



ASSISTING MANAGEMENT IN THE POULTRY AND LAYER INDUSTRIES BY FEED IMPROVEMENT AND EFFICIENCY STRATEGIES (AMPLIFIES) PROJECT

MID-TERM PERFORMANCE EVALUATION REPORT

Revised September 2019

USDA Program: Food for Progress
Funding Year: 2015
Agreement Number: FCC-641-2015/016-00

Prepared by:
Adeline Ofori-Bah (PhD), Team Leader
Emmanuel Ofori-Bah, Survey Coordinator
Albert Obeng-Mensah (PhD), Senior Evaluation Specialist

TABLE OF CONTENTS

ACRONYMS.....	ii
EXECUTIVE SUMMARY	iv
1.0 INTRODUCTION	8
1.1 AMPLIFIES Mid-Term Performance Evaluation Purpose.....	9
1.2 Evaluation Questions	9
2.0 BACKGROUND	10
3.0 EVALUATION METHODS	11
3.1 General Approach	11
3.2 Methods of Data Collection	12
3.3 Methods of Data Processing and Analysis	18
3.4 Challenges Associated with the Methods Used	22
4.0 FINDINGS AND CONCLUSIONS	24
4.1 Results from Estimations of Values for Indicators	26
4.2 Relevance of the AMPLIFIES Project.....	28
4.3 Efficiency in Project Implementation	30
4.4 Effectiveness of Project Implementation	31
4.5 Project Sustainability	43
4.6 Key Lessons Learned.....	44
5.0 RECOMMENDATIONS.....	44
5.1 Recommendations by Stakeholder.....	44
5.2 Recommendations Based on Findings and Conclusions	45
APPENDICES	47
Appendix 1. The Evaluation Statement of Work	47
Appendix 2. The Evaluation Matrix.....	67
Appendix 3. Copies of Data Collection Tools	71
Appendix 4. List of Information Sources	94
Appendix 5. Disclosure of any Conflict of Interest.....	97
Appendix 6. Estimations to Derive Quantitative Evidence.....	99

ACRONYMS

ADRA	Adventist Development and Relief Agency
ADVANCE	Agricultural Development and Value Chain Enhancement
AMPLIFIES	Assisting Management in the Poultry and Layer Industries by Feed Improvement and Efficiency Strategies
APD	Animal Production Directorate
ARS	Annual Results Survey
ASA/WISHH	American Soybean Association's World Initiative for Soy in Human Health
CAADP	Comprehensive Africa Agriculture Development Programme
CAC	Crop Aggregation Centers
CAPI	Computer-Assisted Personal Interviewing
CBO	Community-Based Organization
DOC	Day-Old Chick
DRIC	Directorate of Research, Innovation, and Consultancy
FAD	Food Assistance Division
FBO	Farmer-Based Organization
FCR	Feed Conversion Ratio
FFPr	Food for Progress
FGD	Focus Group Discussion
FTE	Full-Time Equivalents
FY	Fiscal Year
GhAIP	Ghana Agricultural Investment Plan
GoG	Government of Ghana
GNAPF	Ghana National Association of Poultry Farmers
GPP	Ghana Poultry Project
kg	Kilogram
KII	Key Informant Interview
KNUST	Kwame Nkrumah University of Science and Technology
KSU	Kansas State University

M&E	Monitoring and Evaluation
MAG	Modernizing Agriculture in Ghana
METSS	Monitoring, Evaluation and Technical Support Services
MIS	Management Information Systems
MMDA	Metropolitan, Municipal, and District Assembly
MoFA	Ministry of Food and Agriculture
MT	Metric ton
NGO	Non-Governmental Organization
PAPI	Paper-Assisted Personal Interview
PFJ	Planting for Food and Jobs
PHTO	Post-Harvest Technical Officer
PTO	Poultry Technical Officer
PICS	Purdue Improved Crop Storage
PMP	Project Monitoring Plan
SDG	Sustainable Development Goal
SN	Serial Number
SO	Strategic Objective
SOW	Statement of Work
Sub-IR	Sub-Intermediate Result
UCC	University of Cape Coast
UNHCR	United Nations High Commissioner for Refugees
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USG	United States Government
VSD	Veterinary Services Directorate

EXECUTIVE SUMMARY

Background and Purpose of the Evaluation

The contribution of the poultry industry to employment, food and nutrition security, and poverty in Ghana is fairly well documented. Recent increases in market demand for poultry and poultry products have been attributed to rising per-capita incomes and other socioeconomic changes associated with urbanization. Only 30 percent of the annual domestic demand of poultry meat is estimated to be met by domestic production. The combined effects of many challenges place limits on growth of the poultry industry in Ghana, preventing it from contributing fully to the socioeconomic development of the country.

In an effort to assist Ghana in addressing some of the key challenges in the domestic poultry industry, in 2015 the United States Department of Agriculture (USDA) launched the Ghana Poultry Project (GPP) and the Assisting Management in the Poultry and Layer Industry by Feed Improvement and Efficiency Strategies (AMPLIFIES) Project and awarded them \$57 million. Under the Food for Progress (FFPr) initiative, USDA signed the Cooperative Agreement (Number FCC-641-2015/016-00) with the American Soybean Association's World Initiative for Soy in Human Health (ASA/WISHH) to implement the AMPLIFIES Project from October 1, 2016 to September 30, 2020.

With the goal to strengthen market linkages for locally produced maize and soy commodities utilized in feed and poultry production, the following key activities were implemented: 1) Training in harvesting and post-harvest activities; 2) provision of infrastructure for post-harvest storage and aggregation of feed inputs; 3) capacity building to achieve increased efficiency in feed ingredient procurement practices; 4) capacity building to achieve increased efficiency in feed processing; 5) capacity building to achieve improvements in adoption of improved poultry feed; 6) capacity building for quality and consistency of feed formulations; 7) capacity building to increase feed testing capacity; 8) increased marketing to expand the Poultry Feed Distribution Network; 9) facilitation of financial services to provide loans for investment in feed processing; and 10) organization of a national awareness campaign to promote egg consumption.

The purpose of the mid-term performance evaluation is to generate evidence for establishing the extent to which implementation of the AMPLIFIES Project has progressed toward the attainment of its intended objectives. The midterm performance evaluation sought to: 1) Generate evidence for responding to the evaluation questions that seek the relevance, effectiveness, efficiency, and sustainability of project interventions; 2) obtain reliable mid-term data for drawing conclusions about the outcome and output indicators used in measuring the performance of AMPLIFIES; 3) identify unintended consequences, both positive and negative; 4) determine which program components worked as expected and which did not, and the factors that have influenced occurrence of the observed status; and 5) make recommendations to guide successful program implementation for the remainder of the project.

Methods

A participatory approach involving engagement of stakeholders in the evaluation process was adopted throughout the execution of the evaluation. The key clients were fully engaged in the

evaluation design and planning for data collection. Varied procedures used for collecting data are categorized as qualitative and quantitative methods. Qualitative methods were used to gather data for answering the evaluation questions and identify factors that influenced positive and negative outcomes, both intended and unintended, utilizing semi-structured key informant interviews (KIIs) and focus group discussions (FGDs). The main quantitative techniques were a survey of 471 beneficiary maize and soybean farmers and a census targeting 611 beneficiary poultry farmers to elicit data for output and outcome indicators of the AMPLIFIES Project.

Twenty-four enumerators and six supervisors were recruited and provided a five-day training in February 2019 to complete the survey/census in 18 days. Since a significant number of poultry farmers were beneficiaries of both AMPLIFIES and GPP, the training and data collection involved considerable coordination with the team that conducted the evaluation of GPP. This was intended to reduce respondents' interview fatigue. Data collection took place from February 23 to March 10, 2019 for the crop farmers, and February 27 to March 14, 2019 for the poultry farmers. The evaluation team worked with the Monitoring, Evaluation, and Technical Support Services (METSS II) Project Monitoring and Evaluation (M&E) Specialist to request the AMPLIFIES M&E Specialist, poultry technical officers (PTOs), and post-harvest technical officers (PHTOs) notify all farmers of the impending survey prior to the commencement of field work.

Data obtained from all sources, including the survey, was cleaned, validated, and analyzed using qualitative and quantitative procedures. The descriptive approach dominated the qualitative analysis, but some measures of frequency were used to provide evidence about beneficiaries' views to support conclusions about qualitative phenomena such as effectiveness, sustainability, and relevance. The quantitative analysis was performed using the Stata statistical application.

Findings

Out of a sample of 471 crop farmers targeted for the survey, 448 respondents were reached and interviewed, giving a response rate of 95.1 percent. There was a low response (44 percent) in the poultry survey due partially to respondents' unavailability and, in some cases, refusal to participate. Evidently, poor response rate is common to all three regions. Of the 321 (53 percent) poultry farmers reached, as many as 52 of them were not willing to be interviewed. Given the low response rate for the census of poultry farmers, there was a need to determine whether the data collected could be used as evidence to guide decision-making. A decision was made to interrogate findings about the respondents to establish whether those interviewed could constitute a representative sample if a survey technique had been adopted for the category of beneficiary farmers. Using a confident interval of 95 percent and a 5 percent margin of error, as commonly applied in empirical socioeconomic studies, an accepted sample size was estimated to be 231 for a response rate of 40 percent. Based on these estimates, responses from the 269 poultry farmers were accepted as being a fair statistical representation of the beneficiary poultry farmers. However, because the size of poultry enterprises varies significantly, some stratification of these enterprises would have been necessary to ensure a fair representation of the size categories of farmers' enterprises. Based on this later argument, some caution must be exercised when using data that require summation of values for the beneficiary poultry farmers.

Relevance

Responses from interviews with focus groups and key informants, as well as those from respondents in survey/census of farmers, suggest the AMPLIFIES Project has been very relevant in terms of structure, content, and timeliness for addressing some inefficiency challenges facing actors of the poultry feed value chain in Ghana. While key informants in particular, expressed opinions to indicate an alignment to national agricultural policies that had implications for development of the poultry subsector, beneficiary farmers listed some of the project activities that addressed their specific needs.

Efficiency

Seventy-seven percent of crop farmers and 65 percent of poultry farmers expressed opinions in favor of efficiency gains as a result of their participation in the AMPLIFIES Project. Efficiency gains were made in terms of: 1) Reduced expenditure for veterinary services and drugs, resulting from use of improved quality of feed; 2) reduced bird mortality resulting from improved sanitation and biosafety measures; 3) reduced crop losses resulting from access to better storage facilities, especially the Purdue Improved Crop Storage (PICS) hermetic sacks; and 4) improved feed conversion efficiency for some farmers.

Effectiveness

Findings that illustrate the effectiveness of AMPLIFIES Project interventions include: 1) Most targets for performance indicators reported were achieved; 2) the application of harvesting and post-harvest techniques taught by AMPLIFIES resulted in satisfactory outcomes for the crop farmers; 3) coordination with GPP and other U.S. Government (USG)-funded projects has been good, especially interventions through the United States Agency for International Development (USAID) Innovation Labs; 4) the National Egg Campaign was reported to be successful; and 5) unintended results reported in FGDs and the survey/census were mostly positive. In terms of farmers' satisfaction with AMPLIFIES interventions, 88.3 percent of crop farmers and 78 percent of poultry farmers reported overall satisfaction. Indeed, 95 percent of respondent crop farmers expressed a willingness to recommend AMPLIFIES training programs to other farmers.

