). The training was held at CARI in Suakoko, Bong County.

Table 64: Rapid multiplication training participants.

County	Number of participants	Male	Female
Bong Nursery owners	8	7	1
Nimba Nursery owners	16	13	3
Lofa Nursery owners	4	3	1
Grand Bassa Nursery Owners	12	12	0
IITA Staff	4	3	1
LNGO Extension Officers	5	5	0
USAID FED Staff	8	8	0
TOTAL	**57**	**51**	**6**

By the end of July, USAID FED had harvested and distributed 720 bundles of cuttings of the released varieties to 40 commercial nurseries established in FY14 for multiplication. It is anticipated that 40 commercial nurseries established in FY15 will be supplied with similar cuttings in October 2015.

Support commercial production and marketing of vegetable (including legumes) seeds and seedlings

Support private sector firm to develop local brand of vegetable seeds:

By the end of September, USAID FED was still facing challenges in convincing identified agro-dealers to invest in the local production and marketing of vegetable seeds. As farmers either re-use or source cheaper seeds from neighboring countries, investors are not willing to invest as there is no significant demand for local brands. With the emergence of integrators—e.g., ROSNA and Gbomai Farms—these private sector firms could be used to supply improved vegetable seed varieties as part of contract growing arrangements in FY16.

Improving access to fertilizer and other agricultural inputs

Awareness campaign on benefits of agro-inputs through radio and other platforms:

Compilation of success stories, interviews of successful farmers, and development of radio programs:

In Q4, USAID FED developed advertisements on the benefits of UDP and information on agro-dealers from whom farmers can source the fertilizer. USAID FED also developed three farmer testimonials with farmers who have been exposed to UDP and have realized the benefits of using UDP. These advertisements and testimonials were broadcasted by two radio stations in Bong and Lofa counties between August and September 2015.

Support to determine and adopt optimal packaging sizes

Hire STTA to determine optimal packaging:

In Q3, USAID FED deployed an Optimal Packaging and Voucher Specialist, Mr. John Hurrell, to support fertilizer adoption and embedded services with agro-dealers and lowland rice farmers. Mr. Hurrell commenced his assignment on June 2, 2015.

Figure 32: UDP Briquettes packed in 36kg bags.

Engage and support an input supplier for sale of inputs using optimal packaging sizes:

The average rice farmer cultivates 0.25 ha of rice every season. While developing the appropriate model to promote increased adoption of fertilizer, it was observed that the existing 72 kg packaging size for fertilizer (sufficient for applying on 1.0 ha) would make it difficult for adoption to be effective. In collaboration with Gro-Green, an input supply firm in Monrovia, and John Selma, a rice aggregator from Lofa County, USAID FED piloted adoption of UDP fertilizer repackaged in 36 kg bags.

USAID FED subsidized the fertilizer by 50 percent, with the agreement that the aggregator would pay the 50 percent balance to Gro-Green once all the fertilizer has been sold. A total of 10 bags were delivered to the aggregator in September.

Embedded financing for inputs

Support a private sector firm to pilot embedded finance for inputs in rice:

By the end of September, USAID FED had identified and developed a database of 27 agro-dealers located in five counties (Table 65). Using the results of the pilot implemented by Gro-Green and John Selma with repackaged UDP fertilizer, at least two agro-dealers in each of the major rice producing counties will be supported to market UDP in smaller packaging sizes during the follow-on cropping season in Q1 of FY16. Adoption exercises will particularly target farming groups located on water management infrastructure sites.

Table 65: Agro-dealers by County

County	Number of Agro-dealers
Bong	12
Nimba	6
Lofa	3
Grand Bassa	3
Montserrado	3
Total	**27**

By the end of September, John Selma had identified two lowland rice farming groups in Foya and Voinjama districts in Lofa County that will purchase all the 10 bags of UDP as a group. Due to heavy rains, delivery of the fertilizer to the farmers was delayed, but will be completed in early October. Gro-Green has expressed willingness to expand production of UDP briquettes and supply through aggregators if the model is found viable in terms of volume and ability of aggregators and agro-dealers to pay for fertilizer they have received in good time.

Figure 33: Organic Matters earthworm breeding enclosure in Paynesville, Monrovia.

Support a private sector firm to pilot embedded finance for inputs in vegetables:

In Q4 of FY15, USAID FED identified private sector Liberian investor Mr. Ivar Hennes as a potential firm to provide embedded services and financing to vegetable farmers. His company, Organic Matters, is investing in vermicomposting using earthworms.

Organic Matters has already engaged 1,000 vegetable farmers in Nimba County, where the firm will provide embedded services for inputs required. The firm will buy produce from farmers for onward sale to already identified traders in Red Light and also provide land preparation services in exchange for compost material. Organic Matters is currently building its breeding stock of earthworms for the development of compost starting November 2015. Organic Matters is ready to undertake similar embedded financing with USAID FED's vegetable farmers in Montserrado and Margibi in FY16.

Figure 34: Earthworm nucleus breed stock.

<u>Voucher program for fertilizer and veterinary supplies</u>

In Q3 of FY15, the Goat Value Chain identified eight pharmacies in four counties who were willing to invest as agro-pharmacies dispensing veterinary drugs to community animal health workers.

As past experiences have proven voucher programs to be ineffective as a sustainable model for creating access to inputs, USAID FED selected pharmacies that were willing to cost-share in expanding their businesses. This investment would include them meeting the cost of expanding shelf space within their

pharmacies and installing small cold storage to store drugs. USAID FED would pay 50 percent of the cost of the initial veterinary drugs that would be supplied as first stock and link the pharmacies to the CAHWS in the goat production intensification sites.

However, for the pharmacies to sell animal drugs, the MoA has to provide an official permit for them to do so. The USAID FED goat value chain team made several follow-up actions with the MoA regarding the permits, but still have not received this. In September, the MoA finally informed USAID FED that they will jointly train the agro-pharmacists with USAID FED and on completion of the training, they will issue permits to the agro-pharmacists. Once the permits are made available, the cost-sharing agreement can be implemented. It is anticipated that this will take place in November 2015.

Implement voucher program for vegetables incorporating lessons learned from FY14:

Based on the poor redemption rates observed with the vegetable pilot program in FY14, USAID FED made a decision to focus on adoption of inputs through embedded financing and group procurement, and not voucher programs.

Support bulk procurement and group marketing

Identify and engage at least two rice farming groups in each county to carry out bulk procurement and marketing of inputs to their members:

In Q3 and Q4, USAID FED commenced discussions with five rice farmer groups in Bong County toward implementing bulk procurement and marketing of inputs with the assistance of two aggregators. These rice groups cited poor cash flow as their major constraint to undertaking bulk procurement as a group. In Lofa County, two lowland groups from Voinjama and Foya districts were identified with the assistance of an aggregator. These two rice farming groups (Rice and Food Crops Farmers Union and Mayor Farmers Association) have agreed to procure 10 bags of UDP fertilizer as a group to distribute to their members during the second cropping of lowland rice.

Efficient inorganic fertilizer use and organic fertilizer mix introduced and promoted

Promote UDP, MoP and TSP use in rice based on soil analysis:

Zoning of FED rice sites carried out based on soils analysis and fertilizer recommendations developed for each zone:

During Q3, results from the analysis of 100 soils samples collected from three counties were used to plot the soil fertility status of USAID FED supported sites with the assistance of the Liberia Institute of Statistics & Geo-Information Services (LISGIS).

To complete the plotting of a comprehensive map, the analysis results of an additional 164 samples were required. It was anticipated that Nimba County Community College (NCCC) would test these samples using their new science laboratory at their Centre of Excellence. Due to their lack of readiness to take on this service, USAID FED contracted two soil technicians from the University of Liberia to test and analyze the 164 samples under the supervision of USAID FED's STTA Soils Scientist. The results of these samples were submitted on September 23. LISGIS will complete the mapping by the end of October 2015.

Comparative study of use of appropriate fertilizer rates using UDP, MoP and TSP vs. generic fertilizer rate recommendation:

In Q3, FED completed a cost-benefit analysis based on data collected from 279 hectares of lowland rice production where treatments for Urea Deep Placement (UDP), urea broadcast and zero fertilization were conducted. The conclusion was that the use of UDP is 141 percent more profitable than broadcast and 475 percent more profitable than zero fertilization (Table 66).

Table 66: Cost benefit analysis summary for UDP versus broadcast and zero fertilization.

Application	Input Cost/ha				Yield/ha				Gross Profit/ha	
Low land UDP vs Broadcast	UDP costs relative to broadcast by				UDP increases yield by (in % and kgs respectively)				UDP increases profit realtive to Broadcasting,	
	-12.7%					32%	or	950	141%	$253
	From	$552	to	$622	From	2,950	to	3,900	$263	$253
Low land UDP vs Zero Fertilizer	UDP costs increase relative to Zero fertilizer				UDP increases yield by (in % and kgs respectively)				UDP increases profit realtive to Zero fertilizer,	
	120.9%					225%	or	2700	475%	$116
	From	$552	to	$244	From	1,200	to	3,900	$116	$618

The results highlighted an impressive 32-percent increase in production when applying UDP over broadcast fertilizer. USAID FED applied a farm gate price of US$12 per 50 kg bag of paddy rice to illustrate that lowland rice production can be competitive when using this technology. It has actually been determined that the average cost of producing a 50 kg bag of fertilizer can be as low as US$7. This is significant since there is a wide misconception that lowland rice production is not profitable below US$20 per 50kg bag, which has created unrealistic expectations by the farmers. These findings were presented to the Agricultural Coordinating Committee (ACC) on July 15.

Figure 35: Compost shredder breaks down material for fast efficient compost production.

Demonstrate on-farm composting for vegetables:

Support training and demonstration of composting with one farm vegetable cluster:

From August 12–20, USAID FED conducted demonstrations on how to prepare compost using a petrol-powered shredding machine to 17 vegetable lead farmers (all men) from Margibi County and five lead farmers (four men and one woman) from Montserrado County. USAID FED also demonstrated how the vegetation brushed during land preparation could be a source of compost ingredient and provide the group with an additional income if used as compost. The vegetable farmers group at Mount Barclay has expressed willingness to cost share on the shredder machine and use it for commercial compost production in FY16.

Figure 36: Farmer counting tillers at Gbrangasiequelleh, Bong County.

<u>Demonstrate Fertilizer Deep Placement (FDP) in vegetable farming</u>

Pilot Fertilizer Deep Placement using fertilizer rates based on soils analysis:

From August 7–10, USAID FED identified four rain shelters in Margibi and Montserrado counties to demonstrate FDP in vegetable farming. These rain shelters are located in Lowcost, Mulleh and Chosen Generation Church (CGC) Clusters in Montserrado County and Kolliekane Cluster in Margibi County.

Each of the shelters received NPK 15:15:15 at the rate of 7 grams per plant in briquette form, which were placed between okra plants 7 and 10 cm below the soil surface. These sites were planted with two okra varieties, Indiana and Clemson spineless. Data collected on a follow-up visit at Chosen Generation Church (CGC) Cluster in Montserrado County on August 26 revealed no significant differences in plant height or number of leaves between those planted with application of FDP and those with the NPK granule application.

The final results of the FDP pilot on okra will be available in October when the harvesting process is completed and the yields measured.

UDP+SRI research

Conduct UDP+SRI research and carry out comparative analysis of cost and benefits vs. UDP only and SRI only:

In FY15, USAID FED conducted UDP+SRI trials on two sites (Garmue 2 and Gbarngasiequelleh) in Bong County and two sites (Karmei Farm and Gausi Farm) in Nimba County. These lowland sites were selected because of their year-round water supply. The treatments focused on two packages of applications—T1 and T2[9]. From the treatments, it was observed that plants under UDP+SRI had 42 tillers per plant in comparison to nine for those under UDP alone. Further, UDP+SRI treatment plots yield an average of 7.3 MT per ha in comparison to 4.5 MT per ha with UDP alone (Table 67).

Table 67: UDP+SRI versus UDP yields.

Sites locations	**UDP (T^1)**	**UDP+SRI (T^2)**
	Yield (t/ha)	**Yield (t/ha)**
Garmue 2	2.5	7.0
Gbarngasiequelleh	5.8	8.3
Karmei	4.2	6.3
Gausi	5.4	7.5

A cost to benefit analysis showed that rice production using UDP+SRI technology is 136 percent more profitable when compared to use of UDP alone (Table 68).

Table 68: UDP+SRI versus UDP cost benefit analysis.

Direct cost	**Value (US$)**	**Value (US$)**
Output	**Conventional methods + UDP**	**UDP+SRI**
Paddy rice*	$**1,080** (4.5mt/ha)	$ **1,752** (7.3mt/ha)
Input		
Seeds	$ 45.00	$ 8.00
Fertilizer	$ 194.50	$ 153.50
Equipment & tools	$ 28.25	$ 28.25
Land preparation	$ 40.80	$ 44.88
Planting	$ 13.20	$ 13.20
Fertilizer application	$ 14.40	$ 14.40
Crop maintenance	$ 6.00	$ 6.60
Post-harvest	$ 34.50	$ 36.23
Transportation	$ 198.93	$ 208.88
Storage	$ 17.16	$ 18.02

[9] T1- Fertilizer(UDP+MOP +TSP), Plant spacing of 20cm X 20cm, 3 plants per hill and transplanting at 21 days; and T2 - Fertilizer(UDP+MOP +TSP), Plant spacing of 25cm X 25cm, 1 plants per hill, transplanting at 8 days ; Alternate wetting and drying

Total input	**$ 592.74**	**$ 601.96**
Net profit	**$ 487.26**	**$ 1,150.04**
Comparative CBA		**136%**
Paddy rice***** = Cost of paddy rice at farm gate price = $12 per 50kg bag		

Despite these results, it is important to note that the use of SRI in Liberia is bound to several limitations, including lack of organic fertilizer and the fact that SRI can only be used during the dry season when alternate wetting and drying is feasible, and can only be practiced in areas with all-year water supply.

Adoption of UDP at old sites

Promote UDP adoption on FY14 rice sites through 50 percent voucher subsidy:

This has been reported under "Support an input supplier for sale of inputs using optimal packaging sizes."

Pilot use of ICT in soils testing and analysis for rice

Recruitment of Project Manager:

In Q4, USAID FED contracted soil scientist Mr. Emmanuel Lincoln to manage the pilot on the use of soils testing and analysis for rice. His responsibilities included identifying rice farming groups and agro-dealers to pilot the use of ICT in the dissemination of soil test results to farmers and create a link between the farmer, test laboratory, and supplier of inputs.

Training of farmers on soil sampling:

Ten lead farmers and one agro-dealer from Lofa County were trained on how to collect soil samples and on the importance of periodic testing by farmers of the land. The inclusion of the agro-dealer in the pilot is considered as critical in the process of linking farmers to district level suppliers of fertilizer. Since the science laboratory at LCCC was not ready to receive and analyze samples, USAID FED tested the samples in-house in order to get the results for the pilot program. Delays caused by the Centers of Excellence (CoEs) meant the farmers and agro-dealer will only get their results and fertilizer recommendations in October.

Dissemination of soil test results:

Test results of the samples collected during the training of the farmers was completed by two technicians from the University of Liberia on September 23 and the analyses are expected in early October. These results with fertilizer recommendations will be sent to individual lead farmers and agro-dealer via SMS text. USAID FED will work with the agro-dealer and agricultural supply companies in Monrovia to provide the required fertilizers to the farmers using embedded or appropriate financing mechanisms. Embedded financing has been piloted under UDP adoption. However, there are some limitations regarding the extent to which an aggregator can finance the producers. Linking these aggregators to large input supplier firms shares the risk and allows for the exit of donors in a gradual and sustainable manner.

Packaging of samples and transportation:

The lead farmers were trained on how to handle, label and package the samples to ensure the integrity of the samples and recommendation provided.

Testing of samples:

When the science laboratories supported by USAID FED become active at the Community Colleges, FED will introduce the facilities to farmers and agro-dealers in those areas to promote regular and systematic testing of soils from agricultural production areas to ensure optimal use of fertilizers.

Support marketing of legumes (cowpeas and peanuts)

Collection of baselines on projected volumes available for sale;

By the end of September, FED had determined that rice and cassava farmers supported under Integrated Soil Fertility Management (ISFM) initiatives had 13 MT of cowpeas and 21 MT of peanuts as inventory in stock (Table 69).

Table 69: Availability of legumes by County.

County	Cowpeas (MT)	Peanuts (MT)	Total (MT)
Bong	8	7	**15**
Nimba	1	1	**2**
Lofa	1	8	**9**
Grand Bassa	3	5	**8**
Total (MT)	**13**	**21**	**34**

Identification of buyers for cowpeas and peanuts:

During Q3 and Q4 of FY15, USAID FED identified that the buyers of legumes in the counties are agro-dealers and traders who purchase from farmers on demand. Producers sell in small quantities to other farmers and in the market for consumption while retaining sufficient seed for the next cropping season. In FY16, USAID FED will continue to promote the planting of legumes as a rotational or intercrop as part of the ongoing promotion of ISFM.

Support bulk-selling of legumes for the market:

Challenges still exist in bulk-selling of legumes for market because farmers hold onto their inventory and sell as needed for cash. Agro-dealers and aggregators do not purchase and hold product in stock but rather purchase directly from farmers based on the demand.

Sub Task 1.3 Agricultural Extension Support

The principal objectives for USAID FED's FY15 agriculture extension support were to:

- Assist the MoA to develop decentralization strategies for extension service provision that are cost-effective and practical to implement at the county level. These strategies will focus on enhancing access to agricultural information through the implementation of a standardized, practical agricultural curriculum for monthly training of extension workers from both the public and private sector. These will also focus on the distribution of validated extension materials on improved practices and technologies.
- Develop and disseminate a standardized agricultural curriculum and extension materials that will help strengthen the capacity of MoA and other stakeholders to provide technical and extension services at the county level.

- Support the MoA in revising any existing agriculture extension material currently being used by key stakeholders within USAID FED-supported value chains.
- Support efforts to develop demonstration facilities in the counties for continuous training of public, private sector, and civil society organizations.

Development of de-concentration and decentralization strategies with the MoA

Working group established in collaboration with MoA to evaluate existing strategies:

Following a series of consultations between USAID FED and the MoA, a technical working group—the Technical Agriculture Core Team (TACT) — was established in December 2014 to review existing decentralization strategies contained in MoA policy documents. This technical working group was represented by MoA's Deputy Minister for Extension and Research, MoA's Assistant Minister of Extension, MoAs Director for Extension, and USAID FED's Extension Specialist. Under the technical working group, four value chain-specific working groups were established to focus on addressing commodity specific issues.

In June 2015, the MoA endorsed the strategy to focus on extension curriculum standardization and large-scale dissemination of newly developed/revised extension materials and farmer guides as a means to de-concentrate and decentralize agricultural information for extension purposes.

Workshop facilitated in collaboration with MoA, ADCCs, and agriculture stakeholders toward validation of newly drafted de-concentration and decentralization strategy:

During April 2015, USAID FED hosted technical experts from the Government of Liberia (GoL), universities and vocational institutions, the private sector, and development agencies to validate the curricula for the rice, cassava, and horticulture value chains. The curriculum validation workshop for the goat value chain was hosted during June. The curricula development and material dissemination informs the integral approach of MoA's de-concentration and decentralization strategy.

Using the feedback and contributions received from the curriculum validation workshops, USAID FED developed 25 extension booklets and 21 farmer guides for the rice, cassava, horticulture and goat value chains. In September 2015, four workshops were conducted to validate all the newly developed extension materials and farmer guides. All these materials were successfully validated.

Table 70: Developed and validated extension materials and farmer guides.

Value Chain	Extension Booklets	Farmer Guides
1. Rice	11	5
2. Cassava	1	7
3. Horticulture	8	4
4. Goats	5	5
Total	**25**	**21**

Development of standardized agricultural extension curricula

Toward standardizing agricultural extension curricula and materials, USAID FED collected various extension materials for rice, cassava, vegetables and goats that are currently being applied by different institutions and agencies. This was to ensure that the curriculum and materials developed capture the relevant technologies and practices that should be incorporated for validation. A total of 29 different extension materials were

collected from five organizations—BRAC, Concern World Wide, MoA, ZoA and USAID's Advancing Youth Project (AYP).

Development of extension material and information access points

In FY15, USAID FED developed 46 technical extension materials (25 booklets and 21 farmer guides) covering the rice, cassava, vegetables and goat value chain (Table 70). In addition, two videos on "Land Preparation" and "Fertilizer Management" for Lowland Rice Production were also developed. Since videos provide a simple and effective medium for introducing new technology, videos on the application of improved technologies will help to promote USAID FED's sustainability strategy beyond the life of project. Video contents on "Seed Selection and Treatment," "Nursery Production," "Rice Stand Establishment," and "Weed Management" were also collected in FY15 and be edited in FY16.

Extension staff from the MoA, private sector firms, civil society and USAID FED trained on the use of developed extension packages:

A total of 1,015 extension personnel from the public sector, private sector, and civil society will be trained on how to use and disseminate the revised extension materials and farmer guides that have been developed after the validation workshops held in September. This task will be implemented in FY16 once all the materials have been printed.

Developed extension packages printed and disseminated through existing networks of extension staff and lead farmers:

USAID FED will print and disseminate 3,800 extension materials and 194,000 farmer guides that were validated in September FY15 to information access points during Q1 of FY16. The information access points include the private sector, public sector, and civil society.

Agricultural radio program content for monthly radio shows produced in collaboration with communications unit and five community radio stations:

In FY15, USAID FED renewed partnership agreements with four community radio stations—Super Bongese in Bong, Radio Kergheamahn in Nimba, Radio Tamba Taikor in Lofa, and LACSA in Grand Bassa. These radio stations were also supported by FED in FY14. The radio stations developed content for 117 programs in FY15.

Agricultural radio shows aired once weekly by five radio stations in Bong, Nimba, Lofa, Grand Bassa, and Montserrado counties:

A total of 117 radio programs were broadcasted by these radio stations in FY15 and 164 programs in total since FY14 (Table 71).

Table 71: Radio Programs Produced by FED Partner Community Radio Stations.

Radio Station	No. of programs produced	
	FY15	YTD
Tamba Taikor (Lofa)	30	42
Super Bongese (Bong)	29	42

Kergheamahn (Nimba)	27	42
LACSA (Grand Bassa)	31	38
Total	**117**	**164**

Information on listenership coverage collected from each radio station on a monthly basis to gauge number of people receiving extension information through radio:

To assess coverage of the USAID FED partner community radio stations, USAID FED requested the International Research and Exchanges Board (IREX) for information on listenership coverage for radio stations in Liberia. IREX provided a booklet that did not include the community radio stations.

As part of a "Special Study" conducted by USAID FED to determine Household Dietary Diversity among households in FED's primary counties, a question on radio listenership was included. The result suggests that in Bong County, Radio Super Bongese (USAID FED radio station partner) is the most popular station among 47 percent; in Grand Bassa County, Radio Gbezohn is the most popular at 59.6 percent; in Lofa County, Voice of Lofa is the most popular at 42.4 percent; and in Nimba County, Radio Karn is the most popular at 36.3 percent. Out of these radio stations with leading listenership, USAID FED has a partnership with Radio Super Bongese (Table 72).

Table 72: Radio station listenership by County.

County	Stations	Frequency	Percent total respondents	Percent per County
Bong	Radio Super Bongese	56	8.4	47.1
Bong	Radio Gbarnga	33	4.9	27.7
Bong	Bong Mines Radio	18	2.7	15.1
Bong	Radio Gbartala	9	1.3	7.6
Bong	Cuttington Radio	2	0.3	1.7
Bong	Radio Totota	1	0.1	0.8
Grand Bassa	Radio Gbezohn	53	7.9	59.6
Grand Bassa	Radio Dukpai	31	3.1	34.8
Grand Bassa	Lacsa	5	0.7	5.6
Lofa	Voice Of Lofa	50	7.5	42.4
Lofa	Radio Life	44	6.6	37.3
Lofa	Radio Tamba Taikor	16	2.4	13.6
Lofa	Radio Hylengee	7	1.0	5.9
Lofa	Kintoma Radio	1	0.1	0.8
Nimba	Radio Karn	53	7.9	36.3
Nimba	Radio Tappita	35	5.2	24.0
Nimba	Radio Kergheamahn	24	3.6	16.4
Nimba	Radio Saclepea	23	3.4	15.8
Nimba	Radio Karnplay	7	1.0	4.8
Nimba	Radio Gompa	4	0.6	2.7
	Total	**670**	**100.0**	

To ensure that USAID FED reaches the maximum number of people with radio messages and programs, it will be prudent to partner with the top two radio stations in each county during FY16.

Participation of private sector in extension service provision:

Private sector firms trained on the use of developed extension packages and developing integrated strategies for embedding services:

A total of 941 extension personnel from the private sector will be trained on how to use and disseminate the newly developed extension materials and farmer guides once they are printed in November 2015. This task will support the sustainability of technical assistance with the private sector as part of embedded services (Table 73).

Table 73: List of Entities to be trained to use newly developed curriculum and materials.

List of Organizations	No. of Individuals to be trained
DAOs from MoA	29
USAID-FED Supported Businesses	218
USAID FED Supported VSLAs	723
VC Specific Orgs and LNGOs	45
Total	**1,015**

As the USAID FED program comes to an end, the provision of extension and technical services will be transitioned to the private sector in the form of embedded services. In collaboration with the value chain teams and Component 2, USAID FED will monitor the performance of aggregators, traders, logistics services providers, and processors in terms of their effectiveness in providing extension services and agricultural information as well as their profitability.

Sub Task 1.4 Youth in Agribusiness

Principal objectives of FY15

During FY15, USAID FED's principle objectives pursued under Youth in Agribusiness and Peri-Urban Agriculture were to:

- Stimulate the participation of at least 500 youth in agriculture and agribusiness (in Montserrado and Margibi counties), by assisting them to develop their abilities to establish profitable value chain enterprises, by training them to establish horticulture farms as out-growers, aggregators, and linking them to buyers.
- Ensure that at least 45 percent of USAID FED beneficiaries recruited under rice, cassava, horticulture and goat value chains are youth.
- Train and deploy youth extension aides to provide extension services to horticulture clusters in Montserrado and Margibi counties.
- Create jobs and youth enterprises through cost-share as transportation service providers between farmers and collection and processing centers in the rice, cassava, and horticulture value chains.
- Create youth micro-enterprises through cost-share that provide lowland rice farmers with power tiller and power saw services to ensure expansion of lowland rice production within the four counties.
- Create jobs by training youth as cassava and rice processing machine operators within the cassava-processing facilities and rice business hubs.

- Create jobs as blacksmiths and carpenters by providing starter kits to youth apprentices trained as blacksmiths and carpenters in FY14, and enabling them to start small businesses that can provide farmers with inputs and services using local materials.
- Facilitate access to financial services for youth groups through VSLA leadership training, business training and mentorship.
- Identify, train, and mentor local youth NGOs at the county level toward strengthening their abilities to sustainably run efficient and profitable operations in extension and business development service provision to USAID FED beneficiaries, other farmers, and organizations within the counties.

Establishment of agribusiness horticulture pilots

Mobilization of 500 youth in Montserrado and Margibi counties:

In FY15, USAID FED mobilized 500 youth (271 men and 229 women) toward the establishment of agribusinesses and horticulture farms. These youth-owned and operated farms are located in 25 production clusters located in Montserrado and Margibi (Table 74).

Table 74: Peri-urban youth agribusiness beneficiaries.

County	FY15 Youth Targets	# of Youth Identified by January 2015	Male		Female		# of Ha
			No	%	No	%	
Montserrado	360	360	191	(53%)	169	(47%)	90
Margibi	140	140	80	(57%)	60	(43%)	35
Total	**500**	**500**	**271**	**(54%)**	**229**	**(46%)**	**125**

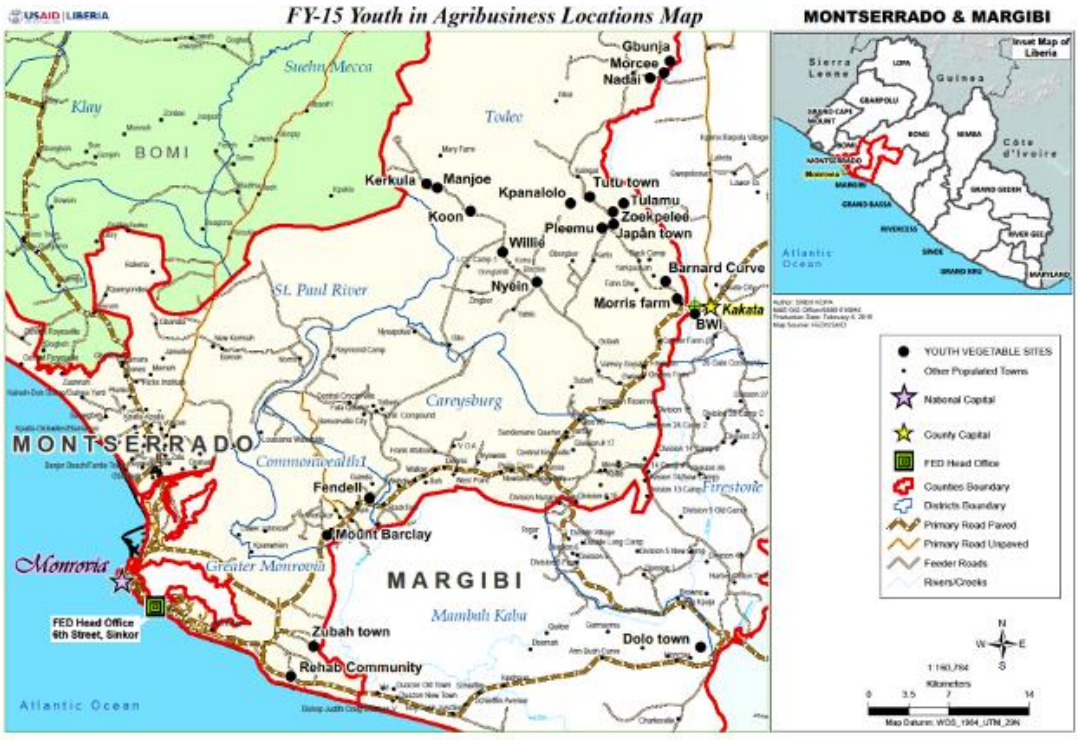

Figure 37:Peri-urban agribusiness clusters.

The selection of these youth groups was based on the proximity of these sites to Monrovia and their ability to demonstrate peri-urban production.

Establishment of baselines and incomes:

During the reporting period, a baseline survey was conducted in 25 youth clusters (with a total of 500 youth) identified by USAID FED in Margibi and Montserrado counties. The baseline survey was conducted to understand the general situation on several parameters:

- Youth access to capital and land.
- Income base of youth who are involved in agriculture.
- Access to market.
- Access to storage.

The survey took a sample of 175 youth (107 female and 68 male), which constitutes 35 percent of the population within the 25 clustered communities. Random sampling method was used with a sampling interval of three. A two-day training was held for Extension Aids of Green Coast Agriculture Program (G-CAP) to ensure that the survey objectives, sampling methodology, and the survey questionnaire were clear. A close, fixed-response interview was conducted where all interviewees were asked the same questions and asked to choose among the same set of alternatives questions. G-CAP M&E Officer monitored the data collection exercises and conducted spot checks to correct common data errors and supported the Extension Aids as necessary for quality assurance.

The result from the baseline was extrapolated to the total targeted population. The results showed the following:

- About 340 youth (68 percent) owned at least 0.20 hectares and up to 0.41 hectares for agriculture use; about 295 youth (59 percent) had a total earning of between US$18 to US$35 per month from sales of crops. The results also indicated that most of the youth recognized that their crops were being infested with diseases but they did not know how to control the pests and diseases.
- The results also showed that more than 50 percent have access to local markets to sell their produce. Local markets are those markets within communities and those organized at the level of the township. Also, at least 18 percent of the youth indicated that they sell their produce at the urban market locations, such as Kakata and Monrovia Red Light.
- Surprisingly, more than 90 percent of the youth have indicated that they do have a place to secure their remaining produce.

Figure 38: Okra produced by three (Koontown Youth United for Progress, Kaker Agriculture Development Project and Tutu Town Agriculture Youth: Kunaimennie) youth group in Todee, Montserrado County

Establishment of demonstration plots:

In FY15, each of the 25 youth groups established 0.25 ha of vegetable demonstration sites in their respective locations. FED provided the 500 youth with training and technical assistance on GAP and IPM with the assistance of USAID FED's horticulture value chain experts and Green Coast Agriculture Program (G-CAP), a locally contracted NGO.

USAID FED provided the youth groups with assorted farming tools (spraying cans, weighing scales, watering cans, ledgers, rakes, shovels, axes, regular

hoes, scratching hoes, cutlasses, wheelbarrows, rain boots and twining ropes for field layout) as well as improved seed varieties, fertilizer, chemicals and pesticides, and drip irrigation kits, to demonstrate improved technologies. In total, the youth groups cultivated vegetables on 125 ha of land, producing aubergines, African eggplant, chili pepper, watermelon, cucumber, cabbage and lettuce.

Establishment of collection centers:

In FY15, it was anticipated that the 25 agribusiness pilots would be assisted to establish collection centers where they can aggregate and sort their vegetable produce. Each of these youth groups has a structure at the vicinity of the demonstration site where they keep their vegetables before selling to buyers (these are structures that were present before FED interventions and which were used for different purposes). FED provided each of these youth groups with five packing crates (125 crates) to facilitate transport and post-harvest loss reduction.

Linking the production clusters to markets:

During Q2 and Q3, USAID FED organized three meetings between the youth groups and buyers ROSNA and the Monrovia Vegetable Traders Association. These meetings were to establish linkages between the producers and the market. By the end of September, 25 of the youth groups had sold a total of 28 MT of assorted vegetables for US$56,602 to the Monrovia Vegetable Traders Association and local markets. (This is reported in the horticulture value chain section.)

Table 75: FY15 Peri-urban youth agribusiness vegetables sales.

County	Total sales volume in June (kg)	Total sales value in June (US$)	Total sales volume in July (kg)	Total sales value in July (US$)	Total sales volume in Aug. (kg)	Total sales value in Aug. (US$)	Total sales volume in Sept. (kg)	Total sales value in Sept. (US$)	Total sales volume YTP (kg)	Total sales value YTD (US$)
Montserrado	78	129.00	4,195	8,480.00	4,245.8	8,463.60	17,244.1	35,244.7	25,762.9	52,317.30
Margibi	0	0	633	1,266.00	1,536.3	2,874.00	241.8	145.08	2,411.1	4,285.08
TOTAL	**78**	**129.00**	**4,828**	**9,746.00**	**5,782.1**	**11,337.6**	**17,485.9**	**35,389.78**	**28,174**	**56,602.38**

Table 76: FY15 Peri-urban youth agribusiness vegetables sales.

County	FY15 target area (ha)	Area under wet season crop production in (Ha)	Area under dry season crop production (Ha)	Total YTD (Ha)
Montserrado	115	132	18	150
Margibi	10	17	7	24
	125	**149**	**25**	**174**

Supporting job creation through youth extension aides:

In FY15, USAID FED identified 25 youth (17 male and eight female) who were to be trained as extension aides. These youth were previously trained as national youth volunteers by the AYP and UNICEF in FY14.

USAID FED contracted Green Coast Agriculture Program (G-CAP), a Local NGO that provided technical assistance to the 25 agribusiness pilots in Montserrado and Margibi counties. G-CAP hired and deployed five

Figure 39: Youth extension aides being trained in Kakata, Margibi County.

technical staff and 25 youth extension aides to the field in mid-February to commence implementation of activities.

USAID FED's Horticulture Specialist provided training to the 25 youth extension aides and five LNGO extension staff (five men and zero women) on GAP and IPM and Integrated Pest Management (IPM) for vegetable production. The training was conducted from April 27 to May 1, 2015, in Kakata, Margibi County, by USAID FED's Horticulture Specialist. The participants were trained on how to identify, control, and manage pests and diseases that affect aubergines, African eggplant, chili pepper, watermelon, cucumber, cabbage and lettuce. The participants were also trained on how to develop compost using locally available biomass material.

Deployment of youth extension aides:

In Q2 of FY15, the 25 youth extension aides were contracted by GCAP as full-time staff and deployed to the 25 youth agribusiness clusters where they continue to provide technical and extension services under the supervision of FED technical staff (Table 77). 21 youth extension aides were deployed to clusters in Montserrado County and four to clusters in Margibi County.

Table 77: Youth extension aides deployed by County.

County	# of Youth Extension Aides	Male		Female	
		No	%	No	%
Montserrado	21	14	(67%)	7	(33%)
Margibi	4	4	(100%)	0	(0%)
Total	**25**				

Monitor performance of youth extension aides in extension provision and data collection:

USAID FED Horticulture Specialist Emmanuel Owusu trained 25 Youth Extension Aides on GAP and IPM and Integrated Pest Management (IPM) for vegetable production. After training, these youth extension aides received follow-up coaching and mentorship from the Horticulture Specialist. The results from his field supervision showed that most of the youth extension aides who had little knowledge on GAP and IPM are

doing better on the field with the farmers. There will be second level of training for youth extension aides in FY16 implementation.

Supporting job creation through youth enterprises as transport service providers

The lack of reliable and affordable transportation services remains a major challenge for farmers in the rural areas to enable them to access markets. This is particularly evident in the rice and cassava production areas. To ensure that rice and cassava farmers can access transport services that will enable them supply the 20 rice business hubs and the 29 cassava processors, USAID FED identified 49 potential youth entrepreneurs located within production clusters in Bong, Nimba, Lofa, and Grand Bassa who could establish transport businesses through cost-share in FY15.

In Q2 of FY15, USAID FED identified 49 youth entrepreneurs to participate in a cost-share to establish transport services using Tuk-Tuk motorbikes within USAID FED-supported rice and cassava production clusters. Tuk-Tuk motorbike is valued at USD $3,000. Each entrepreneur is expected to meet 50 percent cost-share of this value or US$1,500. USAID FED later realized that about 16 of these youth entrepreneurs could not fully meet their cost-share obligation to acquire the Tuk-Tuk motorbikes. As a result, USAID FED opened a time window to allow more potential entrepreneurs to compete for the acquisition of the Tuk-Tuks motorbikes. Furthermore, USAID FED initiated discussions with a microfinance institution, Liberia Entrepreneur and Asset Development (LEAD), to provide access to capital as loans for other potential entrepreneurs on the basis of a 60/40 percent, meaning that these entrepreneurs would pay an initial amount of US$900 while LEAD pay USD US$600. Toward this end, LEAD has already assessed 16 entrepreneurs and will also assess the outstanding 15 applicants to ensure that they can pay the loan that LEAD will give to them. These 49 new entrepreneurs will be provided technical assistance to ensure that their businesses are registered and that they have viable business plans in FY16.

By the end of September, 13 entrepreneurs had paid full cost-share for 18 Tuk-Tuks and 16 entrepreneurs had paid loan deposits with LEAD to access the motorbikes (Table 78). The payment for the remaining 15 Tuk-Tuks is expected to be completed by November 2015.

Table 78: Entrepreneurs who have invested in Tuk-tuks by the end of September.

County	Entrepreneurs by county	No. of tuk-tuk
Bong	7	9
Montserrado	3	5
Lofa	5	7
Nimba	7	10
Grand Bassa	2	3
TOTAL	**24**	**34**

Figure 40: Imported Tuk-Tuk motorbike at USAID FED's office, Nimba County.

Each of the three-wheel Tuk-Tuks have a carrying capacity of 1.5 MT when fully loaded. Each Tuk-Tuk is provided with accessories to include a tool kit, helmet, and other accessories to aid repair and maintenance.

In FY16 and with the assistance of USAID FED's Component 2, these transport enterprises will be trained, mentored, and provided with access to business development services to ensure that they operate profitably.

They will also be linked to the cassava and rice production clusters, rice business hubs, and cassava microprocessors in FY16.