There are, however, a few interventions for which farmers expressed mixed views. For example, while linkages created for maize farmers seem to have yielded significant benefits, a link between soybean farmers and feed mills has not been well established. Another issue that had not been adequately addressed is small farms' limited access to feed formulated to meet genetic need. The size of storage facilities also remains inadequate in some farming communities. Contrary to farmers' high expectation, access to funds allocated for financial assistance to actors in the poultry value chain was problematic.

Sustainability

Eighty-five percent of crop farmers and 80 percent of poultry farmers interviewed agreed that they acquired performance enhancing skills they will continue to use for their enterprises after the AMPLIFIES Project ends. In terms of institutional arrangements, key informants and members of focus groups expressed contrasting views about involvement of local institutions responsible for agriculture extension services in the implementation of the AMPLIFIES Project. While key officers of some District Departments of Agriculture reported their involvement with

AMPLIFIES, others had little to no knowledge about the project. However, coordination with local entities can assure farmers' continued access to extension advice relevant for sustaining gains made by the project, especially due to the implementation of new Government of Ghana (GoG) programs, including Planting for Food and Jobs (PFJ) and Modernizing Agriculture in Ghana (MAG), have increased Metropolitan, Municipal, and District Assemblies' (MMDAs') access to extension service resources.

Recommendations

The following recommendations are based on findings from the evaluation processes and their subsequent conclusions:

- Clean up and update the farmers' database regularly to make it easier to identify active farmers and those that have completely left the business.
- Collaborate with the MMDA Departments of Agriculture to provide a platform for expanding the coverage of project interventions by leveraging resources and ensuring the sustainability of gains made.
- Explore strategic alliances with local entities that can carry on with some aspects of project tasks. On the national front, it is recommended AMPLIFIES identify strategic partners for a more sustainable National Egg Campaign.
- Limit annual results surveys. Besides the expenditure, the implementation of annual results surveys requires significant time and level of effort by the staff for planning and execution, and takes them away from programmed tasks. The measurement of these results can be reserved for mid-term and end-of-project evaluations. Any follow-on project needs to consider using indicators for which data is easily obtained, perhaps from secondary sources.
- Control the damage caused by the misunderstanding about the implementation of the grant component of the project. USDA should provide some clarity on project activities to industry leaders, especially what project funds can and cannot be used for.
- Strengthen the Feed Millers' Association, which can deliver substantial benefits, particularly since members have expressed the need and willingness to coordinate efforts at seeking audience for addressing common objectives.
- Examine the feasibility of establishing a central repository or resource center with tools for local artisans who service the equipment of clusters of toll or feed millers.
- Consider simpler names for projects for easy identification by farmers.

1.0 INTRODUCTION

The poultry industry is very important to the socioeconomic development of Ghana, contributing to employment, food and nutrition security, and poverty alleviation. The poultry sector is often categorized into two parts: Commercial, intensive/semi-intensive operators and small-scale backyard poultry keepers. They are usually treated as distinctively different entities in terms of policy advocacy and development decisions. However, there are significant linkages between them in terms of flow of inputs, products, and raw materials.

It is often argued that increases in Ghana's per-capita income and other social changes associated with urbanization, as well as changes in food preferences, have contributed to rising market demand for poultry and poultry products. The evolution of the poultry industry from the supply of live birds to dressed and cut pieces make poultry products more accessible to increased number of consumers. Lower income households can now afford to purchase smaller portions. Incidentally, the increased demand for livestock products in general is being met by external poultry operations, which has raised questions about the domestic supply response in the past decade.¹

Domestic poultry production increased steadily from 50,985 metric tons (MT) in 2013 to 60,291 MT in 2017.² However, in order to meet local poultry meat demand, imports of the product fluctuated between 96,975 MT and 172,055 MT for the same period with an average of 130,241 MT.³ Thus, domestic production of poultry meat is estimated to meet an average of 30 percent of annual domestic demand. The industry continues to serve as an important source of livelihood for many actors in the poultry value chain. This notwithstanding, the industry faces numerous challenges, including: 1) Limited access to quality feed; 2) inadequate knowledge and attention to breeds of day-old chicks (DOCs); 3) inadequate veterinary services and capital; 4) poor management and marketing skills; and 5) competition from imported products.⁴ Suggestions that new entrants to commercial poultry production are indicative of prospects for the sector in the next five years⁵ seem to have overlooked the frequency of exit by production units from the sector.

The combined effects of many of these challenges place limits on the growth of the poultry industry in Ghana, preventing it from contributing fully to the socioeconomic development of the country. In an effort to assist Ghana in addressing some of the key challenges in the domestic poultry industry, the United States Department of Agriculture (USDA) launched the Ghana Poultry Project (GPP) and the Assisting Management in the Poultry and Layer Industry by Feed

¹ Sumberg, J., Awo, M. D., Kwadzo, G., & Thompson, J. "Ghana's Poultry Sector: Limited Data. Conflicting Narrative, Competing Visions." Brighton: Economic and Research Council., 2013.

² Ghana Ministry of Food and Agriculture, Statistics, Research and Information Directorate. "Agriculture in Ghana: Facts and Figures." 2018.

³ Ghana Ministry of Food and Agriculture, Statistics, Research and Information Directorate. "Agriculture in Ghana: Facts and Figures." 2018.

⁴ FAO, Animal Production and Health. "Livestock Country Reviews: Poultry Sector, Ghana." Rome: Food and Agriculture Organization of United Nations, 2014.

⁵ FAO. "A system of integrated agriculture censuses and surveys, Volume 1." *Food and Agriculture Organization*. November 3, 2014. www.faodocrep/009/a0135e/A0135E06.htm.

Improvement and Efficiency Strategies (AMPLIFIES) Project to be implemented initially in the Ashanti, Brong-Ahafo, Northern, and Greater Accra regions. In 2015, USDA made its \$57 million award to these two Food for Progress (FFPr) poultry projects in Ghana.⁶

On reaching its midway mark, the AMPLIFIES Project undertook a mid-term evaluation to assess its performance and identify ways to reinforce positive results while addressing any shortcomings in order to achieve its objectives.

1.1 AMPLIFIES Mid-Term Performance Evaluation Purpose

The purpose of the mid-term performance evaluation is to generate evidence for establishing the extent to which implementation of the AMPLIFIES Project has progressed toward the attainment of its intended objective of “Increased poultry productivity and expanded trade of poultry products and by-products.” Specifically, it is intended to: 1) Generate evidence for responding to the evaluation questions that seek the relevance, effectiveness, efficiency, and sustainability of project interventions; 2) obtain reliable mid-term data for drawing conclusions about the outcome and output indicators used in measuring the performance of AMPLIFIES; 3) identify unintended consequences, both positive and negative; 4) determine which program components worked as expected and which did not, and the factors that influenced occurrence of the observed status; and 5) make recommendations to guide successful program implementation for the remainder of the project.

The primary audience of the evaluation report are: 1) The funding agency, USDA’s FFPr Program, specifically the Food for Development Branch in the Food Assistance Division (FAD); 2) the main implementing agent, the American Soybean Association’s World Initiative for Soy in Human Health (ASA/WISHH) Program; 3) the Adventist Development and Relief Agency (ADRA) Ghana; and 4) Kansas State University (KSU). Some beneficiaries also expressed an interest in learning about the output of the evaluation.

Findings from the evaluation will help guide the implementation of activities for the remainder of the project. With a clearer understanding about the drivers of the project’s performance, USDA can make informed suggestions for improving project implementation. On the part of ASA/WISHH, if required, leadership will be able to make informed decisions about any strategic adjustments.

1.2 Evaluation Questions

The mid-term performance evaluation focused on providing responses to the following evaluation questions.

Relevance:

1. To what extent is the project aligned with national policies and strategies for agriculture production?
2. How relevant is the project to the stated and immediate needs of stakeholders?

⁶ USDA. "Attachment A." *Plan of Operation - Food for Progress*. USDA, 2015.

Effectiveness:

1. To what extent is the project producing worthwhile results (outputs, outcomes) and/or meeting each of its objectives?
2. What, if any, unintended consequences can be attributed to the project?
3. To what extent has AMPLIFIES coordinated with the GPP and other United States Agency for International Development (USAID)-funded projects such as the Agricultural Development and Value Chain Enhancement (ADVANCE) program, the Ministry of Food and Agriculture (MoFA), other donor projects, and the private sector to achieve the overall objective of strengthening the downstream value chain capacity for Ghana's poultry industry?

Efficiency:

1. To what extent is the relationship between inputs and outputs timely, cost-effective, and to the expected standards?
2. Were inputs converted into outputs in a timely and cost-effective manner?

Sustainability:

1. To what extent are the project results likely to continue after the project?
2. Is stakeholder buy-in likely to continue or to be increased after the current contract period?

2.0 BACKGROUND

Under the FFPr initiative, the USDA signed the Cooperative Agreement (Number FCC-641-2015/016-00) with ASA/WISHH to implement the AMPLIFIES Project from October 1, 2015 to September 30, 2020. The geographic coverage of the project is the Ashanti, Brong-Ahafo, Greater Accra, and Northern regions of Ghana in communities that have high volumes of poultry, soy, and/or maize production.

Over five years (2015-2020), the AMPLIFIES Project is intended to build the capacities of actors within the value chain for Ghana's poultry feed industry. Specifically, it seeks to strengthen market linkages for locally produced maize and soy commodities utilized in feed and poultry production (AMPLIFIES Life of Project Work Plan, 2015). The goal of the project will be achieved by the attainment of the following five objectives: 1) Increase agricultural productivity in the poultry value chain by increasing the quantity and lowering the cost of poultry feed through the reduction of post-harvest loss and procurement inefficiencies of primary feed ingredients (USDA FFPr Strategic Objective [SO]1); 2) increase agricultural productivity in the poultry sector by improving poultry feed quality through the improvement of feed testing capacity and the demonstration of the benefits of quality feed (USDA FFPr SO1); 3) enhance feed processing efficiency through technology transfer and on-site training; 4) increase the trade of commercialized poultry feed through improved distribution networks and marketing; and 5) increase trade of eggs through awareness campaigns and the trade of commercialized poultry feed through improved distribution networks (USDA FFPr SO2).

The above strategic objectives were expected to be attained through the implementation of key activities, including: 1) Training in harvesting and post-harvest activities; 2) provision of infrastructure for post-harvest storage and aggregation of feed inputs; 3) capacity building to achieve increased efficiency in feed ingredient procurement practices; 4) capacity building to

achieve increased efficiency in feed processing; 5) capacity building to achieve improvements in adoption of improved poultry feed; 6) capacity building for quality and consistency of feed formulations; 7) capacity building to increase feed testing capacity; 8) increased marketing to expand the Poultry Feed Distribution Network; 9) facilitation of financial services to provide loans for investment in feed processing; and 10) organization of a national awareness campaign to promote egg consumption.

The AMPLIFIES Project is working in close collaboration with the USDA-funded GPP and also coordinating with regional and district-level associations in selecting beneficiaries (growers and producers) for project interventions and activities. The project is working in 26 districts in the Greater Accra (six districts), Ashanti (six districts), Brong-Ahafo (seven districts), and Northern (seven districts) regions of Ghana. Project activities in the Northern Region focus on crop harvesting and post-harvest activities. In the Ashanti and Brong-Ahafo regions, interventions focus on both crop production and poultry. Activities in the Greater Accra Region focus on poultry production only. However, the National Awareness Campaign to promote egg consumption covers all 10 administrative regions of Ghana.