Supporting job creation through youth enterprises as power tiller service providers

To ensure that lowland rice farmers have access to mechanized services for land preparation, USAID FED identified a total of 30 youth entrepreneurs (all males) who could establish power tiller enterprises on cost share in FY15 (Table 79).

Table 79: Power tiller operators by County.

County	Number of power tillers provided by County	Target Cost Share ha
Bong	10	480
Lofa	9	432
Nimba	10	480
Grand Bassa	1	48
Total	**30**	**1,440**

Figure 41: Power tiller entrepreneurs being trained on power tiller operations in Suakoko, Bong County.

Assess capital and needs requirements of each individual entrepreneur:

In FY15, USAID FED trained 30 youth (all males) on power tiller operations and mechanical maintenance. These trainings were conducted over five days each from February 3-7 in Lofa County and June 15-19 in Bong County. In addition, these 30 enterprises were supported by Business Service Providers under Component 2 to develop business plans. While the plan was to identify only 20 youth entrepreneurs, an additional 10 were added to ensure power tillers procured in FY14 could also be distributed.

Distribute 20 power tillers to 20 youth entrepreneurs through cost-share:

On July 16, USAID FED officially handed over 30 power tillers to 30 youth entrepreneurs during a ceremony held at USAID FED's office in Suakoko, Bong County. The handing-over ceremony was attended USAID's Deputy Mission Director Ms. Barbara Dickerson, and the former Chairman of the Lower House Committee on Agriculture, Fisheries and Forestry, late Mr. Fofi Baimba.

Each power tiller has a cost value of US$4,800. Each of the youth entrepreneurs will till 48 ha of USAID FED-supported lowland demonstration sites at US$50 per ha as part of their cost-share (a total of 1,440 ha). This will translate to a cost-share of US$2,400 per entrepreneur.

Link entrepreneurs to lowland rice farmers during land preparation season:

By the end of September 2015, the 30 power tiller operators had tilled a total of 395 ha of lowland in Bong, Nimba, Lofa, and Grand Bassa counties as part of their cost-share. This represents 27 percent of the total 1,440 ha that are to be tilled. It is anticipated that the entrepreneurs will complete their obligations in FY16 (Table 80).

Table 80: Total area tilled by power tiller entrepreneurs.

County	Number of power tillers provided	Target Cost Share ha	Ha tilled in August	Ha tilled in September	Total ha tilled in FY15	Ha to be tilled in November FY16 (double cropping)	Ha to be tilled in FY16 (Lowland

							Rice)
Bong	10	480	104	100	204	65	211
Lofa	9	432	67	50	117	65	250
Nimba	10	480	187	78	265	65	150
Grand Bassa	1	48	37	11	48	0	0
Total	**30**	**1,440**	**395**	**239**	**634**	**195**	**611**

Supporting job creation through training youth as machine operators

Identify and train 58 youth toward operation of cassava processing equipment:

In FY15, USAID FED trained a total of 58 youth (55 male and three female) from 25 cassava processing centers in Bong, Nimba, Lofa, and Grand Bassa counties on how to operate and maintain cassava processing machines (Table 81). These trainings were conducted over a period of five days each from June 22 to August 14 in four counties.

Table 81: Machine operators trained on cassava processing by county.

County	# of cassava processing center by county	FY15 Youth Targets	# of youth trained	
			Male	Female
Bong	12	24	22	2
Lofa	3	8	8	0
Nimba	6	14	13	1
Grand Bassa	4	12	12	0
TOTAL	**25**	**58**	**55**	**3**

Identify and train 40 youth toward operation of rice milling equipment:

In FY15, FED trained 41 youth (39 male and two female) from 20 rice business hubs in Lofa, Nimba, Bong, and Grand Bassa counties on how to operate and maintain rice milling machines (Table 42).

Table 82: Machine operators trained on rice processing by county

County	# of rice hub by county	FY15 Youth Targets	# of youth trained	
			Male	Female
Bong	3	12	12	0
Lofa	3	12	12	0
Nimba	3	12	12	0
Grand Bassa	1	4	3	2
TOTAL	**10**	**40**	**39**	**2**

Figure 42: Youth group members being trained on how to operate rice milling equipment in Compound #3, Grand Bassa County.

Link 98 youth to established rice business hubs and cassava-processing enterprises (recruitment of youth can be considered as partnership requirement for processors):

After the training of youth as machine operators for rice and cassava, 58 youth as cassava processing machine operators were absorbed by the processing center they were trained to manage, while 41 youth trained as rice mill operators were absorbed by their assigned center.

Supporting job creation through blacksmiths and carpentry enterprises

In FY14, USAID FED identified and trained eight master blacksmiths (all men and two per county) to train 16 youth as blacksmith apprentices. An additional 16 youth (all male and four per county) were identified and selected for similar apprenticeship training in FY15. The apprenticeship programs ran for five months in Bong, Nimba, Lofa, and Grand Bassa counties. The apprentices were trained on how to fabricate local farming tools to create access to tools for rural farmers.

Figure 43: Youth apprentices and trainers with locally manufactured furniture and goat shelter in Bong County.

In FY15, USAID FED identified 28 master carpenters under the Goat Value Chain to train youth as carpenter apprentices. Sixteen youth (all men and four per county) were identified and trained.

Subsequent to the training, USAID FED distributed startup kits to the 16 carpentry apprentices, which included safety goggles, hammer, crosscut saw, clamps, wood chisels, nail puller, measure tape, utility knife, tool box, sliding T-level, working gloves, putty knives, and a tool bag valued at $399 per apprentice. The youth carpenters worked with the construction teams of FY15 goat production shelters in the counties. The youth carpenters will also receive coaching and technical assistance from the BSPs supported under Component 2 to establish viable enterprises during FY16 implementations.

Procure and distribute startup kits and equipment and distribute to 16 apprentices:

At the end of the training, each of the 16 apprentices received a set toolkit to enable them to establish blacksmith shops to provide affordable farming tools to local farmers in Bong, Lofa, Nimba, and Grand Bassa counties. In FY15, all 16 of these enterprises generated a total of US$2,850 as sales revenue from goat shelters renovated and furniture manufactured. In FY16, these blacksmiths will be provided with business development services through Component 2 to ensure they operate profitably.

Strengthening performance and profitability of local youth NGOs

This activity was to be executed by an STTA prior to the EVD outbreak. Due to the EVD, the selected STTA declined to travel to Liberia. The activity was postponed indefinitely. The USAID FED management later decided to pass this activity on to the Business Service Providers (BSPs) that have been subcontracted under USAID FED's Component Two.

Facilitating access to financial services for youth enterprises:

This activity is now mainstreamed under FED's Component 2, subtask 2.1 Access to Finance. One initiative undertaken is the financing for the "Tuk-Tuks." More effort on this is expected in FY16, especially in collaboration with USAID's IBEX project.

Sub Task 1.5: Improving Human Nutrition

Principal objectives for FY15

During FY15, USAID FED's principle objectives pursued under improving human nutrition through diet diversity were to:

- Advocate for increased consumption of animal-based protein and micro-nutrient dense food through implementing a behavior change strategy.
- Mainstream nutrition messaging in program activities and work closely with the MoHSW and other partners to ensure messaging directly addresses the problem of stunting.
- Continue to use radio and leverage other projects working on food security, nutrition, and WASH to broaden the reach of USAID FED's nutrition messaging.

Development of a diet behavior-change communications strategy

In FY15, USAID FED hired a Behavior Change Specialist (STTA) to provide technical assistance toward the development of a diet behavior-change strategy that will promote and increase diet diversity amongst USAID FED beneficiaries. It was decided to pilot the barrier analysis survey in Nimba County on the basis of its diversity of tribes and the number of USAID FED beneficiaries producing rice and cassava. This targeted approach would enable USAID FED to implement a strategy that would impact at least 7,900 beneficiaries by the end of FY15. On the basis of these findings, USAID FED will refine and replicate strategies in other counties.

Figure 44: Enumerators conducting semi-structured interviews during the barrier analysis survey in Karnplay, Nimba County.

In June, USAID FED conducted a barrier analysis survey with 195 households (98 men and 97 women) that had children under the age of 5 in four districts in Nimba County over a seven–day period.

On August 13, the findings of the barrier analysis conducted in Nimba County during the month of July and proposed recommendations for the implementation of the pilot was presented to USAID Liberia, MoHSW, UNICEF, and USAID LAUNCH by USAID FED's Behavior Change Specialist.

USAID FED's Behavior Change Specialist developed 12 customized messages and nutrition lesson plans that were field-tested with 53 beneficiaries (five men and 48 women) before implementation of the pilot.

Figure 45: USAID FED's lead farmers during the nutrition training in Karnplay, Nimba County.

Implementation of diet behavior change strategy:

As part of the pilot, a total of 257 lead farmers (167 men and 90 women) were trained using nutrition training modules and 12 customized messages developed by USAID FED along with ENA

messages. The lead farmers received 200 notebooks that contained the nutrition lessons, teaching aids, planning and attendance sheets. An evaluation of the pilot to draw lessons learned and refines the strategy and messaging to reach additional in other USAID FED counties will be carried out in Q1 of FY16.

Another special study carried out by FED showed that 33 percent of USAID FED's FY14 beneficiaries in the rice value chain had increased their procurement of vegetables and 39 percent more households bought fruits in 2014 relative to 2012. USAID FED's study on diet diversity showed that 57 percent or approximately 22,335 of FED-supported households improved their diet diversity since the time they received nutrition messages from USAID FED.

Nutrition messages are reaching more households:

During Q2 of FY15, USAID FED developed a nutrition poster and flyer that was validated and approved in Q3 by the MoHSW and MoA.

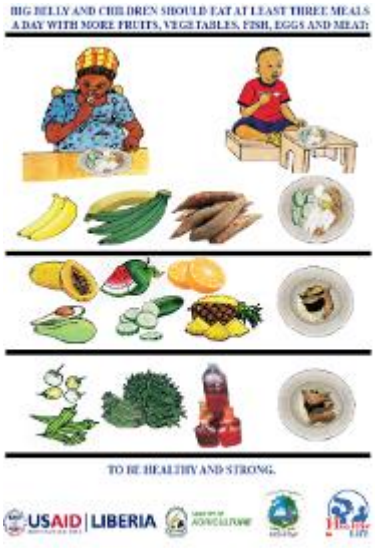

Figure 46: Approved nutrition poster.

A total of 2,000 posters were printed and disseminated to 18 LNGOs, 55 VSLA groups and 1,296 lead farmers in Bong, Nimba, Lofa, Grand Bassa, Montserrado, and Margibi counties (Table 83). In addition, 6,000 flyers were printed and disseminated to 5,032 beneficiaries (2,918 men and 2,114 women) from FY15 beneficiary groups in Nimba through the lead farmers.

Table 83: Distribution of nutrition posters by county and recipients.

County	Number of posters distributed to LNGOs	Number of posters distributed to CBOs	Number of posters distributed to VSLAs	Number of posters distributed to Lead farmers	Number of posters distributed to Community Colleges	Total number of posters distributed
Bong	16	24	11	315	0	366
Nimba	199	183	11	416	38	847
Lofa	21	24	11	220	37	313
Grand Bassa	16	0	11	240	25	292
Montserrado	16	0	6	55	0	77
Margibi	25	0	5	50	25	105
TOTAL	**293**	**231**	**55**	**1,296**	**125**	**2,000**

The same Household Diet Diversity Survey (HDDS) done by USAID FED showed that approximately 64 percent of FED beneficiaries received nutrition messages, largely from FED Extension Officers. This percentage translates to about 69,000 individuals who were trained by USAID FED.

Component Two: Stimulate Private Sector Growth and Investment

Task 2: Policy Enabling Environment for Private Sector Growth

USAID FED's objective under this task is to assist key GoL institutions, such as the MoA and MoCI, to build the technical capacities to identify, formulate, and implement policies and practices that facilitate the growth of private sector agriculture as a "driver" of sustainable economic growth. This will be achieved by assisting the key stakeholders to directly identify and target policies, governance issues, and regulations (particularly regulations concerning quality and control for inputs—seeds, fertilizer, and pesticides—and food production) that affect the four target value chains and ultimately facilitate micro, small and medium-sized enterprises (MSMEs) in these value chains to grow.

The Life of Project (LoP) target for USAID FED under Task 2 is to facilitate 14 policies, regulations, and administrative procedures to advance to the next stage as a result of USG assistance. The following five stages of development defined in the FTFMS Handbook (FTFMS Indicator 4.5.1-24):

- Stage 1. Analyzed;
- Stage 2: Drafted and presented for public/stakeholder consultation;
- Stage 3: Presented for legislation/decree;
- Stage 4: Passed/Approved;
- Stage 5: Passed for which implementation has begun.

Summary of FY15 Achievement

Following on from the development of a Policy Milestone Matrix in 2013, as of the end of FY15 USAID FED has facilitated the following 14 policy recommendations for key government ministries to be advanced to the various stages of development in FY14 and FY15:

Table 84: List of policies analyzed, drafted, adopted and implemented.

Policy #	Policy Description	Stage Policy Achieved				
		Stage 1. Analyzed	Stage 2: Drafted and presented for public / stakeholder consultation	Stage 3: Presented for legislation / decree	Stage 4: Passed / Approved	Stage 5: Passed for which implementation has begun
1	Common ECOWAS Seed Regulation	FY14	FY15	FY15	FY15	FY15
2	Liberian Seed Policy & Regulations	FY15	FY15	FY15		
3	Customs / Tariffs	FY14	FY15	FY15	FY15	FY15
4	Comprehensive Tax & Investment Incentives Policy	FY14				
5	Common ECOWAS Pesticides Regulation	FY14	FY15	FY15	FY15	FY15
6	Liberian Pesticides Policy & Regulations	FY15	FY15			
7	Feeder Roads	FY14				
8	Food Safety	FY14				
9	Rice Policy	FY15	FY15			
10	Liberian Livestock Management	FY14	FY14	FY14		

	Policies					
11	Common ECOWAS Fertilizer Regulations	FY14	FY15	FY15	FY15	FY15
12	Liberian Fertilizer Policy and Regulations	FY15	FY15			
13	Policies to Support Product Quality Controls (National Standards Laboratory)	FY15				
14	Policies to Promote the Cassava Value-Chain	FY15				

USAID FED activities have already met the LoP target in this area and achieved the FY15 target of analyzing six new policies, and has also achieved significant advanced progress in promoting policy areas #1, 2, 3 5, 6, 9, 10, 11 & 12 above. This has resulted in the domestication and adoption of ECOWAS regulations regarding the code of practices for all aspects of the government regulation, sale, certification, import, trade, etc., of seeds, pesticides, fertilizer, and livestock, and policies in the rice sector. As a result of USAID FED's support, regulations in these areas are all in the process of being approved by the executive, and "road maps" for the way to implement these regulations have been produced or are in production. USAID FED has also supported the temporary removal of customs tariffs on essential inputs for agricultural value chains. This has been achieved through the successful approval of Executive Order #64 removing import tariffs on 24 categories of inputs used by domestic agriculture. An extension of the executive order is in the process of adoption that seeks to widen the number of categories excluded from tariffs to also include the import of packaging and packaging materials required for preparing agricultural products for export.

USAID FED's close engagement with two key Ministries (MoCI and MoA) in this policy process—especially with the Annual MSME conference and the MoA taking the lead in conducting the validation workshops to domesticate the ECOWAS regulations—has resulted in both ministries developing significantly as institutions with regards to their capacity to develop policies. Furthermore, the support provided by USAID FED to the MoCI Department of Small Business Administration has allowed it to play a key role in both the analysis and negotiation of agricultural concessions concerning import tariffs and has greatly enhanced the MoCI's ability to support the formalization of 314 MSMEs as a direct result of USAID FED activities in FY15. In addition, USAID FED has facilitated one strategic actor to submit a draft GDA application to USAID and is working with three others who are currently developing their own GDA applications.

Specific Results Towards FY15 Activities

Policy Reform Activities via Technical Working Groups

In Q1 of FY15, the Ebola outbreak ceased the operations of the Liberia Agriculture Business Enabling Environment Inter-agency Policy Group (LABEE IPG) and the technical working groups. These were previously established to support the GoL and donors to help the private sector mitigate the risk of investing in food crops and to facilitate access to markets. As it became clear a different approach would be more appropriate to achieve a greater impact in identifying, formulating, and implementing policies (please see Key Challenges and Lessons Learned below), USAID FED conducted a number of '*ad hoc* policy initiatives' to achieve its goals. The first was a policy forum organized by USAID FED in February 2015 to discuss highly contentious issues regarding the pricing of paddy rice by the government, and the impending expiration of Executive Order #64 and the need to discuss a more strategic approach to incentivizing investment in agriculture. The forum was widely attended by a number of stakeholders including USAID FED, the Ministry of Agriculture (MoA), Ministry of Finance, Planning and Development (MoFPD), Ministry of Commerce and Industry (MoCI), Liberia Revenue Authority (LRA), National Investment Commission (NIC), the Agriculture

Committee head from the House of Representatives, and Private Sector representatives such as Gro-Green, Greenfield Liberia, Fabrar Liberia Inc.

In the presentation on "Rice Optimal Pricing" during the forum, the USAID FED Agribusiness Value Chain Specialist analyzed paddy rice production costs, import costs, and the impact on the private sector of the GoL purchasing paddy rice from local farmers at a price higher than the going market price. This initial policy forum resulted in significant further discussions by stakeholders throughout FY15 which culminated in September 2015 with USAID FED engaging an international rice policy subject matter expert to support a MoCI Technical Working Group to develop a new rice policy, which will be submitted to the President of Liberia for enactment into law in FY16.

Figure 47: USAID FED staff presenting on EO #64 at the Policy Forum held in February at the Cape Hotel in Monrovia, Liberia.

The policy forum also significantly discussed Executive Order #64 and came to the conclusion that it was not appropriate in its implementation to significantly help smallholder farmers import agricultural inputs and needed to be revamped. For Executive Order #64 to be effective, forum participants proposed that the GoL draft a law that will apply for more than the current one-year period of the executive order, simplify the language in the document, clarify the duty waiver procedure, and shorten the amount of time that private investors spend following up on the paperwork. Further, it should focus on agriculture and not on encouraging logging activities. In Q2 of FY15, USAID FED followed up its work supporting the development of this policy and in meetings with the Commissioner for Domestic Tax Revenue and the Tax Policy Division at the Ministry of Finance and Development Planning, and discussed extensively: development and implementation of tax policy proposals; drafting legislation, regulations, procedures and guidance; and participation in the negotiation of mining, petroleum and other concession agreements. USAID FED informed the commissioner of the various incentives for agriculture investment that other West African countries are implementing. There was a lengthy discussion on suspending the Tax Clearance Certificate for three years for MSME agribusinesses as this would allow for permanent custom duty exemption for agricultural machinery and inputs, in addition to reduced tax rates for MSMEs. The end result was that the Commissioner, Mr. Talery, requested that a policy forum be supported to engage all stakeholders in a discussion on tax clearance forms, tax awareness policy issues among newly registered agriculture-based companies, and tax incentives for small-scale farmers who want to register as a business. The initial plan was for USAID FED to support this policy discussion in a breakout session during the 2015 MSME Conference. However, due to the Ebola outbreak, the 2015 MSME Conference which was initially planned for April 2015 was postponed until November 2015. Whilst USAID FED will be supporting this policy discussion in November, Executive Order #64 expired in April 2015. In order to bridge this gap, USAID FED supported the MoCI to produce a more precise executive order that identifies specific tariffs to be removed according to the ECOWAS harmonized tax code, which the MoCI is seeking to be signed into law at the MSME conference and be in effect until legislation can be passed to adopt a comprehensive agriculture investment incentives policy.

Despite the Ebola outbreak, the Seed, Pesticide, and Fertilizer Technical Working Group met three times in FY15 to discuss measures to be undertaken to "domesticate" the three ECOWAS regulations published and made into law last year. The group decided that a small working group would be formed to ensure implementation of the ECOWAS regulations in a more effective manner (please see Key Challenges and Lessons Learned below), and as a result USAID FED provided strong support to the MoA in driving the

domestication of these policies to prepare them for adoption by the GoL. The approach taken to domesticate each policy was the same: USAID FED engaged an international consultant (or partner) and a local counterpart who worked to prepare draft guidelines based on best practices in West Africa and the wider region, which were then validated by stakeholders during a two-day stakeholders workshop hosted by the MoA and USAID FED. The final step is for the consultant teams and the MoA to finalize a draft of regulations that domesticate the ECOWAS regulations into Liberian law and produce a roadmap for their implementation. These documents were then submitted to the ministry to adopt into law. To prepare the seed policies, USAID FED hired an international seed policy expert, Josiah Wobil and a local counterpart Dr. Roland Massaqoui. The workshop was held and the final draft of the policies and roadmap was produced in June 2015. To prepare the pesticides policies, USAID FED hired an international pesticides policy expert, Dr. Alan Schroeder, and a local counterpart, Dr. Roland Massaqoui. The workshop was held and the final draft of the polices and roadmap was produced in September 2015. To prepare the fertilizer policies, USAID FED worked with experts from the USAID West Africa Fertilizer Program (WAFP) and Dr. Massaqoui. The workshop was held on September 23–24 and the final draft of the polices and roadmap is expected to be produced in October 2015. It is expected that all three sets of regulations will be submitted to the Minister of Agriculture by the end of October 2015.

Assessment of Training Needs and Training for Relevant Government Agencies and Private Sector

Throughout FY15, USAID FED continued to work closely with the MoCI, including the Department of Small Business Administration (DSBA), which was officially launched in July 2015. These discussions have primarily been with the MoCI to coordinate the registration of MSMEs as part of Subtask 2.2 (please see below), ways USAID FED can support the capacity building of the DSBA, and the agenda for the third annual Micro, Small and Medium-Sized Enterprise (MSME) Conference to be held in November 2015. The Department of Small Business Administration of the MoCI has provisionally agreed with the three key policy propositions for the conference:

1. The adoption of the Common ECOWAS Tariff (CET).
2. Suspension of the tariff on agricultural equipment, agricultural seed, fertilizers, and pesticides for food and cash crops production and processing.
3. Enforce the use of cassava wheat composite flour, consisting of at least 10 percent cassava.

In addition, USAID FED is preparing to support the DSBA with ICT capacity building training in early FY16.

In April 2015, the National Standards Laboratory (NSL) approved the draft scope of work for USAID FED to engage a consultant to conduct a gap assessment, market study, and business plan for a self-sustaining and functioning institution and recruitment commencing in May. Unfortunately, the project was unable to identify a qualified candidate, and in June USAID FED learned that a DFID-funded project, GROW, was also supporting a consultant for the strengthening of the NSL focused more on the technical and functional aspects. USAID FED decided to focus on the business and sustainability aspect of assisting the NSL and published a Request for Proposal (RFP) to engage a company to help the NSL to carry out a market assessment and prepare a business plan that focuses on practical approaches to revenue generation by NSL

through its services. Unfortunately, after the bidding process was completed the project was unable to award the bid to any qualified candidates due to prohibitive cost proposals. Instead the project revised the scope of work to make the level of effort require a shorter period in Liberia, and a qualified candidate was selected in September 2015. It is expected that the consultant will be in Liberia in early October 2015.

Promotion of Public-Private Partnership (PPP) to Benefit Feed the Future Objectives

Over the reporting period, members of the USAID FED Component 2 team supported one agricultural input supply company and a growers association to submit a draft GDA concept note to the USAID Mission in Liberia as a first step to applying for a GDA to support their embedded financing operations. The team also held several meetings with one agricultural input supply firm, one agricultural logistics firm, and one rice processor to support them in developing a Public-Private Partnership with USAID through the development of a GDA. This has already resulted in two of the firms producing first "rough" GDA applications, which USAID FED is assisting them to revise.

Key Challenges and Lessons Learned

USAID FED had initially planned to recruit local and international legal advisors to advise the GoL on the implications of implementing national policies in line with ECOWAS regulations (in seeds, pesticides, fertilizers and livestock) and the impact on WTO accession in early FY15. Furthermore, the project was expecting to funnel most policy promoting initiatives that came from this advice through the Technical Working Groups (TWGs) of key stakeholders. However, during the initial meetings of TWGs it was quickly recognized that the amount of previous regulation made was very limited and therefore the need for legal counsel unwarranted. It was also recognized that there was also a significant need for more subject matter expertise to inform stakeholders in these areas, and also a need for dedicated actors outside of the TWGs to take ownership of these policies in order for them to be promoted successfully to the legislation stage. To adjust to this shift, USAID FED changed its implementing approach and instead began providing a number of targeted consultancies that brought in international subject matter experts. These experts were then supported by a local counterpart to "drive" the policy formation process in their respective fields. This was accomplished by using dedicated stakeholder meetings to bring in all relevant stakeholders to support the domestication of this legislation and also to ensure it was appropriate for the local context. Similarly, whilst USAID FED had planned to provide greater capacity building to the MoA in FY15, this was dependent on the MoA being receptive to the approach. However, the then Minister of Agriculture was confident that extra support was not required. Despite this assurance, the project discovered that due to the heavy workload of ministries and the rapidly competing priorities, certain legislation could be delayed. To overcome these issues, USAID FED therefore engaged a local counterpart, who has significant knowledge of government processes and had a respected profile, to advocate for the adoption of policies after they have been presented. This has succeeded in policies getting a greater hearing with key stakeholders within the GoL as well as increasing the receptiveness of certain government departments to support USAID FED activities.

To secure a continued waiver of import tariffs on inputs used by domestic agriculture supported by Executive Order #30 which expired in FY14, USAID FED worked with the MoCI to get a continuation of these tariff removals with the issuance of a new executive order, Executive Order #64. However, the rapid switch of government priorities caused by the Ebola crisis demonstrated a weakness in this approach, as once Executive Order #64 had expired, the GoL was not prepared with legislation to keep the tariff removals in place. Therefore USAID FED became aware that the immediate impact of issuing an executive order can only be constantly sustained when it is to be followed by more permanent legislation. This is why in FY16 USAID FED is seeking to support the introduction of a Comprehensive Agriculture Incentives policy that will embed the tariff removals in legislation before the new executive order USAID FED is promoting expires. Furthermore, analysis of the goods imported under Executive Order #64 showed that although the tariff

removals were aimed specifically to support MSMEs in the four target value-chains, in reality larger farming operations were benefiting disproportionally from the tariff removal scheme. This was a result of the larger operations having a better knowledge of changes in tax law, and the fact that loopholes in the executive order were being used to import unintended items, such as trucks and 4x4 vehicles being imported tariff free as "Vehicles for Agricultural Purposes." Building on these lessons, and to mitigate these challenges, USAID FED has already provided greater support to the MoCI to consolidate the new executive order by specifically identifying the ECOWAS Harmonized Tariff Codes to apply under the executive order rather than just specifying the types of products. USAID FED is also planning to target advertising regarding the tariff removals to suppliers of inputs to smallholders in FY16 to increase awareness for suppliers. Furthermore, USAID FED learnt that in order to be able to work with private sector partners to assist them in applying for GDAs, USAID FED will have to directly target potential partners and take time to promote the opportunities. This resulted in FED Senior Management working with a number of partners to facilitate them to produce GDAs.

Subtask 2.1 Access to Financing

USAID FEDs objective under this task is to redress the lack of access to credit faced by MSMEs in the four value chains by establishing self-sustaining, affordable, and accessible agricultural credit systems across the six counties, enabling growth in investment. The project seeks to achieve this goal by supporting enhanced access to: existing formal financing systems, such as established MFIs and traditional banks via the Development Credit Authority; and new informal financing institutions, such as Village Savings & Loans Associations (VSLA), that have the capability to formalize and eventually access additional capital by evolving into microcredit unions. The project will also seeks to expand existing and developing new linkages for supplier/vendor credit mechanisms to enhance the supply of embedded finance across the four target value chains.

The Life of Project (LoP) target for USAID FED under Subtask 2.1 is to: a) facilitate US$1,454,481of financing (cash and in-kind) to be accessed by farmers and agribusinesses through formal, informal, and embedded services (FTFMS Indicator 1.1.4); and b) for 21,955 MSMEs, including farmers, receiving USG assistance to access loans (FTFMS Indicator 4.5.2-30). The FY15 targets under this subtask alone were US$751,634 of financing and 9,000 MSMEs accessing financing, respectively.

Summary of FY15 Achievements

During FY15, USAID FED supported the development of 450 Village Savings & Loans Associations (VSLAs) cross the six counties, with a further 200 VSLA groups in the early stages of formation. USAID FED also continued to support the 123 VSLA formed in FY14. This has resulted in an LoP total of 723 VSLAs. Currently, all 573 groups have engaged a total of 9,842 female members (6,669 in FY15) who have between them generated a total of US$386,368 in savings-based loans, US$261,721 of which in FY15. Importantly, 45 of the most mature VLSAs were linked with the National Apex of Savings and Loan Association (NAPEX) in FY15, seven of which have now received loans totaling US$19,705 from the central bank to further their internal lending activities.

In FY15 USAID FED provided LEAD with six motorcycles, which supported them to increase their micro-lending operations. USAID FED fed also supported the United Nations Capital Development Fund's (UNCDF) Microlead to support five VSLAs in Nimba County to begin the process of establishing a "micro-credit union" that will enable the union members to qualify to receive loans from the Central Bank to be used for on-lending to their individual membership. Simultaneously, USAID FED has worked with USAID Investing in Business Expansion (IBEX) to identify 20 high potential MSMEs, which are receiving support with the aim of them accessing higher-value loans from DCA-supported banks. USAID FED has also been

able to support a number of value-chain actors to provide embedded financing and to directly link to microfinance. This includes supporting produce wholesalers such as the Monrovia Vegetable Sellers Association, who in FY15 fully utilized a US$25,000 loan to provide input credit to 198 USAID FED-supported vegetable farmers and 1,194 farmers in the cassava, rice, and vegetables value-chains who received loans from LEAD.

Figure 49: USAID FED supported NGO Educare delivering training on leadership skills for VSLA groups.

In FY15 USAID FED has supported 10,010 MSMEs to access a total of US$930,362 of financing through formal, informal, and embedded services. Under this subtask, we exceeded by 11 percent the FY15 target of 9,000 for the number of MSMEs accessing financing. Similarly, these activities exceeded the FY15 target of US$751,634 for the amount of financing. The significant overachievement of the FY15 target for amount of financing and the number of MSMEs accessing financing is a result of the positive and wide uptake of the VLSA platform as a source of agricultural financing. It was observed, however, that while the VSLA is an excellent source of informal financing for smallholder farmers, it is not sufficient to fund more advanced entrepreneurial activities. Financing from microfinance institutions (MFIs) is good for moderately sized loans. The maximum an MFI is willing to lend is US$24,000. This is proving to be insufficient for more advanced entrepreneurial activities such as larger-scale rice trading and logistics provision.

Specific Results Toward FY15 Activities

Village Savings and Loan Expansion

In FY15, the Central Bank of Liberia created the National Association of Village Savings and Loan Association (NAPEX) to enhance the delivery of information among member VSLAs in a coordinated fashion, provide the opportunity for feedback on the implementation of activities, and help the Central Bank improve risk management by assisting in loan origination due diligence and the repayment process. As a result, all VSLAs wishing to apply for loans through LEAD are now required to register with NAPEX. Therefore, throughout FY15 USAID FED worked with the 123 VLSA groups established in FY13 and FY14 and supported 45 of these groups that have "graduated" and shared out after the first cycle to register to be eligible to apply for loans from the Central Bank's Loan Extension and Availability Facility (LEAF). By the end of FY15, six of these groups had opened accounts with Afriland First Bank of Liberia and all six groups have received loans of between US$2,350 and US$3,000 from LEAF, with one group receiving a second loan after repaying the first. These loans were based on three-year terms with quarterly payments at 3 percent annual interest rate and are being used by the VSLAs for on-lending to their members.

To expand the outreach of the VLSA activity, in Q2 FY15 USAID FED hired local NGO Educare to work with the existing VLSAs to support the formation of a further 250 new groups. Working in partnership with Microlead, the VSLA curriculum was upgraded with topics including leadership, gender equality, investing in agri-business, record-keeping, and accessing more formal finance to improve management of these groups. As a next step, Educare recruited 50 Community Field Officers (CFOs) and five M&E officers who received a six-day training course and then began the process of supporting 250 all-female "clusters" of MSMEs and farmers to begin establishing VSLAs. As a result, by the end of FY15 this activity has resulted in 9,842 members across the six USAID FED target counties receiving comprehensive training in subjects such as "Effective Communication," "Leadership," and "Improved Nutrition," and a total of US$447,731 saved in

FY15 to provide loans to 1,989 members totaling US$261,721. A full breakdown of the members, shares, loans and sales of these 373 VSLAs is below:

Table 85: Breakdown of number of VSLAs, members, shares, loans and sales by county.

County	VSLAs per County	Active VLSA Members per County	Total (LoP) Savings Pooled per County (US$)	Total (LoP) Number of Loan Recipients per County	Total (LoP) Loans Distributed per County (US$)
Lofa	75	2180	$25,328	449	$22,963
NImba	76	2099	$28,817	752	$52,465
Bong	75	1912	$21,025	237	$7,556
Bassa	74	1898	$13,733	279	$13,402
Margibi	37	925	$24,193	106	$4,005
Montserrado	36	828	$8,632	166	$10,218
Total	**373**	**9,842**	**$121,731.07**	**1989**	**$110,611**

In Q3 2015, USAID FED engaged another local NGO, Universal Empowerment Missions (UEM), to facilitate the formation of a further 350 all-female member VSLAs (75 in Lofa, 75 in Nimba, 75 in Bong, 75 in Bassa, 25 in Margibi and 25 in Montserrado), expanding the number of VSLAs across the six USAID FED target counties to 723. During the reporting period, UEM recruited 70 CFOs and five county-based M&E officers and conducted "VSLA Awareness" training to farming clusters involved in the four USAID FED target value chains. Two hundred of the groups are in the "formation" stage. The 350 VSLA groups will engage approximately 5,600 all-female USAID FED beneficiaries, 45 percent of whom will be youth, and their saving and lending activities will start early in FY16.

Figure 50: USAID FED and Microlead singing their MoU.

Pilot Micro-Credit Union with VSLAs

In Q3 2015, USAID FED and Microlead signed a Memorandum of Understanding (MoU) to partner in facilitating the establishment of a pilot "micro-credit union" to facilitate five existing VSLA groups to link together as a formal union to access larger loans from the central bank. As of the end of FY15, the five VLSAs had each contributed US $1,200 as potential loan capital and received initial "formalization" training according to a training guide developed by Microlead, which will facilitate the union to draft bylaws and a constitution and provide them with capacity building through credit union governance, leadership, financial management, internal controls, marketing, and business planning training. It is expected the union will begin its formal loan operations in early FY16.

Extension of Microfinance to Farmers and Entrepreneurs

Figure 51: Zeelie Farmers Association with its paddy rice purchased through the LEAD program with support from USAID FED.

In Q2 of FY15, USAID FED signed an MoU with LEAD and United States Africa Development Fund (USADF) to support the identification of individual farmers in the four target value chains which could be facilitated by USAID FED to receive individual loans from LEAD to utilize to expand their businesses. As a result, by the end of FY15 this activity facilitated a total of US$172,682 to be provided in new loans to 1,194 farmers and entrepreneurs in the cassava, rice, and vegetables value chains. These loans have had a substantial impact in facilitating some value chain actors to expand significantly; for example, in Q2 the Zeelie Farmers Association in Lofa received a loan of US$10,000 from LEAD to procure 8,050 kg of paddy rice from USAID FED-supported farmers to resell to the MoA and the Margibi-based rice processor, Fabrar Liberia Inc. The subsequent successful repayment of this loan was instrumental in the association then receiving a further loan in Q4 FY15 of US$24,000, which they used to procure and resell 5,880 kg of paddy rice from local farmers.

Business Training and Mentorship to Access Finance

Under this activity, USAID FED has signed an MoU with USAID IBEX to conduct capacity building sessions which will build understanding of loan policy and requirements to obtain loans through banks supported by the USAID DCA agreements for more mature USAID FED-supported entrepreneurs and farmers. At the end of FY15, the project had begun the process of identifying suitable participants and it expects to support the first farmers to receive loans in early FY16. In addition, USAID FED has been providing business training and mentoring to other groups such as the United Communities Agriculture Group from Jeremiah Gardee Town in Grand Bassa. As a result of this support, the group has become one of the largest cassava producing groups in Grand Bassa, and on August 2, 2015, the group signed a grant agreement with USADF for US$89,187 to support expansion of their commercial cassava production.

Pilot Embedded Financing

In Q3 2015, LEAD committed to provide US$60,000 to USAID FED farmers through embedded financing provided directly to input suppliers and traders. As a result in Q4 2015, USAID FED teamed up with LEAD to facilitate the Monrovia Vegetable Seller Association (MVSA) in obtaining a loan of US$25,000 to expand their embedded financing activities. The MVSA has begun utilizing the loan to provide inputs to 474 USAID FED-supported vegetable farmers on credit. The MVSA will then receive repayment in produce, which they will sell in Monrovia at a profit after paying back both the principle and interest on the loan.

Challenges and Lessons Learned

The VSLA program has been highly effective in facilitating MSMEs in farming communities to overcome the challenges of proving that they are able to invest in income-generating activities. Importantly, they have shown that they can successfully pay back loans. In addition, the use of Local NGOs to manage the group-formation process as opposed to the initial approach of using independent consultants has significantly allowed USAID FED to rapidly scale up the outreach of the VSLA program. The program has expanded from 123 groups in FY14 to 573 groups now, with an additional 150 groups to be formed in early FY16. The formation of these groups was delayed due to inability to travel by the Local NGO during the Ebola outbreak.

The program has also shown that systems of embedded finance not only exist but can also rapidly expand once large sources of finance are available for the lenders. However, the informality of these systems and lack of incentives for lenders to "publish" the extent of their lending presents USAID FED with a challenge on how to capture the full impact of its programming. In addition, in FY15 USAID FED was interested in piloting new ICT platforms for lending, however, as the LEAD lending systems are not yet compatible for taking loan repayments electronically, disbursing loans to clients through mobile money is not feasible right now.

Subtask 2.2: Access to Business Development Support (BDS) Services and Enterprise Service Centers

USAID FED's objective under this task is to facilitate the development of an enabling business environment which promotes the development of subsistence farmers into "business minded" MSMEs; and enhance the profitability of farmers by promoting the creation of vertical and horizontal linkages across the four value chains. The project seeks to achieve its objectives by strengthening the provision of sustainable Business Development Services (BDS) to MSMEs by strengthening BDS providers and supporting them to establish sustainable Enterprise Service Centers (ESCs).

The Life of Project (LoP) target for USAID FED under Subtask 2.2 is to: a) facilitate 629 firms (excluding farms) or civil society organizations (CSOs) engaged in agricultural and food security-related manufacturing to operating more profitably (at or above cost) because of USG assistance (FTFMS Indicator 4.5.2-43); and b) for 26,014 MSMEs, including farmers, to receive business development services from USG-assisted sources (FTFMS Indicator 4.5.2-37). The FY15 targets under this subtask alone were 250 firms/CSOs operating more profitably and 19,185 firms receiving BDS, respectively.

Summary of FY15 Achievement

As of the end of FY15, USAID FED has supported 22,205 SMEs (including farmers) in receiving business development services under this activity, representing 116 percent of the FY15 target. A total of 358 firms (excluding farms) and CSOs engaged in agricultural and food security-related manufacturing and services have been supported to operate more profitably, representing 143 percent of the FY15 target. The reason for this overachievement is the increased outreach made possible by Business Service Providers (BSPs) subcontracted by USAID FED to directly provide BDS to MSMEs, rather than relying on MSMEs to deliver services on a pay-for-service model only (please see Challenges and Lessons Learnt below). USAID FED has also supported the development of five BSP providers who have all expressed interest in partnering with the aim of establishing individual ESCs in the five target counties. In addition, the activities under this subtask have resulted in facilitating the registration of 314 MSMEs as businesses. Furthermore, the project is confident that the number will be substantially above the target for this indicator once the data of a survey sampling the financial and managerial improvement of 2,000 MSMEs which have received BDS is received in early Q1 of FY16 (please see Specific Results Towards FY16 Activities below). Again the reason for this significant overachievement in the FY15 target is the fact that by directly contracting the provision of BDS, the project has been able to engage significantly more non-farm beneficiaries than expected if the BDS services were immediately provided on a fee for service model as originally planned.