3.0 EVALUATION METHODS

3.1 General Approach

A two-prong approach, involving both qualitative and quantitative analyses was adopted in order to successfully meet all the mid-term evaluation objectives. The qualitative techniques discussed below were used to derive responses to the evaluation questions and identify the factors that motivated successful implementation of aspects of the project, as well as factors that impeded implementation efforts. Quantitative techniques were used to elicit data for 23 output and outcome indicators of the AMPLIFIES Project reported in Table 7. The Statement of Work (SOW), for which an agreement was signed for the implementation of the mid-term performance evaluation, made reference to 20 indicators. However, upon a request from AMPLIFIES, the number of indicators was increased to 23 and the list of those indicators provided by the Monitoring, Evaluation, and Technical Support Services (METSS II) Project for the assignment. Two evaluation approaches were proposed for generating evidence to draw conclusions and make recommendations for achieving and sustaining intended project results. The proposed approaches were:

- **Participatory/Collaborative Evaluation:** This approach involved the engagement of stakeholders in the evaluation process. The key clients were fully engaged in the evaluation design and planning for data collection. Thus, they had the opportunity to express their expectations adequately, understand, and appreciate the evaluation processes. Key persons of the project's major stakeholder organizations were engaged as members of focus group discussions (FGDs) and key informant interviews (KIIs). Beneficiary farmers also participated in district-level FGDs.
- **The Theory of Change Approach:** Challenges faced in adopting this approach are discussed in Section 3.4. It was, however, possible to establish some links between implemented activities and intermediate results while investigating efficiency and effectiveness of project interventions.

3.2 Methods of Data Collection

The varied procedures used for collecting data for this mid-term performance evaluation are categorized as qualitative and quantitative. The former sought to gather data for answering the evaluation questions and identify factors that influenced positive and negative outcomes, both intended and unintended, and using semi-structured KIIs and FGDs. Twenty-eight people representing stakeholder organizations and direct beneficiaries were interviewed as key informants, using a structured set of questions. Operators of feed mills, feed testing facilities, and crop aggregation centers (CACs) were interviewed. The Evaluation Matrix summarizing methods used for addressing each of the evaluation questions is in Appendix 2.

The main quantitative techniques involved a survey of beneficiary maize and soybean farmers and a census of beneficiary poultry farmers to elicit data for 23 project output and outcome indicators. A sample of 471 beneficiary crop farmers and 611 poultry farmers was targeted for in-person interviews to obtain data for drawing conclusions about project outcomes and outputs. Some data elicited through the survey and census provided evidence, which was used for drawing conclusions in the qualitative analysis.

3.2.1 Focus Group Discussions

Ten districts were selected out of the 26 in which AMPLIFIES operated, using the random selection function of MS Excel, for FGDs. The districts selected and their distribution across the regions are presented in Table 1. Categories of participants for the district-based groups included the District Agriculture Director, District Animal Production Officer, District Veterinary Officer, AMPLIFIES Project field staff, a poultry farmer, representatives of maize and soybean farmer-based organizations (FBOs), and representatives of district-level poultry farmers associations, CACs, and egg sellers.

FGDs offered the opportunity for seeking opinions within a short timeframe from an acceptable number of people. Indeed, the blend of individuals who were either beneficiaries of the project or collaborators for the implementation of the AMPLIFIES intervention and with varying AMPLIFIES experiences offered the opportunity for significant insights. Opinions shared were easily corroborated by other group members, a situation that was good for drawing objective conclusions. FGDs produced information for responding to evaluation questions related to the sustainability, effectiveness, and relevance of project interventions.

Nine out of the planned 10 district-based FGDs were successfully organized. Using telephone numbers of the beneficiaries provided by AMPLIFIES, poultry technical officers (PTOs) and post-harvest technical officers (PHTOs) assisted the evaluation team with organizing the FGDs. In Tema, the District Director of Agriculture and the Animal Production Officer expressed a lack of knowledge about the AMPLIFIES Project but mentioned their awareness about GPP. Their position was confirmed by the AMPLIFIES PTO, who admitted to not inviting them to project events because of their expectation for monetary reward. Based on these observations, the evaluation team decided the group could not provide information for a fair assessment of the project. The farmers who were present were, therefore, interviewed as key informants. The

Team Leader facilitated discussions in Greater Accra and Northern regions while the Senior Evaluation Specialist handled discussions in the Ashanti and Brong-Ahafo regions. A checklist of questions used to guide FGDs is in Appendix 3.

Table 1. Districts Selected for AMPLIFIES Project Mid-Term Performance Evaluation Focus Groups Discussions

Region Name	District Name
Ashanti	Ejura-Sekyedumase
	Ejisu
Brong-Ahafo	Dormaa Ahenkro
	Techiman
	Wenchi
Greater Accra	Ga South
	Tema
Northern	Savelugu
	Tolon
	Kumbungu

Source: Random selection from the 26 beneficiary districts of the AMPLIFIES Project by the AMPLIFIES Project Mid-term Performance Evaluation Team.

3.2.2 Key Informant Interviews

Twenty-eight people representing stakeholder organizations and direct beneficiaries were interviewed as key informants, using a structured combination of closed-ended and open-ended questions. This ensured the quality of responses obtained did not differ regardless of the interviewer. Four beneficiary feed millers and three soybean processors were interviewed as key informants. A set of questions used in structured in-person interviews to seek responses that informed decisions about the relevance, effectiveness, and sustainability of project gains is in Appendix 3, while the list of the key informants is in Appendix 4. As expected, each key informant was able to provide responses to a set of questions, depending on his/her practicing area and level of interaction with the project. This was complemented with open-ended questions to engage conversation within the scope of the evaluation criteria.

3.2.3 The Survey of Sampled Crop Farmers and Census of Poultry Beneficiaries

Respondents: All beneficiary poultry farmers were targeted for in-person interviews using the census approach. Due to the large number of beneficiary crop farmers receiving support (AMPLIFIES reported 3,018 beneficiaries), a sample was selected using the simple random sampling approach for each project district. This probability sampling technique ensured each population unit (i.e., program beneficiary farmer) had a known, non-zero chance of inclusion in the sample.

Sampling Crop Farmers: The total sample size of 471 crop farmers was calculated using the Raosoft Sample Size Calculator Software (www.raosoft.com) at a 99 percent confidence level with a 70 percent response rate and a 5 percent margin of error. From past experience with surveys conducted by the METSS II Project using in-person interviews, the response rates had been very high, over 90 percent. Based on this, the evaluation team settled on a 70-percent

response rate. The sample was not stratified for the two crops of interest to this survey, maize and soybean. This was because all the soybean farmers benefiting from the AMPLIFIES Project were also maize producers. All farmers in the Northern Region planted both maize and soybean and, thus, there was no need for any stratification along crop type.

Four hundred and seventy-one beneficiary crop farmers were selected from the Ashanti, Brong-Ahafo, and Northern regions to constitute the sample of crop farmers for the survey. This number was distributed proportionally among districts in the three regions based on the total numbers of beneficiary crop farmers in the districts. Thus, a proportionate stratified random sampling technique was adopted. Using the list of crop farmers provided by AMPLIFIES, the number of potential respondents per district was estimated and is presented in Table 2. Also in Table 2 is the distribution of respondents intended for interviews only when sampled farmers were not available because they died, move out of the community, or were away for extended time periods. Thus, they are referred to as replacement respondents.

Table 2. Number of AMPLIFIES Project Mid-Term Performance Evaluation Respondent Crop Farmers

Region	District	Number of Beneficiary Farmers	Number of Respondent Crop Farmers	Number of Replacement Respondents
Ashanti	Ejura - Sekyedumase	827	128	5
Brong-Ahafo	Nkoranza	138	22	2
	Wenchi	183	29	2
	Techiman	146	23	2
	Dormaa Ahenkro	288	36	2
Northern	Savelugu	96	15	2
	Tamale Metro	168	26	2
	Kumbungu	313	49	3
	Tolon	214	33	3
	Mion	151	24	2
	Saboba	355	55	3
	Yendi	199	31	2
Total			471	

Source: AMPLIFIES Project Mid-term Performance Evaluation Team.

The sampling frame was the list of all beneficiary crop farmers of the AMPLIFIES Project. Using this sampling frame, the required number of respondents for each district was selected using the random selection function of MS Excel. The RANDBETWEEN function returns a random number between numbers specified. Within the RANDBETWEEN function, the numbers specified for each District were 1 and the population for stratum. The selection process is repeated the number of times that provides the sample required for the stratum. Additional respondents are selected using the same procedure for each district. A list of beneficiary crop farmers was obtained from the AMPLIFIES Monitoring and Evaluation (M&E) Manager to implement the random selection process.

Respondent Poultry Farmers: AMPLIFIES reported 611 beneficiary poultry farmers, all of whom were targeted for interviews using a structured questionnaire. The distribution of poultry farmers by district is presented in Table 3. In order to reduce respondents' fatigue from

interviews with both AMPLIFIES and GPP (in cases where they benefitted from both projects), a decision was made to organize a joint survey in which a farmer would only be interviewed once.

Table 3. Distribution of AMPLIFIES Project Mid-Term Performance Evaluation Respondent Poultry Farmers by District

Region	District	Number of Respondent Poultry Farmers
Ashanti	Ejura Sekyedumase	13
	Atwima Kwanwomana	35
	Atwima Nwabiagya	75
	Kumasi Metro	47
	Offinso South	17
	Offinso North	3
	Ejisu-Juabeng	38
Brong-Ahafo	Wenchi	36
	Techiman	22
	Sunyani	58
	Berekum	33
	Dormaa Ahemkro	91
Greater Accra	Ada West	5
	Ada East	3
	Dangbe East	1
	Dangbe West	30
	Tema Metro	23
	Tema	16
	Ga East	15
	Ga South	27
	Ga West	14
	Accra Metro	9
Total		611

Source: AMPLIFIES Project List of Beneficiary Poultry Farmers.

Data Collection Instrument for In-Person Interviews: Per the SOW, the questionnaire used for 2017 Annual Results Survey (ARS) had to collect data on the project indicators. The questionnaire was revised in order to successfully generate data for the 21 output and outcome indicators for which 2018 data must be obtained and coded for use as a Computer-Assisted Personal Interview (CAPI) instrument and uploaded on tablets. Data for the remaining two indicators were obtained from secondary sources. An addendum to the existing instrument was necessary for eliciting data that would provide responses to the evaluation questions. The final questionnaires used in eliciting data from the crop and poultry farmers are in Appendix 3.

Reconnaissance Survey and Community Entry: All relevant district agriculture officers were contacted via phone to notify them of the impending assignment. This was followed by an email message to each of them prior to reconnaissance visits. The visits were made to each of the study regions while conducting FGDs. The goal was for the evaluation team to familiarize itself with the key stakeholders in the regions and to inform them about the planned data collection exercise. In view of time constraints, community entry events preceded contact with respondents in any new community they entered for enumeration. The supervisor for each regional team paid visits to the community leader through the area assemblyman, with the intent to introduce his/her team and explain the purpose for their visit. Community entry events in the cities were limited to the metropolitan agriculture offices.

Recruitment and Training of Enumerators: There was significant value in engaging the enumerators that collected data for the 2017 ARS, so all 20 were contacted for possible recruitment. Seventeen of them were used for the survey. A total of 24 enumerators and six supervisors were selected immediately after the work plan was approved. Based on the distribution of respondents, the number of enumerators recruited per region to complete the survey/census in 18 days is presented in Table 4. A contract with clearly defined terms of reference was signed with each of the enumerators.

Table 4. Number of AMPLIFIES Project Mid-Term Performance Evaluation Respondents and Enumerators per Region

Region	Number of Potential Respondents	Number of Enumerators	Number of Paid Days
Crop Farmers			
Ashanti	128	3	14
Brong-Ahafo	110	3	12
Northern	233	5	16
Poultry Farmers			
Ashanti	229	5	15
Brong-Ahafo	240	5	16
Greater Accra	142	3	16

Source: Estimation by AMPLIFIES Project Mid-term Performance Evaluation Team.

A five-day training session was organized at the University of Cape Coast (UCC) in February 2019 for a combined team of enumerators that collected data for the GPP and AMPLIFIES mid-term evaluations. The training involved significant coordination with the team that conducted the GPP evaluation because data collection from the poultry farmers was jointly implemented by the two projects in order to reduce respondents' interview fatigue. Training was facilitated by the Survey Coordinators of the two evaluation teams and the Senior Evaluation Specialist with support from the relevant AMPLIFIES and METSS II Project technical staff. Enumerators for the two mid-term performance evaluations were trained in plenary sessions on issues of common interest and split into two groups for training in specific interest areas (i.e., crops and poultry). The fourth day of training was used for pre-testing of the survey instrument, while the last day was used for debriefing from pre-testing and revisions to the CAPI. Defects identified with the CAPI and reported for correction included repetition of questions, improper size of fields, faulty skip patterns, inadequacy of stated questions to solicit the responses required, discrepancies in numeric and alphanumeric fields, issues of acceptance of decimals by certain numeric fields, and inadequate ability to incorporate mathematical operations on input variables. Unfortunately, not all the issues were adequately resolved before field work started.

Prior to training, the evaluation team produced an enumerator manual used for training and reference during the implementation of the entire survey. The manual was submitted to the METSS II Project prior to the training as one of the evaluation team deliverables. It was also shared with the UCC Directorate of Research, Innovation, and Consultancy (DRIC). Training modules covered the following relevant topics: Familiarization with the questionnaire; standardization of the translation of the instrument into the local languages; the use of tablets for recording the responses; mock survey; ethical considerations; and pretesting of the instrument. Four of the enumerators opted out of the survey after the training.

Field Work for Data Collection: Field data collection was initially scheduled for the two weeks prior to Christmas 2018. A notification for temporary suspension of work led to the reschedule of the event for February 11-28, 2019. The dates were set in anticipation that the CAPI used for the 2017 ARS will be updated for the survey. However, further discussions on the assignment took a much longer time than anticipated due to long engagement processes with respect to indicators and approach. In addition, the joint data collection by AMPLIFIES and GPP implied the development of a new CAPI that would combine the instrument for the two evaluations. The sourcing of the services of a CAPI developer and the development of the CAPI took more time than anticipated. In the end, while data collection for the crop farmers took place February 23 to March 10, 2019, data collection for the poultry farmers spanned February 27 to March 14, 2019. Data collection was done in collaboration with the survey of beneficiaries for GPP, which was implemented under the leadership of DRIC-UCC.

The required resources for field work, which included the approved data collection manual, the electronic version of the survey instrument, hard copies of the data collection instrument, note pads, pens, call cards and identification tags, and travel allowances, were provided to the enumerators prior to their departure to the field.

Plans for data collection, including monitoring, data transmission, and reporting, was finalized prior to engagement in field work and shared with all field staff during the training. The Survey Coordinator served as a liaison officer between the project office and field staff, as well as coordinator for the activities of all team members in their regions of jurisdiction. The rationale was to ensure field supervisors remained with enumerators to assure the capture of quality data. The METSS II Project provided both technical and logistical support.

To facilitate the process of scheduling appointments with respondents, the evaluation team worked with the METSS II Project M&E Specialist to request the AMPLIFIES M&E Manager, PTOs, and PHTOs notify all farmers of the impending survey. In order to save time and cost, the team of enumerators and their supervisors scheduled interviews by community and moved as a team to each one. Telephone calls were made to each identified respondent of a community a day before their scheduled interview to agree on a suitable time. Calls were made again on the day of the interview to seek confirmation. The supervisors contacted other farmers in the communities, or FBO leaders in the case of crop farmers, for help in reaching the listed farmers within their community. The FBO leaders were very helpful in scheduling interviews and that perhaps contributed to the rather high response rate for the crop farmers' survey. Some farmers who were not available at the scheduled time had their interviews rescheduled. In other cases, replacements were quickly made for absentee or deceased farmers. All the sampled replacements were used during data collection.

A WhatsApp platform was created at two levels, one for supervisors and another for both supervisors and enumerators, to aid communication, deliberations, and the sharing of experiences.

Data Validation, Cleaning, and Transmission: Captured data was validated for consistency, and all inconsistencies corrected. The data management plan consisted of the following:

- The data collected was checked at every stage to ensure they met the high standard agreed upon for the survey. There were as many as six very experienced supervisors in the field moving from community to community with the enumerators, and they checked all interview responses at the end of each day, ensuring errors were minimized. Where errors were detected, the enumerator and supervisor made notes, flagged them immediately for correction or, in some cases, conducted re-interviewing. For instance, three crop farmers were re-interviewed in the Brong-Ahafo Region and two poultry farmers were re-interviewed in the Greater Accra Region.
- The data collected was transmitted to a database at a central point agreed upon with the client through a series of stages. At the first stage, the enumerator submitted completed questionnaire to the supervisor through a in-built instruction within the software, with a back-up copy stored in the tablet's internal memory. The supervisor reviewed all the modules to ensure they were adequately completed and the data was realistic. The next stage of transmission involved the supervisor sending the data to a server at the METSS II Project office using a in-built instruction. Data quality checks were further conducted at the METSS II Project office before collation. It was at this stage that data cleaning was initiated. The final stage involved the conversion of the collated data into Stata and SPSS formats.

3.2.4 Quality Assurance

The use of the CAPI with built-in edit specifications minimized manual data entry errors and ensured the integrity of the data. As mentioned above, field work supervisors were responsible for the daily scrutiny and transmission of data collected by the enumerators. The scrutiny included identification of outliers and systematic errors in the data collected. As part of the evaluation team's intentions to maintain high-quality research output and to ensure clients were satisfied with the services, the Team Leader periodically reviewed work in progress with the team and included her observations in the regular bi-weekly feedback to the METSS II Project.

3.3 Methods of Data Processing and Analysis

Data obtained from all sources, including the survey, was cleaned, validated, and analyzed after fieldwork was completed. Both qualitative and quantitative procedures were used. The qualitative approach adopted was mostly descriptive. It examined views expressed in KIIs and FGDs to identify patterns for drawing conclusions regarding stakeholders' impressions about relevance, effectiveness, efficiency, and sustainability of the AMPLIFIES interventions. Even though qualitative analysis is generally non-statistical, some measures of frequency were used to provide evidence about beneficiaries' views to support conclusions about qualitative phenomena such as effectiveness, sustainability, and relevance.

The quantitative analysis was performed using the Stata statistical application. It involved simple descriptive statistical analyses such as measures of frequency, central tendency, and dispersion of response to questions to derive data points for the performance indicators. Other qualitative analysis was used to complement the quantitative findings from the efficiency and productivity related data.

3.3.1 Data Cleaning with Stata

Initial summary statistics were obtained for key variables. They revealed the presence of some outliers with values that were obviously unrealistic but could significantly skew estimations. There were a large number of 9999s that had been entered during the data collection in situations where the respondents were not able to provide responses, but data needed to be entered in order to move on to the next question. Those unrealistic data needed to be dropped because the respondent did not provide any information that needed to be verified. Presence of unrealistic, extremely large and zero values that were revealed by the summary statistics had to be addressed. Some basic estimations were made to ensure the data produced valid and realistic estimates. In a few instances, additional variables were generated to compare with existing responses as a means of validation. For example, the reported value of sales was compared with the product of reported quantity sold and the price of the commodity.

3.3.2 Estimations with Stata

Specific analytical procedures for responding to each evaluation question are provided in Appendix 2. Data for the output and outcomes indicators were derived through basic quantitative techniques. In response to the nature of the indicators for which data was being sought, very basic functions in Stata were used to mostly derive proportions, frequencies, total values, mean and median, and cross tabulations among specified variables. Some relevant Stata outputs are provided in Appendix 6 as evidence for reported values. Most farmers did not have any knowledge about the data being sought for some indicators such as “*Average cost of broiler feed per bird per production cycle for broilers fed feed*” and “*True cost per egg from layer fed feed.*” Thus, interview questions sought data for variables that could be used in deriving values for such indicators and for which respondents could readily provide data. Deriving values for those indicators required some estimations using basic mathematical models, which are specified and reported in the Appendix 6. The execution of those models sometimes involves the generation of additional variables such as “*total cost of feed per hen*” and “*total eggs produced per hen.*”

Estimates of average values are reported as those derived using Stata. However, additional estimations were required for indicators that sought values from summation of figures reported by individuals. Values summed up in Stata are those for the sample and not the population of beneficiary farmers. Values obtained for the sample are used in making projections for the population using MS Excel.

3.3.3 Estimation Methods for Indicators

In order to determine the length of time for a bird to attain maturity for broiler-fed feed in weeks, the mean values of the variable are estimated for the three types of broiler feeds for which data is reported.

The number of eggs per hen per cycle was estimated in Stata using the summarize function on the variable, which also produces the mean for the respondents. The Stata output is presented in Appendix 7.

Average cost of layer feed per hen per life cycle was estimated by using the following mathematical expression:

$$ACFHC = \frac{\sum_1^n (CFHM \times NMC)}{n} \quad (1)$$

$$ACFHC = \frac{\sum_1^n \left(\left(\frac{CFPM}{NHMPM} \right) \times \left(\frac{WL + WBL}{4} \right) \right)}{n} \quad (2)$$

where *ACFHC* is the Average Cost of Feed per Hen per Cycle,
CFHM is the Cost of Feed per Hen per Month,
NMC is the Number of Months in the Cycle,
CFPM is Cost of Feed per Pen per Month,
NHMPM is Number Hens per Pen per Month,
WL is the number of Weeks of Laying,
WBL is the number of Week Before Laying, and
n is the number of respondents.

Activating this expression in Stata without dividing by *n* derives Cost of Feed per Hen per Cycle (CFHC) for each respondent. The mean value is then taken to obtain *ACFHC*, a value reported for the indicator.

The following mathematical expression was used for estimating eggs produced per hen per cycle:

$$EPHC = \frac{\sum_1^n (EHM \times NML)}{n} \quad (3)$$

$$EPHC = \frac{\sum_1^n \left(\left(\frac{EPM}{NHMPM} \right) \times \left(\frac{WL}{4} \right) \right)}{n} \quad (4)$$

where *EPHC* is Eggs Produced per Hen per Cycle,
EHM is Eggs per Hen per Month,
NML is Number of Months of Laying,
EPM is Eggs per Pen per Month,
NHMPM is Number of Hens per Pen per Month,
WL is number of Weeks of Laying, and
n is the number of respondents.