Specific Results Towards FY15 Activities

<u>Develop Five Business Service Providers</u>

As a first step to supporting the development of local business service providers (BSPs) in Liberia, in Q1 FY15 USAID FED contracted the Right and Rice Foundation, which is a master business service provider experienced in providing training on business management, planning and farming as a business, to provide capacity training for local BSPs. In Q2, the project also competitively selected five local service providers committed to developing into high quality BSPs to directly provide BDS to USAID FED beneficiaries after receiving training from the Right and Rice Foundation. Each of the five BSPs operates in the following USAID FED target counties: The Community Youth Network Program (CYNP) in Grand Bassa; the Liberia Initiatives for Development Services (LIDS) in Bong County; Liberia Entrepreneurial and Asset Development (LEAD) in Nimba; Jacob F. Tomei Enterprise Center in Lofa; and Top Consulting Inc. in Monserrado and Margibi. The training of the BSPs was conducted in Q2 over a number of sessions as follows:

Figure 52: BDSP training in Kakata, Margibi County.

Table 86: BSP Training breakdown.

Name of BSP	County	Training Location	Date of Training	Participants		
				Male	Female	**Total**
Top Consulting Inc.	Montserrado/Margibi	Kakata City	February 16-20, 2015	6	6	12
CYNP	Grand Bassa	Gbarnga City	February 23-27, 2015	8	4	12
LEAD	Nimba	Gbarnga City	February 23-27, 2015	8	4	12
LIDS	Bong	Gbarngo City	February 23-27, 2015	11	1	12
Jacob F. Tomei Enterprise Center	Lofa	Foyah City	March 3-6, 2015	17	7	24
TOTAL				**50**	**22**	**72**

The capacity building also included sessions on April 1–2, 2015, where representatives of the BSPs worked with the USAID FED component teams in Monrovia to be given a full understanding of USAID FEDs intervention approach across all components and within the four target value chains. This also included a description of the challenges and constraints USAID FED is trying to address.

To continue the technical capacity building of these BSPs and to help them be able to provide rapid and strategic BDS to USAID FED beneficiaries, the project conducted a series of two-day workshops with representatives of three of the BSPs and the management teams of the Rice Business Hubs. The focus of the workshops was on facilitating the participants to establish the vision, activities, and objectives of the individual hubs, in order for the BSPs to support the hubs to develop business plans to guide them through their first three months of operations. The participants of the individual workshops are as shown below:

Table 87: Rice Business Hub Workshop Participant List.

Name of Participant	County	Training Location	Date of Training	Participants		
				Male	Female	**Total**
LEAD	Nimba	Ganta	March 17 - 19, 2015	3	0	3
Dumpa Rice Hub	Nimba	Ganta	March 17 - 19, 2015	1	1	2
Payee Rice Hub	Nimba	Ganta	March 17 - 19, 2015	2	1	3
Boweah Rice Hob	Nimba	Ganta	March 17 - 19, 2015	3	0	3
LIDS	Bong	Gbarnga City	March 23 - 25, 2015	2	1	3
Garmu Rice Hub	Bong	Gbarnga City	March 23 - 25, 2015	3	0	3
Bong-mines Rice Hub	Bong	Gbarnga City	March 23 - 25, 2015	2	0	2
Voinjama Rice Business Hub	Lofa	Voinjama	April 15 – 16, 2015	3	0	3
David Selma Town Rice Business Hub	Lofa	Voinjama	April 15 – 16, 2015	3	0	3
Foyah Rice Business Hub	Lofa	Voinjama	April 15 – 16, 2015	3	1	4
Individual Rice Business Hub	Lofa	Voinjama	April 15 – 16, 2015	1	0	1
Jacob F. Tomei Enterprise Center	Lofa	Voinjama	April 15 – 16, 2015	3	0	3
TOTAL				**29**	**4**	**33**

A workshop April 6–8, 2015, was also held in Grand Bassa in Buchanan City to provide training to two representatives of the CYNP in the technical requirements of cassava producers and cassava nurseries. A total of 14 selected cassava producers participated in the training sessions, allowing them to be introduced to the BSP representatives.

Figure 53: USAID FED supported MSME training session in Bong County.

After the training, on April 22, 2015, the five BSPs were contracted by USAID FED to provide business development services to 22,025 MSMEs and farmers across the six counties. The BDS provided was to include training in business management, planning, and farming as a business and support on formalizing the MSMEs as businesses by registering them with the Liberia Business Registry (LBR) or with the Department of Small Business Administration (DSBA) of the MoCI. The delivery of the BDS began in May 2015 when the BSPs recruited 72 extension officers, which received

"Training of Trainers" capacity building training with 699 village agents. The training session was led by the Right and Rice Foundation and was conducted to provide all 771 participants with the skills to provide training directly to the 22,025 MSMEs and farmers in establishing and formalizing their businesses and/or organizations. The participants of the individual "Training of Trainers" workshops are as shown below:

Table 88: BSPs TOT Training Participants.

Name of Business Service Provider (BSP)	Location of Training County	Extension Officers		Village/s Agents		Total
		Male	Female	Male	Female	
LEAD	Nimba	8	4	174	26	212
LIDS	Bong	8	4	108	17	137
CYNP	Grand Bassa	10	2	110	14	136
JFTEC	Lofa	10	2	90	36	138
TCi	Mont/Margibi	17	7	87	37	148
Total		**55**	**17**	**569**	**130**	**771**

The training of individual MSMEs was carried out by groups of MSMEs in village or sectoral clusters, or provided to individual "larger" MSMEs such as the rice hubs. The extension workers and village agents followed a set curriculum when working with the MSMEs, which had the following six components:

Component I. Establishment of Businesses and/or Organizations

Focused on supporting the MSMEs, to self-identify such core business concepts as: What are the products and services of the business? What are the characteristic of the business? Is it an association, cooperative, sole proprietorship, partnership, etc.? A specific outcome was to support the formalization of a number of these MSMEs though facilitating them to develop articles of incorporation, bylaws, and constitutions so that they can register with the Liberia Business Registry.

Component II. Development of Marketing Plans

Focused on supporting the MSMEs in marketing topics such as: How to define what your market is? Who are your competitors and partners? Who are strategic partners? And, how do you develop long-term business relationships?

Component III. Investing in Business

Focused on supporting the MSMEs in financial investment topics such as: What is the difference between production cost and investment cost? What are the operational costs? How much revenue is needed for the business to sustain its operation?

Component IV. Profitable Operation

Focused on supporting the MSMEs' understanding the profit motivation of companies and covered topics such as: What is profit? Who gets the profit? When should dividends be shared between members? What are the options to increase profit?—Improving efficiency and productivity? Expanding production? Expanding product/service offerings? Expanding markets?

Component V. Financial Management

Focused on supporting the MSMEs to build financial management tools and covered topics such as record keeping, access to financing, and impact of financing on cash flow.

Component VI. Coaching & Counselling

This component was not provided as formal training but was provided on an *ad hoc* basis to certain MSMEs which had further needs for support in their daily operations, particularly in providing follow up support to MSMEs, which were supported in developing three-month action plans.

To expand the impact of the BDS to the larger MSMEs during August 2015, USAID FED supported one of the BSPs, LIDS, to complete an assessment to identify the challenges faced by three cassava processing centers, two rice hubs, and one vegetable rain shelter in Bong County. A similar assessment of 14 rain shelters in Montserrado/Margibi counties was also completed by Top Consulting Inc. (TCI). These assessments resulted in all 22 of these MSMEs being supported to develop individual three-month action plans, which the BSPs are supporting the MSMEs to implement through coaching and mentoring.

Figure 54: BSP Membership/Coaching training being conducted in Garmue, Bong County.

To capture the effect the provision of this BDS on the profitability of the MSMEs, USAID FED commenced in September 2015 a survey to determine the financial and managerial improvement of 2,000 MSMEs that have received the support. It is expected that the results of this survey will be received in early Q1 FY2016. The output of the BSP activities in FY15 can be seen as follows:

Table 89: MSMEs Receiving BDS Support.

Business Service Provider	County	# of MSMEs Having Developed Articles of Incorporation	# of MSMEs Formally Registered	# of MSMEs Developed Business Plans	# of MSMEs Developed 3-Month Action Plans	# of MSMEs received BDS Training
LEAD	Nimba	86	78	2	0	6,539
LIDS	Bong	61	63	2	8	5,653
CYNP	Grand Bassa	50	50	2	0	3,419
JFTEC	Lofa	50	54	2	0	3,369
TCi	Montserrado/ Margibi	90	69	2	14	3,225
Total		**337**	**314**	**10**	**22**	**22,205**

Challenges and Lessons Learned

USAID FED's original vision was to establish private-sector Enterprise Service Centers (ESCs) "near or at the location" of public-sector supported community colleges to allow ESCs to easily collaborate with program-supported Centers of Excellence. It became clear, though, from several strategic planning workshops held with the community colleges and prospective ESC partners that the community colleges were not prepared or interested in operating or co-locating with ESCs on their campuses. In addition, in FY14 there were no proposals submitted for the establishment of an ESC in Nimba or any successful effort to find

partners in Montserrado or Margibi counties. As a result, FED had to issue a second Request for Expression of Interest (REoI) in August 2014 to find prospective partners in these two areas but was still unsuccessful. Building on this experience, USAID FED realized that to find service providers in the counties that are skilled in providing agriculture services (extension services and equipment operation) and business development services, the program would have to work with service providers to build their capacity and access in the region. To overcome this challenge in FY15, USAID FED partnered with five existing private sector agriculture service providers, provided them capacity building training, and then hired these BSPs to deliver business advisory services to program beneficiaries and BDS support. As a result of this direct contracting, the BSPs have been providing BDS to a greater number of MSMEs as expected, as the no-cost service model attracts a significant number of MSMEs who would simply not pay fees if required, and it also provides the BSPs with an incentive to maximize the number of less profitable services for which there is less demand, such as providing business planning and supporting formal registration of MSMEs. In addition, this approach also succeeded in building the capacity of the BSPs sufficiently for them to seek to establish ESCs for them to enhance their own sustainable operations. Furthermore, to support the BSPs in the formalization, USAID FED planned to support staff from the MoCI Department of Small Business Administration (the primary agent for registering MSMEs) to tour the six counties to carry out official registration of the MSMEs that have been supported by BSPs to prepare articles of incorporation, by-laws and constitutions. However, in August the MoCI opened regional offices of the Liberia Business Registry in each of the counties, making the tour redundant.

Subtask 2.3 Increase Women Participation in Agribusiness

USAID FED's objective under this task is to ensure that women have equal access to critically needed extension services, small capital and microfinance, land, technical assistance, and access to equipment for processing. Whilst the program as a whole takes care not to perpetuate gender stereotypes or introduce new gender biases in its programming, subtask 2.3 works directly with a number of women-owned MSMEs working in USAID FED's four value chains to provide them with improved capacity to take on leadership roles, improved economic wealth in agriculture activities, and improved empowerment (decision-making authority and control over assets) in the household and work settings.

The Life of Project (LoP) cross-cutting targets for USAID FED under this subtask is to ensure that at least 50 percent of USAID FED beneficiaries are women, and to ensure at least 20 percent of USAID FED-supported MSMEs are women-owned or managed.

Summary of FY15 Achievement

As of the end of FY15, 46 percent of all USAID FED beneficiaries are women against the LoP target of 50 percent. In addition, USAID FED has supported the development of 573 all-women VSLAs, with another 150 all-women VSLAs in the early stages of formation. To further support the capacity development of women-owned MSMEs, USAID FED has provided 26 women-owned MSMEs with continued mentoring support from international and local consultants.

Figure 55: Mary Mawolo presenting her speech at the Leadership and Business Incubation Workshop, Lofa County.

Gender Baseline Study

In Q1 FY15, a total of 103 women entrepreneurs graduated from the USAID FED Leadership and Business Incubation for Women Entrepreneurs Training Program. This program aimed to address

two critical constraints facing women: lower human capital (leadership and business skills), and less access to networks and information. During this program started in FY14, the 106 women were provided with training on leadership, effective communication, effective negotiation, public speaking, strategic planning, basic recordkeeping and basic business registration. To follow up with this initial training, in FY15 USAID FED was seeking the "leading" 26 of these entrepreneurs to provide with closer and more sustained mentoring and coaching. To identify the leading 26 participants in Q2 FY15, USAID FED engaged an international Women-Owned Enterprise Development Specialist, Donna Rosa, to conduct a baseline study of these women entrepreneurs. As a result of this baseline study, 26 "leaders" were selected as they met the following criteria:

- Participated in at least 90 percent of the FY14 Women in Leadership training workshops.
- Demonstrated significant knowledge of basic business practices (recordkeeping, understanding of profit and cost, etc.).
- Had an existing business or previous experience in business.
- Had a sound business proposal.
- Was able to share in the cost (cash or in-kind) of the investment (start-up or expansion) needed by the business she proposed to pursue.

In addition, the baseline survey was used to collect financial data on the business data of 52 working women's businesses.

Women Business Incubation

Following the baseline survey, the international Women-Owned Enterprise Development Specialist began a program of group workshops and individual coaching and mentoring to support the 26 leaders to develop more sophisticated business plans for their organizations or businesses. In Q4, all 26 female-owned MSMEs were presented with a written copy of the business plan they had developed to allow them to start implementing them. In addition, a local consultant was recruited in Q4 to provide extra mentoring support for these women as they work to implement these business plans. This mentorship will continue throughout Q1 of FY2016; the mentor will begin working with these entrepreneurs in September 2015.

Figure 56: Business planning meeting with Willing Women Initiative, Totota, Bong County.

Challenges and lessons learned

Initially, many of the women engaged in the VSLA programs were illiterate, and as it was necessary for at least one of the group's members to record all of the VSLA activities. In some groups, men had to be admitted to help with this responsibility. The situation highlighted the challenge faced by women attempting to engage in formal business opportunities. As a result, in FY15 USAID FED worked to improve the basic literacy and numeracy of new VSLA. Another lesson learnt is that once MSMEs have adopted new technologies, such as growing new products such as peanuts and cowpeas that require new markets to be developed, then further support must be given for these MSMEs to develop the new marketing techniques.

Component Three: Build Local Technical and Managerial Human Resource Capability

NDA curriculum rolled out in the first semester of AY 2014-2015

On March 13, 2015, USAID FED in partnership with the Vice President of Liberia and Ministry of Education (MoE), officially launched the new National Diploma in Agriculture (NDA) Program at the Booker Washington Institute (BWI) campus. The NDA is a skills-focused two-year Vocational Diploma that prepares high school graduates to move directly into agricultural employment in the formal sector or through entrepreneurship. The Centers of Excellence (CoEs) will lead the practical training program through demonstration farms, extension services, and the showcasing of best practices and innovations in agri-business.

Figure 57: Vice President of Liberia Joseph N. Bokai and the US Ambassador Deborah Malac touring the demonstration farm at BWI during the NDA roll out ceremony.

The first year of the NDA program was rolled at the four USAID FED-supported CoE's (BWI, GBCC, LCCC, and NCCC). At the end of Q2, Lofa County Community College, Grand Bassa Community College, and Nimba County Community College all commenced classes for academic year 2014/2015 as part of the NDA program. BWI also commenced entrance exams for students aspiring to enroll in the NDA program; classes began in April 2015.

During Q1, USAID FED met with BWI Principal Alexander Massey at the CoE to discuss the status of USAID FED supporting farm development enterprises, the library, and rollout of the National Diploma in Agriculture (NDA) program. The BWI Principal solicited USAID FED's support to rehabilitate four classroom structures set aside for the NDA program. Major renovation includes:

Figure 58: One of the classrooms in need of renovation at BWI, Margibi County.

- Window and chair reconditioning and painting.
- Armchair repair.
- Renovation of four classrooms adjacent to the Agriculture Department to exclusively host NDA students.
- Library renovation to improve ventilation, lighting system and the general outfitting.

According to Massey, the NDA program will boost activities at BWI's Agriculture Department and could increase student enrollment. USAID FED funded the construction materials for the renovation of BWI's four classroom blocks based on an assessment and estimate review conducted by USAID FED Senior Engineer and BWI technical team. BWI, on the other hand, provided the labor force.

Figure 59: NDA Poster.

The BWI library is generally in good condition, but work needs to be done to address some issues at the facility. According to BWI Head Librarian, Daisy Fahnbulleh, there are leaks in the roof, which damages books when it rains.

Promoting the NDA:

In February, 300 copies of the NDA poster and flyer were printed and distributed to the community colleges and BWI. The posters and flyers were intended to be used to kickstart the promotional campaign activities at the various community colleges and BWI. The goal was to increase the enrollment of students in the NDA program during academic year 2015.

Additionally, 200 copies were presented to the CoEs by USAID FED staff for immediate posting and distribution. The remaining 400 copies were presented to the MoE for onward distribution to the colleges and high schools in the communities to continue the promotion and successful rollout of the NDA program.

During Q1, an assessment of the NDA program was suspended and expected to commence after two months of implementation of the program at each institution.

During Q2, USAID FED began an assessment of the rollout of the NDA program at the CoEs, beginning with Nimba and Grand Bassa Community Colleges. One-on-one discussions were held with instructors, administrative staff, and students regarding the delivery of the NDA program, including the methodologies for students' practical lessons with selected farms and industries. The assessment of the program will help determine the effectiveness of the curriculum and instructors' delivery as well as practical exercises, while outlining areas for improvement as a feedback mechanism.

CoE Enrollment Data:

Table 90: Agricultural Department & NDA student enrollment

Center Of Excellence	Male	Female	Total
Grand Bassa Community College	149	85	234
Nimba County Community College	82	60	142
Lofa County Community College	167	45	212
Booker Washington Institute NDA	40	7	47
BWI Regular and AVTP	131	46	177
Grand Total	**569**	**243**	**812**

Table 91: Institution enrollment data reflecting total number of students per institution excluding the Agriculture Department.

Center Of Excellence	Male	Female	Total
Grand Bassa Community College	535	471	1006
Nimba County Community College	303	145	448
Lofa County Community College	400	155	555
Booker Washington Institute	893	246	1,139
Grand Total	**2131**	**1017**	**3148**

An assessment of the NDA program was completed early in July 2015 by the Component 3 Lead, Dr. Samuel Duo. USAID FED is now focusing on the following steps for FY16:

By the end of Q4, USAID FED completed the recruitment of eight STTA in Liberia to provide the technical field-based training in soil science, crop science, animal science, farm woodland management, and computer software skills training. Such backstopping technical training support is now finally scheduled to be provided in early October 2015. A subsequent training will be carried out by the end of Q1 of FY16 to address the training needs for the NDA Year II implementation of the syllabi and lesson plans. Secondly, the Government of Liberia (GoL) the MoE will be continually engaged and encouraged to recruit seven additional faculty for the CoEs—especially NCCC, four instructors; GBCC, two instructors; and LCCC, one instructor—to ensure an effective delivery of the NDA curriculum.

Additionally, during early April 2015, the GBCC began relocating to its new campus facility in Paynesberry, Buchanan, Grand Bassa County. The Agriculture, T-VET and the Health Science departments moved to the new campus and began classes. Students are currently faced with higher transportation costs to the new facility to attend classes. Another challenge faced by the institution is the need for office furniture and equipment to set up offices at the new facility. Under the workplan, USAID FED began the procurement of computers, office desks, chairs, projectors, internet facilities and other items for all four CoEs. These items have already been procured and will be used to set up the computer rooms, science labs, libraries, and other relevant learning facilities in support of NDA program.

The office of the Academic Career Counseling at NCCC organized a one-day Agriculture Career Workshop on April 16, 2015,on the main campus of the college. The USAID FED Senior Vocational Agriculture Education Officer spoke to over 155 agriculture students enrolled in both the NDA Program and the regular diploma program on the topic, "The importance of studying agriculture and opportunities within the field of agriculture." The USAID FED Senior VAEO urged students to look at agriculture as a moneymaking career and not as subsistence farming.