The true cost of producing an egg was derived by dividing the cost of feed per hen per cycle by the number of eggs produced by a hen per cycle. It was therefore estimated by simply dividing the result of Equation 2 by the result of Equation 4. Incidentally, the number of eggs produced by a hen per cycle was also obtained directly from respondents during data collection. The estimated value was not significantly different from responses provided. Thus, the reported values were used for the estimates reported.

The number of eggs per hen per cycle was estimated in Stata using the summarize function on the variable, which also produces the mean for the respondents. The average cost of feed per hen per cycle was derived in an estimation process of four stages in Stata. At the first stage, the variable Cost of Feed per Hen per Month (CFHM) was generated using the formula above. The Stata output is presented in Appendix 7. The second stage entailed the generation of the variable Number of Months per Cycle (NMC) also per the formula above. The two new variables were multiplied for each respondent at the third stage to get the number of eggs each respondent produced per cycle, thus generating a third new variable. At the fourth and final stage, the average figure was derived by activating the mean function for the third variable generated. The final output is reported in Appendix 6.

The definition of jobs created is, “Jobs should be converted to full-time equivalents (FTE). Thus, a job that lasts four months should be counted as 1/3 FTE, and a job that lasts for 130 days should be counted as ½ FTE. Number of hours worked per day or per week is not restricted as work hours may vary greatly.”⁷

In the survey, the number of months worked by each employee of the respondent farmer was obtained and reported. Based on the definition quoted above, the FTE of jobs created by sampled farmers was expressed as follows for estimation:

$$\text{Sample FTE of Jobs} = \sum_1^n (Mnth/12), \quad (5)$$

where n is the number of reported employee and $Mnth$ is the number of months worked by the employee. The FTE of jobs for all the beneficiary farmers was derived using the following expression:

$$\text{FTE of Jobs by the population} = \left(\frac{\text{population size}}{\text{sample size}} \right) * \text{Sample FTE of Jobs} \quad (6)$$

To obtain the total land area under improved technology in the year, the land area farmed by the farmers who respond positively to an application of improved technology was summed for the seasons of planting for maize and soybean using Stata. In order to derive values for the entire population of beneficiary farmers, the following mathematical expression was applied:

$$\text{Land size of Population} = \text{Total Land size of sample} \times (\text{Population Size} \div \text{Size of observation}) \quad (7)$$

Similar mathematical expressions were used to obtain values for the number of individuals trained and those applying improved management practices. Based on the types of trainings provided to poultry farmers, the proxy used to determine their application of improved management practices is a positive response to application of record keeping. This was the only management practice among the list of training topics that fall within the definition of the indicator. The estimations and their output are presented in Appendix 6.

⁷ United States Department of Agriculture, Foreign Agriculture Services, “Food for Progress and McGovern-Dole Indicators and Definitions”. Food Assistance Division, Office of Capacity Building and Development, 2014.

The variable from the data was used in Stata to estimate the average cost of producing 50 kilogram (kg) bags of poultry feed of the following varieties: chick marsh, grower marsh, layer marsh, broiler starter, broiler, and grower. From the results, the average price per kg is estimated by simply dividing by 50 kg.

3.4 Challenges Associated with the Methods Used

Per the terms of reference for the mid-term performance evaluation, there was an existing data collection instrument designed for the 2017 ARS that had to be used. The evaluation questions for that survey differed significantly from those of the current survey. Thus, the Paper-Assisted Personal Interview (PAPI) could not be used to elicit adequate data for the mid-term evaluation questions without amendments. An addendum of questions was produced to complement the existing questions. These were coded and added to those that sought data for estimating values of performance indicators.

In terms of generating data for the project performance indicators, the evaluation team undertook a matching exercise between the 20 indicators listed in the SOW and the annual survey questions used in 2017. There were four indicators for which data was not collected as part of the ARS. Thus, the existing questionnaire, as designed, was unable to capture adequate data. Data for two of those indicators (*“average cost of production of locally produced feed per kilogram”* and *“per capita consumption of eggs”*) had to be obtained from other sources. For the remaining two indicators (*“average cost of layer feed per hen per life cycle”* and *“average cost of broiler feed per bird per production cycle for broilers fed feed”*), questions were formulated for inclusion in the CAPI. In addition, categories for disaggregating data for a number of indicators were omitted in the original questionnaire. The disaggregation categories were coded for the CAPI to ensure complete reporting on the indicators.

Developing and using a survey instrument to collect data for AMPLIFIES and GPP presented another level of coordination with inherent challenges in terms of managing cost and time as well as giving due consideration to the size of the joint questionnaire and its implications for respondents’ time.

In order to resolve these indicator-questionnaire challenges, the AMPLIFIES M&E Manager and Management Information Systems (MIS) Officers availed themselves a few times to work closely with the team’s Survey Coordinator and METSS II Project M&E Specialist to effect the necessary modifications.

A clearly defined Theory of Change facilitates an effective investigation of attainment of expected chain of changes. Unfortunately, the hypothesis for a chain of changes for the project seemed to have evolved over time. The initial objectives and expected results changed. The three objectives stated in a project document titled *Attachment A: Plan of Operation Food for Progress, FY 2015* were as follows:

- Increase agricultural productivity in the poultry value chain by increasing the quantity and lowering the cost of poultry feed through the reduction of post-harvest loss and procurement inefficiencies of primary feed ingredients (USDA FFPr SO1);

- Increase agricultural productivity in the poultry sector by improving poultry feed quality through the improvement of feed testing capacity and the demonstration of the benefits of quality feed (USDA FFPr SO1); and
- Increase trade of eggs through awareness campaigns and the trade of commercialized poultry feed through improved distribution networks (USDA FFPr SO2)

The following two were later added in the Project Monitoring Plan (PMP):

- Enhance feed processing efficiency through technology transfer and on-site training; and
- Increase the trade of commercialized poultry feed through improved distribution networks and marketing.

Second, in the same PMP, another set of two SOs (“increased poultry productivity” and “expanded trade of poultry products and by-products”), five Intermediate Results (IRs) and seven Sub-Immediate Results (Sub-IRs) are provided on pages six and seven. Third, the same PMP adopts USDA FFPr results framework, presented on pages 45 and 46 of the document. With this apparent lack of clarity of a Theory of Change, it is difficult to attempt to validate a theory. This notwithstanding, there are still some expected results for which a set of indicators are tracked to measure performance. Investigating those results is key to this evaluation.

The biggest challenge in the subject evaluation was the joint administration of the survey by AMPLIFIES and GPP and its repercussions. There were significant advantages in such coordination of effort that can benefit: 1) the respondents, in terms of not responding to two interviews when the farmer was a respondent for both surveys; 2) the evaluations teams, in terms of the synergies made available; and 3) the managers, in terms of management effort for the provision of logistics. Unfortunately, there was not enough time to effectively plan for the joint processes required. But it offered an excellent learning experience that can be considered for future evaluations.

In terms of the set of data obtained from the survey, some variables that had been considered in the questionnaire were missing from the dataset. This is perhaps one of the consequences of the joint administration of surveys for AMPLIFIES and GPP. Questions that sought the values for the cost of inputs were administered under the modules for GPP. Respondents for AMPLIFIES only were, therefore, not given the opportunity to provide responses to them. Thus, there was a missed opportunity to investigate profitability and related measures of performance to support decisions about efficiency benefits of the AMPLIFIES Project.

Only 269 out of 611 beneficiary poultry farmers were reached and interviewed, producing a response rate of 44 percent. However, because of the low response rate and the apparent lack of randomness with the farmers that were interviewed, some caution must be exercised when using data that requires summation of values for the beneficiary poultry farmers. There are a few big players in the poultry industry whose production figures can sway data in ways that make it difficult to make projections for the whole industry when the representativeness of the available and willing respondents is unclear. Several factors accounted for the low response rate, some of which are summarized as follows:

- Many farmers were unwilling to sit for hours in an interview when they had their businesses to attend to. Unlike the questionnaire for crop farmers, the questionnaire for interviewing poultry farmers was long, making some interviews last for more than two hours when the respondents were beneficiaries of both AMPLIFIES and GPP.
- A great number of possible respondents could not be contacted mainly because the telephone numbers provided by AMPLIFIES were wrong and reached non-respondents. In Sunyani, the name of a farmer in the list happened to be a staff of GPP. In Berekum, a name of the farmer and contact person was an ADRA staff working with United Nations High Commissioner for Refugees (UNHCR). He claimed there was only a visit by the AMPLIFIES field officer, but his name ended up as a farmer. Calls to some contacts also did not go through at all. Some respondents also refused to pick up after the first call and introduction. Calls to several contact numbers provided by AMPLIFIES, even for key informants, went to wrong persons.
- A number of respondents declined interviews, mainly because of their assertion that the various surveys in the past yielded no substantial results to their poultry businesses. In the Brong-Ahafo and Greater Accra regions, for example, 10 and 11 poultry farmers, respectively, declined to speak to the enumerators.
- Unlike the crop farmers who lived in small communities, the locations of poultry farmers were relatively scattered and involved coverage of long distances. Some poultry farmers registered were located outside the jurisdiction of the indicated districts and municipalities. Some respondents registered under the Ga South Municipality were from areas as far as Swedru in the Central Region and Adeiso in the Eastern Region. Travel time had implications for the number of interviews that could be covered in a day. The situation was worse where travel through the cities with vehicular traffic contributed to the length of travel time.
- Some farmers complained about issues with the project, especially with regards to the grant facility and therefore were not willing to provide their information to the project. Others claimed they had not benefited in any way from the project and so did not see the need to provide financial and business information to the team.
- Information among farmers got around quickly, and by the time one made a call to find out about farmers' availability, they would have already made the decision not to participate in the survey.
- Others were of the opinion that output of the survey was never shared with them.
- Some farmers kept on rescheduling their meeting dates but never honored them.

One other issue of concern, data for the project's performance indicators are reported yearly for each US Fiscal Year (FY). Unfortunately, data in this survey was collected and is reported per the calendar year. This was the case because farmers could easily identify with output and outcomes per calendar year. Moreover, data from other secondary sources in Ghana is reported per calendar year.

4.0 FINDINGS AND CONCLUSIONS

Out of a sample of 471 crop farmers targeted for the survey, 448 respondents were reached and interviewed, giving a response rate of 95.1 percent. Unfortunately, the result of some of the challenges discussed in the preceding section is a low response (44 percent) in the poultry survey. Table 5 provides information on the distribution of responses by regions. Evidently, the poor response rate is common to all three regions. Of the 321 (53 percent) of poultry farmers reached, as many as 52 of them were not willing to be interviewed.

Table 5. Distribution of AMPLIFIES Project Mid-Term Performance Evaluation Poultry Farmers Consent by Region

Region	Accepted Participation	Rejected Participation	Total
Greater Accra	82	24	106
Ashanti	71	14	85
Brong-Ahafo	116	14	130
Total	269	52	321

Source: Generated from AMPLIFIES Project Mid-term Performance Evaluation survey data.

This seems quite disappointing when compared to the response rate of the crop farmer survey. Indeed, given the rather low response rate for the census of poultry farmers, there was a need to determine whether the data collected could be used as evidence to guide decision-making. A decision was made to examine findings about the respondents that were interviewed to establish whether their number could constitute a representative sample if a survey technique had been adopted for the beneficiary poultry farmers. Thus, using a confident interval of 95 percent and a 5 percent margin of error, as commonly applied in empirical socioeconomic studies, an accepted sample size was estimated to be 231 for a response rate of 40 percent. Based on these estimates, responses from the 269 poultry farmers were accepted as being a fair statistical representation.

However, because the size of poultry enterprises varies significantly, some stratification of these enterprises would have been necessary to ensure a fair representation of the size categories of farmers' enterprises. Based on this later argument, some caution must be exercised when using data that require summation of values for the beneficiary poultry farmers. There are a few big players in the poultry industry whose production figures can sway data in ways that make it difficult to make projections for the whole industry when the representativeness of the available and willing respondents is unclear.

A majority of the poultry farmers produced layer birds (Table 6). While 61 percent of the respondents produced only layer birds, 25 percent produced both layer birds and broilers. Fourteen percent produced broilers only. With this background information, one must be mindful of the number of possible respondents for layer and broiler-specific questions.

Table 6. Distribution of AMPLIFIES Project Mid-Term Performance Evaluation Poultry Farmers by Their Production

Birds Produced	Percent of Respondents
Broilers	13.7 percent
Layers and Eggs	61.0 percent
Both Layers and Broilers	25.3 percent

Source: Generated from AMPLIFIES Project Mid-term Performance Evaluation survey data.

4.1 Results from Estimations of Values for Indicators

4.1.1 Data Obtained from ADRA

Data on the total installed storage capacity was obtained from ADRA, the implementing partner that managed the construction of storage facilities on behalf of AMPLIFIES. The data provided was not disaggregated for dry and cold storage. The number of beneficiaries, both direct and indirect, was also obtained from ADRA together with data on loans disbursed and the number of private entities that applied improved techniques and technologies as a result of USDA assistance.

4.1.2 Data for Cost of Complete Poultry Feed Analysis Per Test

Only five respondents provided responses that indicated their use of the existing facilities for poultry feed analysis. The costs varied significantly and ranged between GHS50 and GHS2000. Evidently, farmers could not comprehend what a complete feed analysis entailed. The average values reported were obtained from three feed testing sites and the University of Ghana, Kwame Nkrumah University of Science and Technology (KNUST), and UCC.

4.1.3 Average Cost of Production of Locally Produced Feed

Data on average cost of producing layer and broiler feeds were obtained for 50 kg bags of feed from farmer interviews, and the 1 kg value determined by a simple division by 50. Attempts to obtain data for pre-mix feed from the feed mill proved to be futile. The managers regarded such information to be proprietary.

Table 7. 2018 Data Estimated for the AMPLIFIES Project Performance Indicators

SN ⁸	Indicator Name	Indicator Number	Disaggregation	2018 Achieved
1	Total increase in installed storage capacity (dry or cold storage) as a result of USDA assistance (MT)	Standard #11		2,000
2	Cost of complete poultry feed analysis per test (in USD)		Total Average	100
			Average for layers	
			Average for broilers ⁹	
3	Average cost of production of locally produced feed per kg (in USD)		Average for pre-mix ¹⁰	
			Layer	1.43
			Broiler	1.72
4	Production cycle (length of time for a bird to attain 1.5 kg) for broilers fed feed (in weeks)		Broiler fed only self-hand mixed	10.9
			Boiler fed only locally purchased commercial feed	8.9
			Broilers fed only improved formulated feed	5.5

⁸ SN = Serial Number

⁹ Data was not available at the source.

¹⁰ Data was not available because feed millers were unwilling to disclose.

SN ⁸	Indicator Name	Indicator Number	Disaggregation	2018 Achieved
5	Average cost of broiler feed per bird per production cycle for broilers fed feed (in USD) (using US\$1=GHS4.35)		Broilers fed only self-hand mixed feed	4.19
			Broilers fed only locally purchased commercial feed	2.96
			Broilers fed only improved formulated feed	2.25
6	Average cost of layer feed per hen per life cycle (from DOC to spent hen) for layers fed feed (in USD) (using US\$1=GHS4.35)		Layers fed only self-hand mixed feed	30.35
			Layers fed only locally purchased commercial feed	25.81
			Layers fed only improved formulated feed	27.12
7	Egg production per hen per life cycle for layers fed only self-hand mixed feed (total number of eggs)		Layers fed only self-hand mixed feed	358
			Layers fed only locally purchased commercial feed	309
			Layers fed only improved formulated feed	368
8	True cost per egg from layer fed feed (total cost of feed per hen/total eggs produced per hen) in USD (using US\$1=GHS4.35)		Layer fed only self-hand mixed feed	0.084
			Layers fed only locally purchased commercial feed	0.084
			Layers fed only improved formulated feed	0.070
9	Total number of individuals benefiting directly as a result of USDA assistance	Standard #17	Male	2,390
			Female	1,239
10	Total number of individuals benefiting indirectly as a result of USDA assistance	Standard #18	Male	2,375,813
			Female	
11	Number of individuals who have received short-term agricultural sector productivity or food security training as a result of USDA assistance	Standard #16	Male	2,207
			Female	1,205
12	Number of jobs attributed to USDA assistance	Standard #15	Male (crops)	117
			Female (crops)	759
			Male (poultry)	43
			Female (poultry)	0
13	Number of private enterprises, producers organizations, water users associations, women's groups, trade and business associations, and community-based organizations (CBOs) that applied improved techniques and technologies as a result of USDA assistance	Standard #7	FBOs & CACs	93
			New	
			Continuing ¹¹	
14	Number of individuals who have	Standard #2	Male	2,294

¹¹ Data obtained from ADRA was not disaggregated.

SN ⁸	Indicator Name	Indicator Number	Disaggregation	2018 Achieved
	applied new techniques or technologies as a result of USDA assistance		Female	1,227
			New	204
			Continuing	3,317
15	Number of loans disbursed as a result of USDA assistance	Standard #5		130
16	Number of individuals receiving financial services as a result of USDA assistance ¹²	Standard #4	Male	
			Female	
17	Value of loans provided as a result of USDA assistance ¹³	Standard #6	Male	
			Female	
			Joint	
18	Number of individuals who have applied improved farm management practices (i.e. governance, administration, or financial management) as a result of USDA assistance	Standard #3	Male	447
			Female	63
19	Value of sales by project beneficiaries (USD)	Standard #13	Maize	\$4,788,424.02
			Soybean	\$1,794,853.57
			Broiler	\$1,498,755.52
			Spent Layer	\$7,741,877.09
			Cockerel	\$631,872.10
			Eggs	\$207,039,913.11
20	Volume of commodities (MT) sold by project beneficiaries	Standard #14	Maize	14,886
			Soybean	8,256
			Eggs (Crates)	12,925,188
21	Annual per capita consumption of eggs in Ghana ¹⁴	Custom	Average number of eggs	
22	Number of hectares of land under improved techniques or technologies as a result of USDA assistance	Standard #1		11,543
23	Number of public-private partnerships formed as a result of USDA assistance	Standard #8		17

Source: Estimations generated from AMPLIFIES Project Mid-term Performance Evaluation survey data.

4.2 Relevance of the AMPLIFIES Project

The poultry value chain, like others in the Ghanaian agricultural sector, is characterized by inefficiency and mistrust among the various actors. Taking on the responsibility to build trust among actors of the poultry sector was a very relevant decision by AMPLIFIES, as it sought to reduce inefficiencies in the production and distribution of quality poultry feed in Ghana. The value chain approach adopted by AMPLIFIES happened to be the core concept for most of the

¹² There is no evidence to suggest that the few poultry farmers that had access to financial assistance could attribute it to assistance from the project.

¹³ Data for this serial number was not supplied by the project.

¹⁴ Data is not available because national data had not been estimated for reporting by MoFA.

current agricultural policies and initiatives designed and implemented by the Government of Ghana (GoG), international development agencies, and non-governmental organizations (NGOs). The design of AMPLIFIES was aligned to the current approach to commodity development in the country.

Findings from the review of literature show the AMPLIFIES interventions are in tune with the poultry development and post-harvest management objectives and policies outlined in Program Area Two of the Ghana Agricultural Investment Plan (2018-2021) and linked to the Government's Agenda for Growth.¹⁵ AMPLIFIES is aligned with the aspect of the global agenda, encompassed in the Sustainable Development Goals (SDGs), that seek to increase incomes and prosperity.

All key informants, except for one person, expressed strong views to affirm the alignment of the AMPLIFIES Project to national agricultural policies that had implications for development of the poultry sub-sector. All but three key informants affirmed the view that industry leaders had been consulted during the project development phase, leading to the design of a project that is responsive to the sector's need for efficient production and marketing of quality poultry feed.

Focus groups reiterated the relevance of the project interventions in addressing farmers and feed millers' technology and management needs. Members of focus groups, especially those in the Ashanti and Brong-Ahafo regions, attested to meetings being held with representatives of the poultry farmers during the project design phase. In effect, their expressed needs were duly considered in the project's design and development. Thus, all the stated objectives of the AMPLIFIES Project were relevant to its beneficiaries. The structure and content of planned interventions were lauded by the farmers in the focus groups. Activities frequently mentioned by poultry farmers as being relevant included broiler demonstrations, feed formulation, and egg promotion. Indeed, demonstrations on layers, which were later conducted, had been in response to farmers' demands.

In terms of individuals' needs, responses from the farmer survey revealed an 89.4 percent agreement by crop farmers with statements expressing relevance of the project interventions, while as little as 1.8 percent indicated a disagreement with the statements (Table A7.1). The responses suggest strong relevance of project interventions from the perspective of crop farmers for addressing their harvest, post-harvest technologies, and management needs. The support for the arguments in favor of the project being responsive to beneficiaries needs is reduced among respondent poultry farmers to 76 percent, even though 81 percent of responses express a view that suggest significant relevance of the training programs. This slight deviation from crop farmers' impressions can be explained by an assertion that most demonstrations were tailored to meet the needs of broiler farms even though a majority of poultry farmers stocked layers.

A respondent of a prominent feed milling firm reported that training provided to the firm's beneficiaries was tailored to the firm's specific needs, which were identified through a number of interactions with the project's expert in poultry feed processing and management. In contributing to discussions about the relevance of the project, two soybean processors expressed

¹⁵ MOFA. *Ghana Agricultural Investment Plan (GhAIP) 2018 - 2021*. Accra: Ministry of Food and Agriculture, 2018.

a view that building the capacity of crop farmers to produce quality maize and soybean was a very relevant intervention. They argued the intervention provided them an opportunity to access quality soybeans produced locally at competitive prices. Hitherto, soybeans from Northern Ghana were of poor quality, often damaging their processing equipment. They also had to add toxin binders to maize that was often infested with weevils, a practice that substantially increased production costs.

Maize farmers mentioned the following as some of the past experiences the project sought to address and for which they considered the interventions to be relevant:

- Farmers lost up to 50 percent of their maize in storage as a result of damage by insects, fungi infections, and decomposition since they did not have adequate and proper storage facilities.
- Farmers' outputs were sold immediately after harvest at relatively low prices because they did not have effective ways of minimizing post-harvest losses.
- Produce was sold to buyers who often dictated arbitrary prices.
- There was lack of motivation and means to determine farmers' grain maize quality.
- Farmers faced rejection by poultry farmers and feed processors due to poor quality.