Practical exercises incorporated in the lesson plans:

This activity intends to find agriculture and agribusiness facilities owned and operated by the private sector that can be used as demonstration sites for students enrolled in the NDA. It was anticipated that after completion of the reconnaissance exercise in Q2, USAID FED and the CoE's will begin negotiations with these farm/facility owners and finalize MoUs in order to establish partnerships with the institutions. The inclusion of farm/facility owners is intended to incorporate additional practical exercises into the NDA program lesson plans.

During Q2, USAID FED staff traveled to the field from February 9-14, 2015, and conducted reconnaissance visits to successful farming sites in Nimba, Lofa, Grand Bassa, and Margibi counties. The objective was to identify potential demonstration sites for the CoE agriculture students to carry out practical exercises according to the lesson plans of the NDA program.

USAID FED VAEOs, Extension Officers and staff from each CoE identified 17 demonstration sites in USAID FED-supported areas in the four counties as listed below. They also arranged for NDA students to conduct practical learning exercises at these farms. MoUs have been signed with each demonstration farm to enhance students' practical learning.

LOFA COUNTY

1. USAID FED Supported Cassava Nursery
2. Cocoa & Palm Plantation
3. Seleka Rubber Plantation
4. Voinjama Piggery Production Center

NIMBA COUNTY

1. Ganta Methodist Agricultural Site (They have training areas for vegetables, poultry and pigs)
2. USAID FED Supported Lowland Rice Production Site
3. USAID FED Supported Vegetable Production Site
4. Cocopa NRI Rubber Plantation
5. Gaimah Farm (Lowland rice production, and animal husbandry)

MARGIBI COUNTY

1. Gbarfilla Farm (Various vegetables, various fruits, soybeans lowland rice, chickens and pigs)
2. Allen Yancy Farm (Onions and hot peppers)
3. Kerjutunor Farm (Cabbage, okra, hot pepper, eggplants, corn and bitter balls)
4. Stubberfield Farm (Hot pepper, eggplants and bitter balls)

GRAND BASSA COUNTY

1. USAID FED supported Debbah Town Farm (Cassava)
2. Josephus Barnard Farm (Hot peppers)
3. Gbangee Town Goat Cluster
4. Neekreen Town Poultry

In March 2015, USAID FED finalized discussions with the administrations of the CoEs and demonstration farm owners in regarding finalizing plans for the review and adoption of practical lessons for the students. An agreement was reached to engage local farm and poultry owners to assist with students' practical learning exercises. An agreement was reached with the stakeholders, and MoUs were finalized as outlined in task 3.1.2.3 below.

Figure 60: Mr. Emmanuel Sumo signing on behalf of the Allen Yancy Onion Farm.

Schools had reopened in March 2015 after a prolonged period of closure due to the Ebola crisis; therefore, USAID FED staff began planning to work jointly with the four CoEs beginning in April to facilitate the development of MoUs between the CoE institutions and farm owners selected during the reconnaissance visits.

During May of Q2, stakeholders workshops were held at the Paynesbury Campus of GBCC and at BWI intended to finalize MoUs between farm owners and these institutions to allow NDA students to use the farms for practical exercises.

Below is a list of the farms that signed MoUs with GBCC and BWI to allow the NDA students to use their farms for practical exercises.

GBCC:
1. Grangee Town Goat Cluster
2. Joyce Kolvah Vegetable & Cassava Farm
3. Fortsville Vegetable Farming Group.

BWI:
1. E. Musu Tuah-Younn Multipurpose Farm
2. Gborfilla Farming Group
3. United Farmers' Cluster
4. J. Kpardeh Akoi Farming Group
5. Allen Yancy Onion Farm

On May 16, 2015, the NDA animal production class launched its first practical session. Mr. Alfred S. Kpadebah, Instructor of Principles of Animal Production (NDA 111), and the Dean of Agriculture Department Mr. Paul L. S. Nabieu, headed the team. Practical classes have also been conducted in other classes, including Introduction to Soil Science (NDA 118), Computer Application (NDA 114), and Introduction to Farm Woodland Management (NDA 117).

Practical field work began during this quarter at the CoEs. Freshmen students pursuing the NDA program at NCCC started practical exercises applying what they learned in the classroom. The NDA students planted local varieties of groundnut and cowpea on 0.1 ha of land using improved agriculture methods, including planting in rows to enable plant population calculation as opposed to the traditional broadcasting method**.**

Power Tiller Training at the Centers of Excellence:

USAID FED organized power tiller operation and maintenance training of trainers (ToT) for agro technicians and instructors at the four CoEs. The five-day training was held May 12-17, 2015,at the NCCC campus, followed by the LCCC and BWI, and facilitated by USAID FED Agro-Technician Charles Flomo.

Upon completion of the capacity-building training workshop, participants are expected to be able to operate the power tiller to plow land for rice, vegetable, root, and tuber planting, as well as provide services to surrounding community farmers for income generation and maintenance of the equipment.

Table 96: Power tiller trainees.

Complete Syllabi and lesson plans for the second year of the NDA:

Dr. Sam Duo USAID FED's Component 3 Lead facilitated the syllabi and lesson planning workshop held in July 2015. USAID FED's Component 3 Team used June to prepare for the workshop. Participants came from the University of Liberia, Cuttington University, MoE, and MoA, and instructors from the four CoEs were part of the workshop for the development of the Year 2 syllabi and lesson plans.

A total of 29 participants attended the workshop. They were divided into four groups to participate, including Component 3 team members who were also assigned to each of the four groups to assist with data entry or word processing. The workshop participants were drawn from the following institutions:

Table 97: NDA Year II lesson development participants.

Community/Institution	**Number of participants**
Grand Bassa Community College (GBCC)	5
Booker Washington Institute (BWI)	5
Nimba County Community College (NCCC)	4
Lofa County Community College (LCCC)	5
Ministry of Education (MOE)	1
Ministry of Agriculture (MoA)	1
Cuttington University (CU)	1
University of Liberia (UL)	2
USAID FED	5
TOTAL	29

The NDA courses designed for Year II syllabi and lesson plans include the following:

Table 98: Year II NDA courses.

Year 2 Semester 1	Year 2 Semester 2
1. NDA231 Pasture and Forage Production 2. NDA232 Agro-Climatology 3. NDA233 Introduction to Entrepreneurship 4. NDA234 Leadership 5. NDA235 Industrial Crop Production II 6. NDA236 Soil Fertility and Crop Nutrition 7. NDA237 Farm Soil Management	1. NDA241 Farm Power and Mechanization 2. NDA242 Genetics and Breeding 3. NDA243 Practice of Entrepreneurship 4. NDA244 Beef and Dairy Production 5. NDA245 Poultry Production 6. NDA246 Basic Fisheries Technology 7. NDA247 Agricultural Extension and Rural Sociology 8. NDA248 Farm Management 9. NDA249 Introduction to Animal Health


Figure 61: Participants during the NDA syllabi and lesson plan workshop at NCCC.

Development of internship programs with industry players and finalization of MoUs:

During Q1, USAID FED was expected to hold consultative meetings with industrial players for the possible recruitment of interns from the community colleges. The challenge faced during the period was that private sector stakeholder representatives departed the country due to the Ebola outbreak, thus the activity was not carried out. USAID FED and the CoEs planned to engage these stakeholders by the end of Q2.

During May, USAID FED held discussions with NCCC Administration regarding the establishment of internship opportunities with key industrial players for NDA students. On May 22, 2015,during its Career Fair, the NCCC administration discussed its internship program with key stakeholders, and encouraged their participation in the internship program. An internship meeting was later held in June 2015, and the NCCC, in consultation with other stakeholders, intends to launch the internship program in October 2015.

In June 2015, consultative meetings were held at both the LCCC and NCCC campuses to engage key industrial players for the possible recruitment of interns. The internship program is intended to expose the Agriculture Students who are also under the NDA Program to field activities before graduation. Consultative meetings were held with the authorities at GBCC and BWI.

Representatives from the below institutions pledged their full commitments toward supporting the internship program.

1. Voinjama District Cooperative Society
2. Africa Development Corps
3. Rural Agriculture Alternative
4. MoA/IFAD STCRSP
5. Cocoapa Farmers' Cooperative
6. Karmei Farm

At the consultative meetings at both LCCC and NCCC, industrial representatives and the CoEs jointly developed the selection criteria, and the CoEs selected a vetting committee for the selection of interns from each CoE. An MoU was drafted by the CoEs and circulated to all industrial representatives for their input. The official launching of the internship program in Lofa County was held on September 24, 2015, and in Nimba County it is slated for October 22, 2015. Representatives from the below institutions made commitments to support the internship program at LCCC:

In Lofa County, the below industrial key players attended:
1. Voinjama District Cooperative Society
2. Africa Development Corps
3. Rural Agriculture Alternative
4. MoA/IFAD STCRSP

In Grand Bassa County, the below industrial key players attended:
1. Liberia Agriculture Company
2. LIBRNCO

In Nimba County, the below industrial key players attended:
1. CoCopa Rubber plantation
2. Liberia Christian College/LICC
3. Gbedin/Dokodan Farmers' Cooperative

Industrial partners at the CoEs were identified in preparation for this task in May 2015. The delay was due to the NDA program being rolled out in March 2015 instead of last September due to the Ebola outbreak.

Figure 62: African Development Corps meeting with LCCC regarding the internship program.

On September 17, 2015, representatives from African Development Corps (ADC) headed by Mr. James S. Jorgbor signed the MoU accepting five students from LCCC for the internship program with their organization. After the signing, the five students were asked to sign an agreement form while a representative from ADC and the Dean of Agriculture, Mr. Paul Nabieu, serving as witnesses. The five students who signed the MoU with ADC were:

Table 99: LCCC students signing the internship program MOU before ADC representatives.

Figure 63: Kickoff of the internship program at BWI.

On August 27, 2015, activities marking the official launching of the internship program at Booker Washington Institute commenced. Representatives and heads of various governmental institutions, industrial partners, non-governmental organizations, and other technical vocational institutions attended.

The stakeholders expressed their satisfaction for the launching as it is giving them an opportunity to interact with the students, instructors, and administration of BWI. They promised to absorb the interns as they were aware that the internships would help develop the students for the job market. The students' representatives thanked the stakeholders as they expressed their profound gratitude for the opportunities the institutions will be providing them and promised to conduct themselves in a respectful manner while on their job training.

On September 24, 2015, activities making the official launching ceremony of the agriculture internship program undertaken by the Department of Agriculture with support from USAID FED took place in the auditorium of the LCCC. More than 75 participants, including representatives of INGOs, NGOs, LCCC administration, local government officials, prospective interns, and junior students of the college attended.

Figure 64: Participants at the official launching of the internship program at LCCC.

During the official launching ceremony program, the names of 21 expected graduates—20 men and one woman—from the Agriculture Department were announced by the Dean as qualified for the internship program in keeping with the set criteria put in place by the LCCC Administration. Three organizations—the Africa Development Corps (ADC), Rural Agriculture Alternative (RAA) and International Foundation for Agriculture Development (IFAD)— agreed to absorb the 21 students into their institutions as interns from October to December 2015.

Table 100: Institutions accepting interns from LCCC.

Institution	**# of Interns**
ADC	5
IFAD	10
RAA	6
Total	**21**

The MoU was developed with the support of USAID FED and signed by partners from the Africa Development Corps and LCCC, where ADC has accepted five of the 21 students. IFAD and RAA will be doing likewise to absorb the remaining 16 interns.

The official launching of the internship programs at Nimba County Community College and Grand Bassa Community College will take place in October 2015.

Establish performance management system at the CoEs:

In August 2015, a SoW was finalized and USAID FED HR began recruiting a Performance Management System Development Specialist to work with the CoEs. The consultant, Dr. John Sellu, is expected to be dispatched to the field to begin his assignment with the CoEs in early October 2015. A PMS is meant to provide a benchmark for instructors' evaluation and to guide them on areas for improvement. This also will provide the CoE management with a reference on training and other professional development activities that instructors need for effective delivery of the NDA Program.

The Performance Management consultant, upon completion of Phase 1 of his assignment, will follow up with the CoEs during fiscal year 2016 to monitor and ensure that the PMS system has been established and is functioning effectively.

Instructors trained on effective delivery of the NDA:

During Q2, USAID FED hired Mr. Jallah Kennedy, Agri-business Capacity Consultant, and mobilized him to the field to commence his task of conducting a capacity needs assessment of faculty members of USAID FED's four partner institutions in preparation for the rollout of the NDA program. Mr. Kennedy began his

assessment at the BWI and continued to GBCC, where he concluded Phase 1 of his assessment and proceeded to NCCC and LCCC, where he completed Phase 2.

The assessment sought to determine and identify relevant skills needed by instructors and top management of the four CoEs and determine capacity gaps that must be addressed in order to effectively deliver the quality of instruction anticipated for the NDA program.

The consultant outlined recommendations, which include USAID FED considering the possibility of ensuring that support and availability of specialized trainings for both instructional and support staff in professional areas such as soil testing and analysis, seed testing and analysis, seed processing and preservation, plant propagation techniques, drug administering to livestock, and compost-making. Others areas include castration, poultry production, and artificial insemination.

In May of Q3, USAID FED conducted a follow-up skills gap assessment of CoE instructors. The results of the assessment would be used to determine the training needs of the instructors for effective delivery of the NDA curriculum.

The curriculum, which was officially launched in March 2015, has seven courses to be taught in the first semester of Year One. These courses include:

- Principles of Animal Production
- Communication in English
- Principles of Crop Production
- Practical Math/Problem Solving
- Computer Applications I
- Introduction to Farm Woodland Management
- Introduction to Soil Science

Skills needed by CoE Instructors to Ensure Effective Delivery of the NDA Curriculum:

From the capacity assessment of 25 instructors, the following was noted:

- English, Mathematics and Computer Science instructors have adequate knowledge and skills to ensure effective delivery, and they answered "not applicable" regarding a deficient topic in the syllabi and lesson plans.
- However, the need for upgrading skills in newly developed computer software should be encouraged by the CoEs. Additionally, instructors should be encouraged to use free online computer courses, such as Alison's training, to upgrade their computer skills.
- Regarding courses in agriculture, instructors in soil science, crop production, animal production, and farm woodland management showed weaknesses in comprehension and indicated capacity strengthening needs in specialized skills across all four CoEs. For example, capacity strengthening areas in soil science include soil textural class analysis in the field and laboratory, soil profile analysis, soil pH, soil nutrient analysis, classification based on soil order, and soil bulk density determination.

Table 101: Number of Instructors that Participated in the Capacity Assessment.

Centers of Excellence	Number of Instructors
BWI	7
GBCCC	7
LCCC	5
NCCC	6
Total	**25**

Table 102: Skills Needed for NDA Instructional Staff.*

Skills Gap	Number of Instructors	Percent
Skills Not Applicable: (English, Computer & Mathematics Instructors)	9	36.0
Soil Science: Soil texture, pH, soil nutrients, soil profile analysis, soil classification based on soil order and soil bulk density (field and laboratory analysis)	4	16.0
Crop Production: Fertilizer requirement for plant, calculation and application; pesticide calculation, irrigation practices, and field layout.	4	16.0
Animal Production: Disease diagnosis and treatment; reproduction-cross breeding and feed calculation	4	16.0
Farm Woodland Management: Identification and selection of economic tree species and nursery establishment of economic tree species.	4	16.0
Total	**25**	**100.0**

**BWI, GBCC, LCCC, NCCC staff.*

Basic Computer Literacy Skills Needed by the NDA Instructors:

A total of 19 instructors out of 25 have skills in Microsoft Word. Approximately half of the instructors assessed have no knowledge and skills in Microsoft Excel and PowerPoint. Only 14 out of 25 instructors are knowledgeable in internet use.

Table 103: NDA Instructor Knowledge and Skills Levels in Basic Computer Operation

Computer	Not Knowledgeable	Fairly Knowledgeable	Knowledgeable	Total Number of Instructors
Microsoft Word	4	2	19	25
Microsoft PowerPoint	14	1	10	25
Excel	14	4	7	25
Internet Use	7	4	14	25

Based on these findings, USAID FED hired consultants to carry out the necessary knowledge and skills upgrading of instructors in the four CoEs.

In Q4, SoWs were finalized based on findings from the follow-up assessment and FED HR began the recruitment processes to hire five additional local consultants (listed below) to work with the CoEs. The process including interviews, background check, and final selection, and notifications of successful candidates were completed by the end of September 2015.

1. Farm Woodland Management Specialist
2. Soil Scientist/Agronomist
3. Agronomist
4. Computer Literacy Trainer

5. Animal Scientist

These consultants will provide intensive technical skills training to enhance the delivery of the CoE instructors' immediate training needs for effective delivery of the new NDA program. The consultants are expected to be dispatched to the field to begin their assignments with the CoEs in October 2015.

Exposure visit to vocational education in ECOWAS region:

In January of Q2, a vetting committee was set up by USAID FED which finalized the selection of the CoE staff based on a set of criteria, in order for them to travel to Ghana on a study tour. The 12 candidates from the four CoEs were selected to travel are:

Early in Q2, USAID FED Vocational Education Specialist STTA Patrick Ofori appraised Agriculture Vocational Training Institutes and Agricultural Colleges from different regions in Ghana. He identified three institutions that would meet the objectives of the exposure trip for staff from the USAID FED-supported CoEs. The trip aims for administrators, instructors, and business managers from USAID FED's CoEs to gain insights from how these more advanced vocational institutions deliver their vocational programs, generate revenues to sustain their operations, ensure sustainable management of the institution, and assure employment for the graduates. The expectation emphasizes that when the participants return to Liberia, they would come up with plans on how to improve management of the institutions, enhance delivery of the NDA, and how to run their agricultural enterprises more profitably.

The following vocational institutions were visited during the trip to Ghana:

1. Animal Health and Production College (AHPC) in Pong-Tamale
2. Kwadaso Agric. College (KAC) in Kwadaso Kumasi
3. Adidome Farm Institute (AFI) in Adidome, Sogakupe

USAID FED-supported CoEs commenced the selection process for representatives from the agriculture, business, and administrative departments to participate in the exposure visit to the three selected vocational educational institutions in Ghana. The two-week exposure trip took place in February 2015.

The general objectives of the tour were to:

- Study the achievements of the Ghanaian institutions.
- Identify profitable enterprise models for the replication at the CoEs in Liberia.
- Form partnerships with our Ghanaian counterparts providing the platform for teaching staff to learn from each other, improve the quality of their curriculum and teaching methods, learn new techniques for the development of farm enterprises, and promote sustainable income generation.
- Develop action plans, budgets, and deliverable timelines for implementation.

The USAID FED Ghanaian Consultant, Mr. Patrick Ofori, organized and facilitated the meetings in all of the locations visited. Upon returning from daily visits, evening sessions were also organized and conducted with the consultant, where each group analyzed its daily activities and rehearsed group presentations.

Figure 65: Participants from the study tour on a field visit in Ghana.

The libraries and laboratories of the Ghanaian institutions were also explored by the USAID FED study tour team, where they had the opportunity to ask questions related to the operations of the facilities, farm enterprises, and strategies put in place to sustain these facilities. Below is a summary of the lessons learned:

Figure 66: CoE staff participating in the study tour to Ghana.

- Teachers that serve the institutes for three years are qualified and usually sent for advanced studies (internally and externally). During the study period, they are required to return every vacation to teach.
- The farm institute produces planting materials such as citrus, vegetables, pineapple, cassava cuttings, and cacao for sale.
- Agro-business courses (business plan and project proposal writing) are included in the curriculum to provide students with some of the requisite entrepreneurial skills for enterprise development. To help students develop business skills and take advantage of entrepreneurship, business courses are integrated into the curriculum to help students gain knowledge in business planning and management.
- The colleges visited in Ghana use a standardized curriculum for delivery of both the certificate and diploma programs developed by Cape Coast University in collaboration with the Technical Vocational Institutes and Ministry of Food and Agriculture.
- Instructional delivery methods in the colleges visited has been shifted from using black boards and chalk to modernized white boards and projectors for lesson presentation to students with the availability of textbooks or handouts to students during classroom presentations.
- Syllabi and lesson plans are developed from the curriculum, harmonized and aligned with the courses taught by the instructors.

- Students enrolling in the diploma program in Agriculture Science are required to complete two years of theory and one year of practical exercises (three years total) to become eligible for graduation. The Ghanaian program has the first year being theory based, while the second year the students participate in an internship program, and fin the third year they study in the classroom again before graduation.
- A combination of business and agriculture (agri-business) can be harnessed to develop sustainable enterprises that lead to successful livelihoods.
- Graduating students are given specific projects in their areas of study to be carried out individually with supervision from the assigned instructor before graduating.
- Facilities such as the library, science laboratory, and soil science laboratory exist at all three Ghanaian institutions.

By the end of Q3, USAID FED received submissions of the CoEs action plans to implement the lessons learned from the study tour in Ghana.

Establishment of standardized Agricultural Science Labs and training of instructors and technicians

During the reporting period, Architecture and Engineering firm Global Construction and Mechanical Company (GCMC) completed assessments of the buildings that would house the science laboratories in each of the CoEs. Further, the purchase order for GCMC's services was modified to include provision of supervision services during the science laboratory constructions works.

Following the conclusion and revision of budgets, three firms were selected to carry out renovations in Q2:

- Unique Business Corporation (UBC) – Lot 1 (BWI) & 3 (NCCC)
- VECO Construction Consultancy Incorporated - Lot 2 (LCCC)
- Seek Engineering & Consultant (SEACON) Inc. - Lot 4 (GBCC)

In April of Q3, the agriculture science laboratory renovation works commenced at the four CoEs and was completed by the end of Q4. The CoE administrations worked closely with the construction firms and GCMC supervisors to ensure that work was progressing in accordance with the workplan.

The four CoEs received a list of all the laboratory equipment and furniture for the Science Lab. On August 11, 2015, the installation of laboratory equipment and furniture began at the newly renovated science laboratories at the CoEs and was completed by end of September 2015.

Figure 67: Dr. Moses Zinnah testing the soil for nitrogen content during the Grand Bassa Community College Science Lab Inauguration.

On September 15 and 30, 2015, the USAID Deputy Mission Director and the USAID FED in collaboration with the Government of Liberia inaugurated the modern Science Laboratories at both Booker Washington Institute (BWI) in Kakata, Margibi County and the Grand Bassa Community College in Buchanan, each worth approximately US$200,000.

The Science Labs at the NCCC will be inaugurated in October and the one at LCCC in November.

An SoW is being finalized and expected to be published in early October 2015 to recruit a local STTA to conduct training for instructors and laboratory technicians on how to effectively manage and maintain the

laboratory facilities at the four Centers of Excellence. The training of the lab technicians and instructors will begin in early November 2015 after completing the inauguration ceremonies of the science labs.

Library facilities upgraded, outfitted and effectively maintained

During Q1, USAID FED procured textbooks and reference materials for the CoE libraries. In January, a list of approved textbooks and reference materials were procured with the assistance of the Home Office and shipped to Liberia. On January 23 and 27, 2015, FED VAEDS traveled to GBCC and BWI and presented 72 pieces of textbooks to the each institution on behalf of USAD FED in support of the NDA curriculum. NCCC and LCCC also received 72 pieces of textbooks each from USAID FED.

Figure 68: USAID FED handing over textbooks to the CoE's.

By the end of Q3, a total of 104 sets of textbooks and reference materials were provided by USAID FED to the CoEs. In Q3, additional textbooks were identified for use during the development of the Year 2 syllabi and lesson plans, and a copy each was procured to be evaluated by the instructors during the workshop. The CoE instructors determined the textbooks to be useful. Therefore, USAID FED is procuring these textbooks (three copies per textbook) in Q1 of FY 16.

Table 104: Courses Requiring Additional Textbooks for Year 2 of the NDA.

Course No.	Course Description
NDA 231	Pasture and Forage Production
NDA 234	Leadership
NDA 237	Farm Soil Management
NDA 242	Genetics and Breeding

USAID FED completed the SoW for the development of a Flash Website for the CoEs and sought the services of a qualified DAI Home Office staff to assist with the assignment, but that arrangement did not materialize. However, USAID FED has decided to do away with the Flash Web development and instead procure a hard drive to store instructional materials for students and instructors at the four CoEs in early FY 16.

In November, USAID FED contracted Librarian Specialist Mr. Forkpa Kemah, who trained local librarian and library staff from BWI, LCCC, NCCC, and GBCCC on how to effectively manage the operation and efficiently maintain the learning resources housed in their libraries in order that these are optimally used by current and future students for many years to come. The training took place at Suakoko, Bong County.

On March 17, 2015, USAID FED facilitated mobilization and dispatched the consultant to the field to commence the second phase of his assignment, which was geared toward providing follow-up and mentorship training for the librarian staffs at the CoE's. The trainer visited the libraries at each of the community colleges and BWI to monitor progress on library maintenance and provide additional coaching where needed in support to the rollout of the NDA at the institutions.

Library at the Grand Bassa Community College:

During Q1, USAID FED observed that the GBCC library might not have the capacity to accommodate the additional agriculture textbooks that the project intended to supply in support of the NDA. GBCC library shelves were overloaded by the volume of books and boxes of books placed on the floor. The GBCC Head

Librarian Oretha Diggs also stressed the need for a photocopier/printer in the library and requested USAID FED to support the cataloguing/shelving for setting up the new campus library.

Establishment of computer labs at the CoEs:

In accordance with USAID FED FY15 annual workplan, USAID FED intended to further assist the CoEs with the establishment of internet connectivity. In April of Q3, USAID issued an RFP and a vendor was selected to provide the internet services. Novafone was selected to provide services for the four CoEs for a total of US $84,360 for a period of one year. During the reporting period, Novafone completed the internet installation process at the four CoEs. There are two purposes for this: 1) to provide online learning resources and 2) as a source of income through fee-based internet access services to the community, students, and instructors. Internet access will be provided to the computer labs, libraries, career, resource and internship centers, as well as the departments of agriculture, business, administration, and other departments.

In Q2, the procurement process for the acquisition of computers, furniture, and other ICT equipment for the computer laboratories at the four CoEs was initiated. An RFQ was publically advertised in three newspapers on February 9, 2015.

USAID FED also received and evaluated 10 RFQs for the supply of computers and office furniture from local vendors. Four vendors out of the 10 submissions were selected for inspection based on technical specifications provided. USAID FED visited the four selected entities. The inspection was intended to ascertain the level of understanding of the technical requirements of the RFQ and quality of materials in their possession as being displayed. Based upon final inspection, Crosswords, a local firm, was selected for the supply of the equipment for Lot #1 for US $139,010.

Build Capacity of CoEs to generate income from different sources

In August, a SoW was finalized and USAID FED HR began the recruitment processes to hire a Strategic Planning, Finance, and Enterprise Development Specialist to work with the CoEs. The recruitment processes, including interviews, background checks, final selection, and notification of the successful candidate, were completed by the end of September 2015. The consultant is expected to be dispatched to the field to begin his assignment with the CoEs in early October 2015. He will work with CoEs for the development of three-year strategic plan including business, HR, institutional, and financial plans.

Figure 69: CoE staff participating in compost training at BWI.

Booker Washington Institute Farm Development Enterprises:

During Q1, BWI sowed watermelon, okra, and cucumber seeds, and applied compost on the institutions' vegetable production sites. Vegetables were planted on the following land areas:

- Watermelon- 1000 meter sq. (20x50)
- Okra- 800 meter sq. (16x50)
- Cucumber - 400 meter sq. (16x25)

BWI continued the cultivation of an additional land space to accommodate hot pepper, sweet pepper, bitter ball, sweet corn and cabbage.

The BWI production unit also conducted major crop maintenance activities and site expansion targeting a one-hectare plot for vegetable production required for this dry season. According to the BWI farm manager, an additional 2 ha vegetable site will be cultivated in January 2015 to meet the markets' demands. A total of 3 ha of production sites will be used for student research and demonstration sites to enhance production activities at BWI. Fencing of the demo farms to protect crops from animals and thieves is a major task, while pest control is ongoing.

To address the concern of irrigation systems during the dry season, USAID FED hired a firm to construct wells and set up irrigation systems at both GBCC and BWI to support the vegetable crops during the dry season**.**

Vegetable Harvest at BWI

During the month of December 2014, BWI harvested fresh okra (304 pounds), watermelon (1,390 pounds) and cucumber (399 pounds) from the institutions' USAID FED-supported vegetable site. BWI harvested a total of 1,566 pounds worth of vegetables and realized LD $39,150 (US $500) in income.

Figure 70: Figure 16: NCCC Student participant operating the Wood chipper during the training. Production training in progress at BWI, Margibi County.

Commercial Compost Production Training at BWI:

In December, BWI produced three compost piles in anticipation of readiness in February 2015. BWI commenced compost production in December in anticipation of the preparation of 400 bags for the operation. The compost is intended to enhance crop production within the communities and other agriculture sectors in the country (Figure X).

In January of Q2, USAID FED organized and conducted a 10-day compost preparation training workshop for the CoEs at BWI. The training was facilitated by Mr. Jacob Swee, instructor at BWI, in which 16 people (12 men and four women) participated from the four Centers of Excellence.

The participants toured the agricultural facilities of BWI, including; the vegetable garden where compost materials were used as fertilizer for the production of vegetable crops (watermelon, cucumber, and okra), the cattle facility, pig-pen, and compost plant.

The objective was to provide CoE staff with practical hands-on training in the production of compost for commercial purposes to help them consider composting as another income-generating opportunity.

At the conclusion of the training, participants requested a number of follow-up actions to be taken by USAID FED to ensure success for the CoEs in the production of compost:

NCCC Compost Enterprise:

NCCC has not commenced the making of compost, though the college has received a wood chipper, compost thermometer, and moisture meter. According to the NCCC Administration, the roof of the compost building has not been renovated by USAID FED since it got damaged immediately after construction work was completed. An appeal was made during the first semester of academic year 2015 to repair the damaged roofing, but repairs have not been done.

Each of these CoEs will need to carry out a market study to determine the feasibility of going into this business. If they are able to determine that it is a feasible business for them, then USAID FED can provide additional business support to them.

Grand Bassa Community College (GBCC)

During the reporting period, USAID FED met the Grand Bassa County Community College (GBCC) Vegetable Enterprise Team to discuss progress of the operation. The chili pepper, bitter ball, and eggplant crops are planted in nurseries, and transplanted in the field periodically on a hectare of land.

USAID FED and GBCC also visited the vegetable enterprise site under cultivation at the Paynesberry Campus. During the visit, USAID FED confirmed that GBCC received the USAID FED-procured wood chipper. GBCC hired five casual workers for site clearing and transplanting of seedlings.

Figure 71: The NDA students at GBCC in Big Joe Town conducting their practical exercises at the farm

GBCC's production plan for cassava was developed and they had begun working on completing their marketing plans. The marketing plans will be completed in early FY 16.

In Q2, USAID FED delivered irrigation pressure pumps to GBCC and BWI. The irrigation pumps are being used for the vegetable farms at both institutions to boost production.

During Q3, the USAID FED Vocational Agriculture Education Specialist and Vocational Agriculture Education Officer assigned to GBCC visited the GBCC Vegetable Enterprise site in Big Joe Town, where digging of the soil and laying of beds for the pepper and bitter ball seedlings to be transplanted from the nursery began. Also in May, GBCC received 100 bags (50kg/bag) of compost procured by USAID FED from the Booker Washington Institute (BWI). At a cost of US$15 per bag, BWI earned US$1,500 for the 100 bags of compost. Application of the compost was carried out at both the GBCC main campus vegetable demonstration site and the enterprise center site.

- A total of 1.5 hectares have been planted with mixed vegetables at the GBCC Demo Site.
- Tomatoes seedlings have been planted in the rain shelter provided by USAID FED.
- Transplanting of bitter ball and pepper seedlings was completed at the GBCC Vegetable Enterprise Center during the period.
- Over 6,000 ridges and mounds have been developed but needed more cassava cuttings.
- Out of 60 bags of cassava cuttings allotted for GBCC cassava enterprise, USAID FED provided a total of 20 bags of cassava cuttings. An additional 40 bags of cuttings will be provided in the next month.

Figure 72: USAID FED installed rain shelter at GBCC with tomatoes planted inside.

Lofa County Community College Farm Development Enterprises

In October of Q1, LCCC harvested rice from its 2.4 ha farm. The yield, however, was low at 2.85 MT from 2.4 ha. This activity did not receive assistance from USAID FED due to the delay in the signing of the MoU between FED and the LCCC Administration, resulting from prolonged negotiation on the terms of the MoU.

Figure 73: Assorted tools received by LCCC, Lofa County,

During the reporting period, LCCC threshed and bagged a total of 57 (50 kg) bags, or 2.85 MT of paddy rice (Nerica-L-19) from 3 ha. A total of 48 out of 60 plots were cultivated. USAID FED's support to the LCCC demo farm commenced in September after the rice had already been transplanted and was in its physiological stage. USAID FED was unable to conduct the necessary technical site assessment prior to transplanting and establish corrective measures before transplanting.

USAID FED procured and delivered farming tools totaling US$4,306 to LCCC. These tools and a shipment of five bags of USAID FED-procured urea fertilizer were not yet utilized by the CoE during the 2014 farming season due to their late arrival. These inputs would be used during the 2015 farming season.

During the quarter, USAID FED put the following measures in place to achieve its targets:

- Work with USAID FED Water and Irrigation Management Specialist to conduct site assessments and provide technical advice for the next planting season.
- Time the various planting seasons and start early preparations/TAMIS approvals for the activities.
- Commence early procurement of farming inputs such as agro-chemicals to be dispatched to the field.

In December, USAID FED Irrigation Management Specialist assessed the LCCC lowland demonstration site and recommended technical solutions to address the problem of low water supply at the lower end of the irrigation scheme. Recommendations included using a two cropping pattern to avoid planting crop from June to September 30, construct central drainage canal using 6-inch PVC pipes symmetrically from water retention head dike to the tail end of the scheme. The construction of the central drainage canal must be undertaken

early January or February. The materials estimated for the second alternative is US $713, while the cost estimate for the central drainage canal is US $3,483 arriving at a total of US $4,196. However, the problem is expected to be resolved in the early part of FY 16 by the USAID FED Irrigation Management Specialist.

LCCC Goat Shelter Construction:

During the reporting period, LCCC received 488 planks of wood and construction materials required for goat shelter construction. The wood was part of LCCC's contribution toward the construction of the goat shelter. In December, USAID FED recruited a lead carpenter to supervise the goat shelter construction. The goat shelter is constructed to support the development of the goat farming business at LCCC.

Goat and Lowland Rice Enterprise Plans:

During Q2, USAID FED supported LCCC in completing the first draft of the CoE's business plans for the goat and lowland rice enterprise. The draft has been submitted to USAID FED for review and feedback. The draft financial policy document of LCCC has also been submitted to USAID FED. Both documents have been reviewed by USAID FED. Comments were made and the documents were returned to LCCC for revisions.

Staff from the Agriculture Department at LCCC crafted a feeding and watering plan required by USAID FED before the procurement of 25 goats for their institution. The plan will help guide the caretakers in ensuring proper management and care for the goats. USAID FED has planned to procure the goats in April followed by basic training on the administering of medication and feeding procedures for the caretakers. However, the procurement process will be completed in Q1 of FY16.

The major components of the goat production and management plan are:

- Cassava Farm—the leaf and dried tuber will be fed to the goat until the peak of the rainy season when forage and hay will be available for the animals.
- Four field workers have been selected to be fully responsible for feeding the goats on time. They will also be responsible to gather nutritional feed for the goats.
- The Agriculture Department will help to plant nutritious grasses or forage in mini-ranches for the goats.
- Ensure safe drinking water for the goats on a daily basis.

In Q3, Lofa County Community College (LCCC) sold 51 bags of seed rice (50 kg) at US$20 per bag to the MoA. The rice was harvested from the LGCC demo farms. According to the Dean of Agriculture, Mr. Paul Nabieu, the money generated from the sale of this rice would be re-invested in lowland rice cultivation. LCCC completed the brushing of the 3.7 ha of lowland farm for rice production, which includes the peripheral bonds, inter-bonds, and floodways.

USAID FED and the LCCC Marketing Manager and Farm Manager conducted a one-day marketing survey for seed rice and paddy rice sales and goat sales covering vendors in Kolahun, Foyah, and Voinjama. The survey is intended to support the establishment of the goat and rice enterprises at LCCC.

Survey data has been compiled and submitted to the Marketing Manager. The survey results would feed into the market analysis for the business plan development. During the exercise, the survey team visited the New Foya Market, several cooperatives in Foya, the Kolahum Brothers Cooperatives, and Kolahum Central Market.

In September of Q4, LCCC began transplanting of rice seedlings on 56 plots. At the end of September, 29 plots had already been transplanted.

The institution is still awaiting technical assistance from the USAID FED Water Management team to complete the installation of PVC pipes to correct the water shortage situation in some areas of the swamp. According to Farm Manager Mr. Kollie Y. Harris, the reason for the delay in transplanting activities is that the administration did not release money on time to carry out the transplanting after the request was made in July. On August 21, 2015, LD $22,400 or US $264 was released to fuel the power tiller and pay daily hired labor to carry out the transplanting operation. The amount has been exhausted in the transplanting process of the 29 plots. The farm manager has written another request for LD $20,000 or US $235 to complete the transplanting, but the college is still working on the request. New rice seedlings are presently at the nursery to transplant.

The training workshop of goat technicians at the CoEs in administering goat medication and care taking commenced on August 12, 2015, with support from the USAID FED Goat Value chain in support of the development of the CoE's farm enterprise development activity. USAID FED provided each CoE goat medication and starter kits to facilitate the training.

Nimba County Community College (NCCC)

During the Q1, USAID FED commenced the establishment of two agri-business enterprises at NCCC—cassava and goat. A strategic committee was set up by the management to develop business and marketing plans for the two enterprises. The business plan for the cassava enterprise has been developed and submitted to FED for review and finalization.

USAID FED and NCCC Marketing and NCCC Business Managers conducted a three-day market survey of cassava products covering 25 vendors in Voinjama, Lofa County, as part of the development of the CoE's cassava enterprise plan (Table X). The compiled field data has been submitted to the NCCC Marketing Manager for analysis and development of a marketing plan.

Figure 74: Goat Medication Administering Training workshop at Goat Shelter at Nimba County Community College (NCCC).

Table 105: Enterprise established at NCCC.

	Product for market	**Market**
Cassava Enterprise	Cassavas chips, cassava- bread, starch, fufu,	Internal and external, including: bordering communities in Guinea & the Ivory Coast

Over 1,000 mounds and ridges have been planted with cassava cuttings and out of the 5.2 ha provided by the CoE for enterprise development, 1.2 ha is already under cultivation. A total of 1.075 ha has been planted with cassava using improved methods. Planting to complete the 1.2 ha is ongoing as of the end of September 2015.

NCCC Goat Shelters Construction:

USAID FED completed and officially turned over the goat shelter, which comprises general housing, and a maternity and quarantine center to Nimba County Community College (NCCC). The goat shelter is part of USAID FED's farm development activity, which supports NCCC's NDA practical sessions and also aims at generating income for the Center of Excellence.

At NCCC, paddy rice production is key to the operation of the Department of Agriculture as it provides an experiential learning opportunity for the students. The first and second weeding of the paddy field at the rice demo site has been completed and the application of fertilizer through top dressing has been carried out by volunteer students.

In Q3, students of the NCCC Agriculture Department under the close supervision of the Department Coordinator completed the spraying of the lowland rice demonstration site with herbicides as part of the students' practical exercises. The spraying activities of the lowland rice demonstration site is expected to reduce the number of unwanted plants (weeds) in the swamp area to give way for the reconstruction of the broken interbonds, peripheral, and floodway of the 2.5 ha of lowland rice fields. The 2.5 ha of lowland rice field is intended for students to gain hands-on training in lowland rice production.