This evidence supports a conclusion that the AMPLIFIES Project has been very relevant in terms of structure, content, and timeliness for addressing some inefficiency challenges facing actors of the poultry feed value chain in Ghana.

4.3 Efficiency in Project Implementation

Observations from reviewed reports suggest that, in spite of the ARSs, AMPLIFIES has not been able to report data for its indicators that seek to measure efficiency derived from the implementation of project activities.

Responses to statements expressing efficiency of project interventions revealed that 77 percent of respondent crop farmers and 65 percent of poultry farmers believed there had been some efficiency gains from the project. As many as 14.5 percent of responses from crop farmers and 16.5 percent of poultry farmers disagreed. A similar trend is revealed by responses from key informants on efficiency issues. It is not unusual for individuals to express divergent views in terms of efficiency, since expectations about the criteria and how it is manifested tend to be relatively diverse. In order to address any uncertainty about efficiency, this study obtains farmers' impressions of feed conversion ratios and gross margins for drawing conclusions.

An example of efficiency gains cited frequently by poultry farmers is the reduction in expenditure for veterinary services and drugs as a result of improved quality of feed and its effect on the health of birds produced. Similarly, application of improved sanitation and biosafety measures were considered cost effective. They were initially perceived as being costly, but the poultry farmers acknowledged the associated benefits far outweighed the costs. Their effects in terms of reduced mortality of birds were often cited as examples of cost effective measures introduced by the AMPLIFIES Project.

Almost all farmers interviewed acknowledged efficiency gains from the use of the Purdue Improved Crop Storage (PICS) hermetic sacks in spite of introducing additional cost element to their operations. Benefits from using the PICS sacks were said to have outweighed the additional cost it introduced. About 78 percent of respondent crop farmers reported an ability to sell their produce at times that were convenient to them, while 80.3 percent indicated an ability to increase their sales revenue having sold at the existing market price; all as a result of interventions by AMPLIFIES.

Efficiency benefits of using hermetic sacks can be eroded if the user, especially in the case of feed mills, is not able to reuse the sacks, thereby increasing the production cost. The feed mills prefer not to recycle sacks for fear of spreading fungi.

Even though project beneficiaries report increases in maize production, the number of beneficiary farmers is not enough to influence the market price of maize as total demand for maize for human and animal consumption continues to outstrip local production. Thus, the price of poultry feed has not reduced much, contrary to the expectation of poultry farmers. Only a few farmers, perhaps those who produced their own feed, reported reductions in cost of feed. This notwithstanding, significant cost savings have been recorded by poultry farmers and have resulted in better profit margins for the farmers. Broiler farmers, for instance, are now able to produce birds that are ready for sale in six to eight weeks as compared to the nine to 12 weeks previously needed to produce the same size of birds. As expected, 61 percent of poultry farmers interviewed reported improvements in feed conversion efficiency. These occurrences have a significant cost reduction effect, especially as the feed constitutes a very high proportion of variable cost. Reduction in the wastage of feed fed to the birds also has positive implications for the feed conversion efficiency.

Close to 89 percent of the respondent crop farmers provided responses that suggested significant reductions in post-harvest losses. That implies an increase in the crop farmers' sale revenues, which can result in better gross margins. Crop aggregators too now have better access to FBOs, thereby reducing the time and cost for aggregation.

4.3.1 Timeliness in Accomplishing Planned Activities

An observation from the project documents review revealed the project's slow start. FY 2016 did not see much field activity as the project was focused on mobilizing resources. Activities in the field seemed to have picked up a good pace in FY 2017 and implementation of planned activities was on track by the end of the year. This momentum continued into FY 2018.

4.4 Effectiveness of Project Implementation

A remarkable comment made by a farmer, which echoed the sentiments of many farmers, is worth noting, "If you have strength to work and no knowledge, there is little benefit." This is an acknowledgment of the benefits from the knowledge acquired from capacity building provided by the project. Training for both crop and poultry farmers resulted in remarkable outputs and outcomes, discussed in subsequent subsections. Ninety-five percent of respondent crop farmers expressed a willingness to recommend AMPLIFIES training programs to other

farmers. However, a lower proportion of the farmers, about 88 percent of crop farmers and 78 percent of poultry farmers, reported overall satisfaction with the interventions provided through AMPLIFIES, while only 1.8 percent were not satisfied and the remaining were undecided. Similar proportions of responses were observed for farmers' confidence in managers' and trainers' capacity to provide the planned technical assistance effectively. The finding suggests there were a few respondent farmers who were satisfied with the training that addressed most of their training needs, but they were less satisfied with some other planned activities, which are revealed in discussions of subsequent subsections. Operators of feed mills in their individual interviews expressed absolute satisfaction with the technical assistance provided by KSU's Grain Science and Industry Department Feed Expert Dr. Charles Robert Stark, in particular, and his team of experts.

4.4.1 Status of Expected Results

One way of determining the effectiveness of project intervention was to investigate the attainment of planned project outcomes/intermediate results. Table 8 presents reported results by the AMPLIFIES Project. Values achieved for most performance indicators exceeded their targets by very large margins. Evidently, the targets were set at very low values so exceeding the target might not necessarily portray effectiveness of activity delivery and outcomes. One would expect targets to be reviewed after realizing targets for the entire project duration were exceeded in the early years of project implementation. The only reported indicators for which targets were not met by 2017 were, *“Number of individuals who have received short-term agricultural sector productivity or food security training as a result of USDA assistance (female),”* *“Average cost of production of locally produce pre-mix feed per kilogram (USD),”* and the *“Volume of commodities (MT) sold by project beneficiaries (soybean and Maize).”* Interestingly, per the reports, while targets for the volume of sales (especially for crop farmers) were not met, the achieved values of sales for the same commodities outstripped their targets by huge margins. It gives the impression that volumes and values were not adequately synchronized for the targets. But evidently, the volumes of sales reported were underestimated.

Table 8. Results Reported by the AMPLIFIES Project for FY 2017 and FY 2018

Indicator	Type	FY 2017 Target	FY 2017 Actual	FY 2018 Target	FY 2018 Actual
Total increase in installed storage capacity (dry or cold storage) as a result of USDA assistance	Standard #11	0	1,000	0	1,000
Total increase in installed storage capacity (dry or cold storage) as a result of USDA assistance (dry)	-	800	0	0	1,000
Total increase in installed storage capacity (dry or cold storage) as a result of USDA assistance (cold)	-			0	1,000
Total increase in installed storage capacity (dry or cold storage) as a result of USDA assistance (new)	-	400	0	0	1,000
Total increase in installed storage capacity (dry or cold storage) as a result of USDA assistance (refurbished)	-	400	0	0	1,000

Indicator	Type	FY 2017 Target	FY 2017 Actual	FY 2018 Target	FY 2018 Actual
Cost of complete feed analysis per test					
Average cost of production of locally produced layer feed per kg (USD) (using \$1 USD =4 Cedi)	Custom	\$0.39	0.375	\$0.37	---
Average cost of production of locally produced broiler feed per kg (USD)	Custom	\$0.45	0.45	\$0.42	\$0.39
Average cost of production of locally produce pre-mix feed per kg (USD)	Custom	\$0.33	0.75	\$0.31	---
Production cycle (length of time for a bird to attain 1.5 kg) for broilers fed feed (weeks)					
Production cycle (length of time for a bird to attain 1.5 kg) for broilers fed only locally purchased/produced commercial feed (weeks)	Custom	9	-	7	4.1
Production cycle (length of time for a bird to attain 1.5 kg) for broilers fed only improved formulated feed (weeks)	Custom	9	-	7	4.1
Average cost of broiler feed per bird per production cycle for broilers fed feed (USD)					
Average cost of broiler feed per bird per production cycle for broilers fed only self-hand mixed feed (USD)	Custom	\$5.50	0	\$5.25	\$0.72
Average cost of broiler feed per bird per production cycle for broilers fed only locally purchased commercial feed (USD)	Custom	\$5.50	0	\$5.25	\$0.72
Average cost of broiler feed per bird per production cycle for broilers fed only improved formulated feed (USD)	Custom	5.75	0	\$5.50	---
Average cost of layer feed per hen per life cycle (from DOC to spent hen) for layers fed feed (USD)					
Average cost of layer feed per hen per life cycle (from DOC to spent hen) for layers fed only self-hand mixed feed (USD)	Custom	\$49	0	\$46	---
Average cost of layer feed per hen per life cycle (from DOC to spent hen) for layers fed only locally purchased commercial feed (USD)	Custom	\$49	0	\$46	---
Average cost of layer feed per hen per life cycle (from DOC to spent hen) for layers fed only improved formulated feed (USD)	Custom	\$52	0	\$50	---
Egg production per hen per life cycle for layers fed feed (total number of eggs)					
Egg production per hen per life cycle for layers fed only self-hand mixed feed (total number of eggs)	Custom	300	0	310	---
Egg production per hen per life cycle for layers fed only locally purchased commercial feed (total number of eggs)	Custom	300	0	310	---
Egg production per hen per life cycle for	Custom	310	0	315	---

Indicator	Type	FY 2017 Target	FY 2017 Actual	FY 2018 Target	FY 2018 Actual
layers fed only improved formulated feed (total number of eggs)					
True cost per egg from layer fed feed (total cost of feed per hen/ total eggs produced per hen) (USD)					
True cost per egg from layer fed only self-hand mixed feed (total cost of feed per hen/ total eggs produced per hen) (USD)		\$0.20	0	\$0.20	---
True cost per egg from layers fed only locally produced/purchased feed (total cost of feed per hen / total eggs produced per hen) (USD)					
True cost per egg from layers fed only improved formulated feed (total cost of feed per hen / total eggs produced per hen) (USD)		\$0.20	0	\$0.20	---
Total number of individuals benefiting directly as a result of USDA assistance	Standard #17	2,250 ¹⁶	2,828	2,250 ¹⁷	2,861
Total number of individuals benefiting directly as a result of USDA assistance (male)	-		2,011		1,974
Total number of individuals benefiting directly as a result of USDA assistance (female)	-		817		887
Total number of individuals benefiting directly as a result of USDA assistance (new)	-	2,250	2,828	2,250	196
Total number of individuals benefiting directly as a result of USDA assistance (continuing)	-	1,010	0	2,020	2,665
Total number of individuals benefiting indirectly as a result of USDA assistance	Standard #18	5,500	61,351	5,500	54,568
Total number of individuals benefiting indirectly as a result of USDA assistance (male)					
Total number of individuals benefiting indirectly as a result of USDA assistance (female)					
Number of individuals who have received short-term agricultural sector productivity or food security training as a result of USDA assistance	Standard #16	3,040	2,769	3,040	2,279
Number of individuals who have received short-term agricultural sector productivity or food security training as a result of USDA assistance (male)	-	2,128	1,938	2,128	1,453
Number of individuals who have received short-term agricultural sector productivity or food security training as a result of	-	912	831	912	826

¹⁶ The disaggregated targets were not available.

¹⁷ The disaggregated targets were not available.