NCCC also commenced the process of compost preparation at the institution. This is ongoing on a small scale without the use of the thermometer and moisture meters, which are used for temperature reading. The compost building itself needs renovation to prevent leakage during the rainy season. The NCCC administration has also agreed to work with BWI expertise to assist or advise on setting up their compost plant. In an effort to subsidize the compost-making process at the CoEs, USAID FED has procured moisture meters and thermometers for the compost production at the CoEs.

NCCC has also hired a technician to supervise the activities of the goat shelter, and formulate the feeding plan and treatment of goats with available medication.

NCCC has promised to develop and submit a worplan for the students' development of the cassava enterprise. It is also important to commence the cultivation of the remaining acres under the cassava enterprise development, and also resume the cleaning of the 1.2 ha, already planted on mounds.

Build capacity and provide technical assistance support to the CoEs' business departments

In August, a SoW was finalized and FED HR began the recruitment processes to hire a Proposal and Grant Writing Specialist to work with the CoEs. The consultant, Mr. Nathaniel Sikeley, is expected to be dispatched to the field to begin his assignment with the CoEs in early October 2015. He will train and help build the capacity of CoE staff for the development of proposals and grants writing for the purpose of identifying other sources of income for the sustainability of enterprises and other basic facilities.

The recruitment process for hiring of local independent consultants in the areas of grant proposal writing, strategic planning, and performance management systems, and other areas to provide professional training and assist CoE staff to develop skills in these areas, has been completed. It is expected that these CoE staff will be trained to begin to engage external sources for the purpose of generating additional funding for the development and management of their institutions. Training is expected to commence by October 12, 2015, and run until November 20, 2015.

The Proposal and Grants Writing Specialist will follow up on this task upon completion of the training scheduled to begin in October 2015.

Improvement of financial and organizational systems

A SoW was developed for the recruitment of a financial management specialist to establish and improve financial systems at the CoEs. This activity will be carried out in Q1 of FY16.

Establishment of advisory committee to provide checks and balances to CoE management

To achieve this task, Component 3 scheduled a technical review during the first week in August. Due to the nature of the task, USAID FED VAED's had to hold discussions with each institution's authority to develop a concept with the CoEs and clarify the functions of the advisory committee. Additionally, an activity plan was drafted for review with the CoEs for subsequent implementation. Technical review of the activity has been completed. The workshops for the establishment of the advisory committee will carried out during Q2 of FY 16. An Advisory Committee is needed to provide checks and balances to the management of the CoEs. The primary purpose of the advisory committee is to assist the CoEs' administrations in establishing, operating, and evaluating programs which serve the needs of the CoEs to provide expertise pertaining to strategic management, workforce development, sustainability, and technological change.

Component Four: Cross-Cutting Activities

Task 4.1: Communications/Knowledge Management

Communications

USAID FED was featured in print, broadcast, and online media, both international and local, at least 63 times in FY15.

No.	. USAID FED News	Newspapers	Online News Outlets	Radio and Other Media
1	Center of Excellence Staff to Vocational Education Trip to Ghana	7	1	
2	LEAD and USAID's Partnership Loan Intervention for Farmers	5		
3	MoE Launches New NDA Program	1		
4	Interview with Agnes Luz, NDA Program			1
5	Interview with John Selma, LEAD Loan			1
6	Interview with Agnes Luz, NDA Program			1
7	Liberia Business Incubator Inauguration	3		
8	Liberia's First Industrial Rice Processing Facility Inaugurated	6	1	
9	USAID FED Hands Over Technical Equipment to the MoA M&E Pilot Program in Bong County	2	1	
10	Rebuilding Liberia as Ebola Cases-Decline		1	
11	US Commits to Liberia Transformation	1		
12	Interview with Agnes Luz, LBI			1
13	Power Tiller Distribution Ceremony	9		2
14	Interview with Nelson Kanneh, Power Tiller Ceremony			1
15	Tuk Tuk Distribution Ceremony	2		3
16	USAID FED Inaugurates Science Lab at BWI	6		3
17	USAID FED Inaugurates Science Lab at GBCC	1		2
18	Back to School Farming Initiative Under USAID FED		1	
	Total	**43**	**5**	**15**

Success Stories

In FY15, USAID approved 14 success stories for distribution:

1. USAID FED Helps Improve Subsistence Farmers
2. Liberian farmers produce Surplus Rice
3. LEAD USAID FED's Loan Initiative

4. NAPEX Recognizes USAID FED
5. USAID FED Supported Rice Business Hub is Yielding Results in Lofa County
6. Farmer Turns Agro Dealer Changes Agro-Input Landscape
7. USAID FED Kick's Off 2015 Goat Marketing Event in Bong County
8. Loan Program Increases Rural Women's Capacity to Improve their Farms
9. USAID FED Supported Women's' Group Cashes in on Their Success
10. USAID FED Empowers Rural Women in Rice Production to Reduce Poverty
11. Liberian Goat Farmer: "I Have learned to Raise Goats as a Business Through the Support Of USAID FED"
12. Subsistence Upland Farmers Become Profitable Commercial Vegetable Producers
13. Higher Demand for Cassava Presents Farmers with Marketing Opportunity
14. Young Entrepreneur Dreams Big for Animal Farming

Press Releases

In FY15, USAID FED sent out 11 press releases to various media organizations to be published:

1. USAID FED in Collaboration with the GoL Inaugurates Science Lab Facility at the Grand Bassa County Community College in Buchanan
2. USAID FED Empowers 49 Youth Entrepreneurs through the Provision of Mechanized Transportation Equipment
3. USAID FED In Collaboration with the GoL Inaugurates Science Lab Facility at the Booker Washington Institute in Kakata, Margibi County
4. USAID FED Empowers 30 Youth Entrepreneurs through Provision of Power Tillers
5. USAID FED in Partnership With the Liberian Government To Inaugurate LBI Cassava Processing Facility
6. USAID FED Hands Over Technical Equipment to Boost Ministry of Agriculture's Monitoring and Evaluation System
7. President Sirleaf and U.S. Ambassador Malac Inaugurate Liberia's First Industrial Rice Processing Facility
8. Vice President Boakai Launches the National Diploma in Agriculture to Build Vocational Skills for Liberians
9. LEAD and USAID FED's Partnership on Loan Intervention for Farmers Breaks Financial Barriers
10. Center of Excellence Staff Participate in Study Tour to Vocational Agriculture Institutions in Ghana
11. UDP Trial Results Show Improved Yields for Liberian Rice Farmers

Knowledge Management

USAID FED requires STTA findings on special studies to be submitted to USAID for approval and then uploaded to USAID's Development Experience Clearinghouse (DEC) once approved. USAID FED also organized nine knowledge-sharing events, where findings and recommendations of STTAs were shared with partners and other stakeholders (Table X).

Table 106: STTA reports presented in FY15.

Value Chain/ Component	Event	STTA
Component 1 (Rice)	Observation & Deliverables for USAIS FED Rice Project	Dr. Pandian Balamurugan
Component 1 (Vegetables)	Technical Assistance in Production and Post-harvest Handling of Vegetables Toward Improved Productivity and Profitability of the Horticulture Value Chain in Liberia.	Emmanuel O. Owusu

Component 1 (Input Supply)	Comparative Study – UDP vs Broadcast and Zero Fertilizing in Lowland Rice Production in Bong, Nimba, Lofa and Grand Bassa counties of Liberia	Steve Atkinson
Component 1 (cross cutting)	Marketing and Sales Platforms for USAID-FED Priority Commodities	Cecilio Costales
Component 1 (Nutrition)	Improving Dietary Diversity through a Behavior Change Approach	Alison Gardner
Component 2	Women's Business Incubation	Donna Rosa
Component 2 (Policy)	Preparation of Implementing Guidelines for ECOWAS Seed Regulation	Josiah Wobil & Roland Massaquoi
Component 2 (Policy)	Rice Policies for Liberia: The way forward	Dr. Eric Wailes
Component 2 (Policy)	Development of recommended implementation guidelines to implement the ECOWAS Pesticide Regulation and to create a road map for the creation of a Plant Protection Directorate in the Ministry of Agriculture.	Dr. Alan Schroeder

Special Studies:

Justice Djokoto

1. Dietary diversity
2. Post-harvest losses of vegetables and rice
3. Impact of increase in rice production on household economics
4. Adoption (Application) of technologies introduced by FED
5. Impact of VSLA on beneficiaries

Asnakew Negash, Special Studies Advisor II, conducted the following studies:

6. Determining effectiveness of FED's extension delivery
7. Impact of use of shelters in goat production
8. Effectiveness of Community Animal Health Workers
9. Rice seed demand in the among FED farmers
10. Impact of the Rice Business Hubs in the communities
11. WEAI three years after USAID FED

United Methodist Radio Partnership

In January, USAID FED entered into an agreement with the United Methodist Radio in Monrovia toward broadcasting "On the Farm" in the counties of Montserrado, Margibi, Grand Bassa, Cape Mount, Gbarpolu, Bomi, and Bong. Under this agreement, "On the Farm" will be aired once a week for 30 minutes at no cost to USAID FED. USAID FED will produce two 30-minute programs each month. Programming will include food crop prices as well as information on agriculture best practices. The program will also feature USAID FED partners who might like to send useful messages to Liberian farmers.

Task 4.2: Environmental Compliance

Background/Introduction

Environmental compliance is a cross-cutting activity designed to mitigate the impact of FED's activities. The activity supports the four value chains, provides technical assistance on project environmental management

and oversight responsibility for the implementation of the Environmental Monitoring and Mitigation Plan (EMMP).

Rice Value Chain

In FY15, an environmental assessment was carried out on 261 hectares of lowland located in Yaphas Town, Todee District, Montserrado County. This is in line with USAID FED's approved IEE for new project activities. The assessment documented the current environmental conditions of the sites proposed for lowland rice cultivation for a large-scale lowland rice farmer. The land was heavily forested with no human activity for over 20 years. The assessment therefore recommended that there should be no USAID FED implemented activity on the site in keeping with USAID regulations on converting untouched or non-degraded land for agricultural activities.

As part of the principal objective of FY15 and to ensure compliance with USAID policies and USAID-approved IEE and EMMP for USAID FED's programming, especially training practices that are environmentally sound and safeguard human health and the environment, 280 upland farmers and 184 lowland lead farmers from Bong, Lofa, and Nimba counties were trained in environmental best practices in agriculture. The training was in response to USAID FED's environmental compliance objectives for FY15. Emphasis was especially placed on the implementation and promotion of specific Best Management Practices (BMP's) and understanding of USAID FED's environmental regulations.

Table 107: Upland Farmers Training.

County	Male Total #	Female Total #	Total
Nimba	86(78%)	24(22%)	110
Bong	100(92%)	9(8%)	109
Lofa	51(84%)	10(16%)	61
Total	**237(85%)**	**43(15%)**	**280**

Table 108: Lowland Farmers Training.

County	Male Total #	Female Total #	Total
Nimba	47(94%)	3(6%)	50
Bong	71(89%)	8(11%)	79
Lofa	44(80%)	11(20%)	55
Total	**162(88%)**	**22(12%)**	**184**

The routine monthly monitoring of sites across the four value chains is part of measures put in place to ensure that best practices are observed by farmers when conducting their activities. This routine inspection enhances compliance and verifies the knowledge of farmers on pollution control, soil and water use, application of fertilizers, and implementation of best practices.

The Environmental Monitoring Assistant and Grand Bassa County Manager conducted site visit to several lowland rice, vegetable, goat shelters, and water well sites. The main purpose of the visit was to ensure that USAID FED's activities are compliant to its EMMP.

Sites visited over the period included three lowland rice sites; Payecea, Gio, and David Town. From the supervision conducted so far, land preparation activities are ongoing and conforms to the Environmental Guidelines on Small Scale Activities in Africa (EGSSA). Water is available throughout the year, which makes it possible for farmers to conduct double cropping. Personal protective equipment is available to farmers to ensure safety while carrying out their farming activites. Drainage construction was ongoing and all sites are previously used sites, which complies with USAID and government's regulation regarding deforestation. USAID FED's EMMP is being complied with farmers while conducting their activities.

Figure 75: Payecea town lowland rice ditch being constructed.

Thirteen water management sites were visited over the period in Bong and Lofa counties. The purpose was to ensure compliance to quality standards and environmental requirements. Construction of those sites is on track.

USAID FED remains firm on the Reg. 216 requirement, and will undertake to ensure that no un-degraded lowland or uplands landscape is introduced in the USAID FED project.

Cassava Value Chain

Several cassava sites were visited across the four counties to ensure environmental best practices was applied in pests control, soil erosion, planting method base on site location, cassava production etc. The use of integrated pest management remains high for USAID FED's environmental compliance.

Vegetables

USAID FED monitored several vegetable sites in Lofa and Grand Bassa counties to ensure compliance as it regards safe use of water and pest control. All sites visited so far effectively and safely use water resources for irrigation purposes. The vegetable sites are appropriately drained to avoid unwanted standing water. All sites have been cleared of weeds and vegetation, which shows that farmers are maintaining a clean surrounding to minimize pest incidence and avoid chemical spraying, which is one of the best practices in environmental conservation. Most farmers apply local pest control methods in handling incidence of pest.

Goat Value Chain

In FY15, several goat shelters were also monitored to ensure compliance with USAID FED's EMMP. The routine monitoring took into consideration animal health, the location/construction of new goat shelters, waste management system, access to safe drinking water, and other best management practices across the four counties. In observations, safe drinking water was being provided to livestock. Livestock receive regular veterinary attention through deworming and vaccination. Animals that fall sick are treated and kept separate from other animals in the quarantine shelter. The goat shelters are all fenced, which prevents theft and the roaming of animals in the communities. The construction of the shelters reflects principles of good craftsmanship for animal husbandry. Livestock are kept in safe distance away from houses, kitchens, and other structures.

Figure 76: A goat shelter in Gaopa, Saclepea, Nimba County.

The issue of water shortage sometimes becomes a problem, especially during the dry season where water wells and pumps run dry. Shelters are cleaned regularly to reduce flies and odor, and manures from livestock are sold to vegetable farmers as organic fertilizers. All sites monitored so far are in compliance with FED's EMMP.

Other Environmental related activities

A one-day site monitoring visit was carried out by the Environmental Assistant along with the USAID FED Senior Engineer on the April 17, 2015. The visit was primarily aimed at monitoring the de-roofing of asbestos materials from the building that is to serve the CoE's Science Laboratory at the Booker Washington Institute in Kakata, Margibi County.

USAID FED received reports from the local EPA Department in Margibi County that due to staffing issues in the EPA, the designated authority to sign the permit requested by BWI had not been appointed at the time of the request. However, the local EPA Department should ensure to carry out due monitoring and supervision of the demolition and disposal process in line with EPA Guidelines. The activity was carried out by the subcontractor with direct supervision and monitoring by the local EPA office. USAID FED also monitored this activity to ensure compliance with our Field Operations Manual and USAID Environmental Regulations. This demolition and the disposal process of asbestos was successfully completed.

Major Accomplishments

- 280 upland lead farmers were trained in environmental best practices in agriculture.
- 184 lowland lead farmers were trained.
- Environmental monitoring tool developed to enhance monitoring across the four value chains.
- Printing and documenting all activities in TAMIS by value chain for Market Development Fund (MDF) filing.

Constraints

Extension officers are not making use of the environmental checklist. In the county offices, except Bong, extension officers do not use the checklist and neither do they document it. This, of course, creates a bottleneck for updating environmental activities at the county level. Translating environmental compliance practices at the field level requires improvement, especially for extension officers. Extension officers need to better document all their activities, including using the environmental checklist that will be used on a daily basis at the field level. Increase environmental monitoring across the four value chains to ensure compliance is strictly adhered to while conducting activities.

Recommendations

All extension officers or LNGOs visiting the field or conducting spot checks make use of the checklist and have it documented in the environmental files in the counties as evidence that sites are being monitored to ensure compliance with USAID and government's regulations.

Task 4.3: Monitoring & Evaluation

Data Quality Assessment

During FY15, the Liberia Monitoring and Evaluation Program (L-MEP) has a contractual obligation to conduct Data Quality Assessment (DQA) on the indicators used in USAID projects in compliance with the

ASDS 203 guidelines. The DQAs are intended to assess the quality of the data being reported by implementing partners. Consistent with this mandate, L-MEP conducted a DQA in June 2015 on data being reported on indicators used by USAID FED.

L-MEP previously conducted DQAs in 2012 and 2014 on indicators reported by USAID FED. The current DQA is the third DQA L-MEP has conducted on USAID FED indicators. Of the 26 indicators currently listed in USAID FED's approved M&E Plan, L-MEP has conducted DQA on a total of 20 indicators during the first, second, and third DQA. The third DQA was conducted on five indicators. Six indicators are outstanding because they were recently added to the revised M&E Plan, and USAID FED has not begun reporting data on these indicators.

During the DQA, L-MEP gathered relevant information through document review, meetings and interviews, and field observations. The information gathered was documented through established procedures for applying the five data quality standards—Validity, Reliability, Timeliness, Precision and Integrity—as per the ADS 20.3.11.1.

The third DQA revealed that the USAID FED program, after four years of project implementation, has enhanced its M&E System, resulting in improved data collection and reporting processes. The implementation of recommendations from the first and second DQAs implemented in FY 2012 and 2014 has—to a large extent—helped to improve FED's data management processes. USAID FED has implemented most of the DQA recommendations from the 2012 and 2014 DQA reports, which include developing and standardizing data collection instruments and processes, filing and storing data files correctly, developing an M&E manual, standardizing data reporting processes across regions of interventions, identifying data limitations, and developing ways to resolve some of these issues: (a) USAID FED has utilized data collection instruments consistently across the regions assessed in Bong, Nimba, Lofa, Margibi, and Grand Bassa counties; (b) Data reported on the indicators assessed were found to be consistent in PIDS, FtFMS, and the annual reports. USAID FED has identified ways to deal with possible data limitations, and steps have been taken to resolve some challenges faced in collecting and reporting some data; for example, FED has begun to collaborate with its local partners to help track project beneficiaries whose farms are not easily accessible due to their distant locations.

Other M&E Activities

Rapid Rural Appraisal:

A final report of the Rapid Rural Appraisal has been finalized and is being submitted to USAID for approval. Upon approval from USAID, this document will be used as an agriculture investment brief, informing the MoA and other donors, agriculture stakeholders, entrepreneurs, and farmers about the potential within Lofa, Grand Bassa, Bong, and Nimba that exists for lowland agriculture expansion. This document also provides information on locations that is endowed in the production of specific commodities, especially rice, cassava, vegetables, and goat.

Data Collection and Reporting Training:

During the reporting year, the FED M&E team conducted training on data collection, data management, and reporting for 19 LNGOs supporting youth in agribusiness (1) and in the value chains for rice (5), cassava (5), vegetable (4), and goat (4). Specific reporting templates and reporting guidelines were finalized for their use during FY15. Since then, LNGOs began responding to specific reporting guidelines and obligations as defined by their scope of work.

USAID FED Geographical Information Systems (GIS):

During the reporting period, the USAID FED M&E GIS Officer completed the following mapping exercises:

1. Rain Shelters location maps
2. Vegetables Clusters maps
3. Cassava Processors location maps
4. Cassava nurseries sites maps
5. Cassava Clusters maps
6. Maps of locations for goats marketing events
7. Goat Production sites maps
8. Lowland rice location maps
9. Upland rice location maps
10. Maps of UDP Trial sites, UDP Commercial sites, UDP+SRI Trial sites
11. Maps of RSM sites, differentiated by lowland and upland
12. Maps showing water management/irrigation sites
13. Maps of location of rice business hubs

Additionally, the USAID FED GIS Officer carried out mapping exercises for large scale land owners who will eventually be supporting USAID FED rice VC activities:

1. Fabio Lavent
   a) John L. Cooper Farm - 190 hectares
   b) Cinta Town Farm 280 - hectares
2. John Sunday, Todee District, Yahphas Town - 261.2 hectares
3. Jackson F. Doe, Yarwein Mehnsonnoh District, Sahnpa Town – 350 hectares
4. Dunbar's Farm, Jorquelleh District, Velenai Town – 125 hectares
5. Floh's Farm, Jorquelleh District, Galai Town – 120 hectares
6. Sumo Farm, Yeallequelleh District, Gbartala – 200 hectares