Indicator	Type	FY 2017 Target	FY 2017 Actual	FY 2018 Target	FY 2018 Actual
USDA assistance (female)					
Number of jobs attributed to USDA assistance	Standard #15	10	146	15	10
Number of jobs attributed to USDA assistance (female)	-	3	27	5	0
Number of jobs attributed to USDA assistance (male)	-	7	119	10	10
Number of private enterprises, producers organizations, water users associations, women's groups, trade and business associations, and CBOs that applied improved techniques and technologies as a result of USDA assistance	Standard #7	20	93	20	---
Number of private enterprises, producers organizations, water users associations, women's groups, trade and business associations, and CBOs that applied improved techniques and technologies as a result of USDA assistance (FBOs)	-	10	93	6	0
Number of private enterprises, producers organizations, water users associations, women's groups, trade and business associations, and CBOs that applied improved techniques and technologies as a result of USDA assistance (new)	-	20	93	20	0
Number of private enterprises, producers organizations, water users associations, women's groups, trade and business associations, and CBOs that applied improved techniques and technologies as a result of USDA assistance (continuing)	-	18	0	38	0
Number of individuals who have applied new techniques or technologies as a result of USDA Assistance	Standard #2	1,000	1,718	1,000	---
Number of Individuals who have applied new techniques or technologies as a result of USDA assistance (male)	-	700	1,237	700	---
Number of Individuals who have applied new techniques or technologies as a result of USDA assistance (female)	-	300	481	300	---
Number of Individuals who have applied new techniques or technologies as a result of USDA assistance (new)	-	1,000	1,718	1,000	---
Number of Individuals who have applied new techniques or technologies as a result of USDA assistance (continuing)	-	1,000	0	2,000	---
Number of hectares under improved techniques or technologies as a result of USDA assistance	Standard #1	2,000	3,931	2,000	---
Number of loans disbursed as a result of USDA assistance	Standard #5	43	0	43	3
Number of individuals receiving financial	Standard	43	0	43	365

Indicator	Type	FY 2017 Target	FY 2017 Actual	FY 2018 Target	FY 2018 Actual
services as a result of USDA assistance	#4				
Number of individuals receiving financial services as a result of USDA assistance (female)	-	13	0	13	68
Number of individuals receiving financial services as a result of USDA assistance (male)	-	30	0	30	297
Value of loans provided as a result of USDA assistance	Standard #6	\$25,000	\$0	\$25,000	\$6,375
Value of loans provided as a result of USDA assistance (female)	-	\$7,500	\$0	\$7,500	\$0
Value of loans provided as a result of USDA assistance (male)	-	\$17,500	\$0	\$17,500	\$6,375
Value of loans provided as a result of USDA assistance (joint)	-	\$25,000	\$0	\$25,000	\$0
Number of individuals who have applied improved farm management practices (i.e. governance, administration, or financial management) as a result of USDA assistance	Standard #3	820	2,079	820	---
Number of individuals who have applied improved farm management practices (i.e. governance, administration, or financial management) as a result of USDA assistance (male)	-	567	1,601	567	---
Number of individuals who have applied improved farm management practices (i.e. governance, administration, or financial management) as a result of USDA assistance (female)	-	253	478	253	---
Value of sales by project beneficiaries	Standard #13	\$1,200	\$160,776,089	\$1,600	\$362,837.50
Value of sales by project beneficiaries (soybean)	-	\$800	\$249,287	\$1,000	\$4,850
Value of sales by project beneficiaries (maize)	-	\$400	\$1,206,900	\$600	\$357,987.50
Value of sales by project beneficiaries (layer feed)	-	\$300	\$12,213,225	\$400	---
Value of sales by project beneficiaries (broiler feed)	-	\$300	\$1,081,500	\$400	---
Value of sales by project beneficiaries (other poultry feed)	-	\$300		\$400	---
Value of sales by project beneficiaries (poultry feed mixes)	-	\$300	\$1,978,000	\$400	---
Value of sales by project beneficiaries (table eggs)	-	\$200	\$144,047,175	\$300	---
Volume of commodities (MT) sold by project beneficiaries	Standard #14	5,000	107,449	8,000	1,277.50
Volume of commodities (MT) sold by project beneficiaries (soybean)	-	1,500	539	2,400	11
Volume of commodities (MT) sold by	-	3,500	4,023	5,600	1,266.50

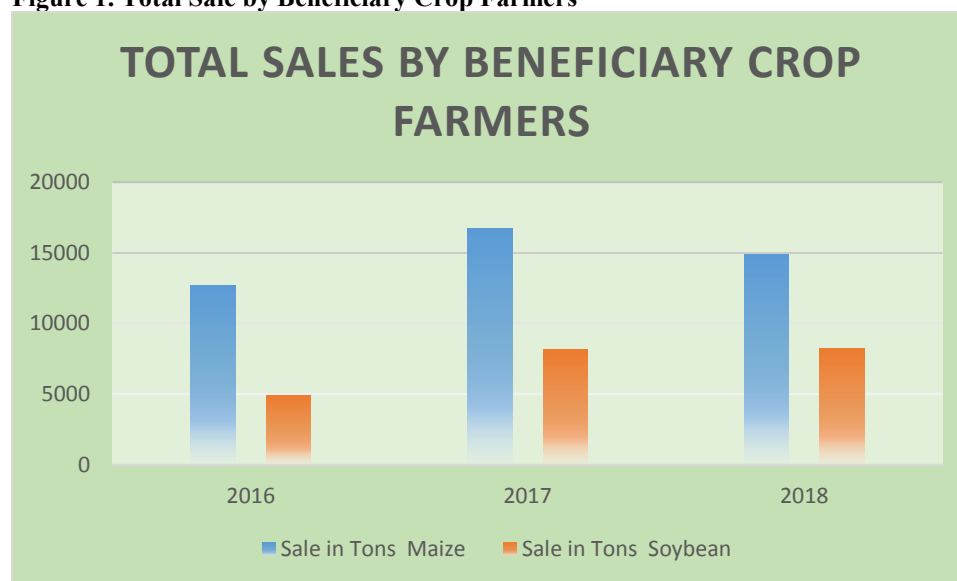
Indicator	Type	FY 2017 Target	FY 2017 Actual	FY 2018 Target	FY 2018 Actual
project beneficiaries (maize)					
Volume of commodities (MT) sold by project beneficiaries (broiler feed)	-	3,000	2,163	5,000	---
Volume of commodities (MT) sold by project beneficiaries (layer feed)	-	1,000	28,737	1,500	---
Volume of commodities (MT) sold by project beneficiaries (other poultry feed)	-	500		750	---
Volume of commodities (MT) sold by project beneficiaries (poultry feed mixes)	-	500	1720	750	---
Volume of commodities (MT) sold by project beneficiaries (table eggs)	-	39,800	70,267	39,850	---
Annual per capita consumption of eggs in Ghana	Custom			20	---
Number of public-private partnerships formed as a result of USDA assistance	Standard #8				

Source: Adopted from the AMPLIFIES Project April-September Semi-Annual Reports for 2017 and 2018.

In the survey, the proportion of poultry farmers that reported having applied new management practices was about 74 percent, while close to 97 percent of crop farmers applied new management practices and improved technologies. Indeed, the number of crop farmers that applied new, improved technology more than doubled between FYs 2017 and 2018. There were much higher increases in the application of new technologies among crop farmers who were able to increase the land size under improved technology by more than 300 percent between FYs 2017 and 2018.

The total number of individuals, especially crop farmers, benefiting directly as a result of USDA assistance far exceeded the targets for both years reported and were almost twice the target figures. While this can suggest efficiency in the use of project resources, its effectiveness in terms of volume of sales by the crop farmers as presented in Figure 1 has been mixed. Sales increased for both crops in 2017 and dropped slightly for maize farmers in 2018. This could be attributed to a number of factors beyond the control of the project.

Figure 1. Total Sale by Beneficiary Crop Farmers



Source: Estimations generated from AMPLIFIES Project Mid-term Performance Evaluation survey data.

4.4.2 Interventions That Worked Well

Crop farmers training in harvesting techniques and post-harvest technology and management were not just relevant but effective as well. Crop farmers and operators of feed mills attested to overwhelming benefits derived from the use of prescribed PICS sacks. It is perceived as secure since farmers are now able to store their produce while waiting for better prices without having concerns about losses of grains during storage. Close to 88 percent of respondent crop farmers were able to store some of their produce as intended, however 86.6 percent reported they were able to access better storage technology for their output. The implication is that a very significant majority of the crop farmers are using the improved storage technologies. As a result of this, as many as 89 percent of the same group of farmers reported experiences of significant reduction in post-harvest losses.

The introduction of moisture meters to farmers has been welcomed by most actors of the poultry feed value chain. This is reported to have led to trade and use of better quality produce, having reduced the effects of fungi and aflatoxin. Its use has become regular practice by some FBOs and CACs. AMPLIFIES's facilitation of resources for the production of moisture meters in Kumasi has ensured its increased use.

Having received relevant training in techniques for harvesting soybean, farmers, through their responses in the survey and FGDs, claim to have reduced losses during and after harvesting. Beneficiary farmers are now able to observe the physical appearance of the leaves of the plant to determine its maturity rather than waiting for most crops to fall before harvesting.

FBOs have also recognized the benefits in the use of tarpaulins to the extent that groups that previously used sacks, like Suglo-Nbori-Buni of Pagazaa and Kulnoli-Dinvla of Zion, have now bought their own tarpaulins. The use of pallets for storage and adherence to packing arrangements that allow for ventilation is gradually becoming the norm.

Links with Esoko was reported to have been effective for the feed mills, which were able to make a decision on where to source their maize from. Even when they have had to import maize, the information from Esoko had weighed into the decision.

The National Egg Campaign worked very well. Using quantity of eggs sold as proxy for egg consumption, all key informants and close to 95 percent of poultry farmers suggested a remarkable increase in egg consumption. Responses from feed mills also indicated a significant increase in sales of layer feed in the past two years as a result of increased production of layer birds. One firm reported an increase in the proportion of layer feed sold in relation to broiler feed; from 65 to 85 percent of total poultry feed sales. Another reported an increase in layer feed proportion from 48 to 60 percent.

Views expressed about the linkages facilitated by AMPLIFIES are mixed. While some farmer groups were of the view that linkages facilitated by AMPLIFIES have been beneficial, other groups expressed contrary views. For instance, in the Northern Region, some FBOs have been linked to an agro-input dealer, Gumaya Enterprise, that provides them the hermetic bags on credit for onward sales to group members. Some crop farmers have also been linked to poultry producers, poultry feed processors, and aggregators. Other farmer groups in the same region were of the view that operators of feed mills introduced to them did not offer favorable prices and would prefer to wait for more favorable market prices. There were instances where some group members had expressed strong sentiments about a lack of linkages with financial institutions.

Linkages created for maize farmers seem to have yielded significant benefits. Maize farmers, especially those in the Brong-Ahafo Region, reported satisfaction with the linkages created for marketing their produce. As expected, 80 percent of crop farmers in the survey, reported increased access to market on account of AMPLIFIES, while 11 percent expressed a contrary opinion. Beneficiary maize farmers in the Ejura District sold about 80 percent of their produce to poultry farmers and feed mills. The result is a relatively low patronage of the CACs as revealed by responses in the survey of crop farmers.

4.4.3 Interventions That Did Not Meet Expectations

The link between soybean farmers and immediate users of the produce, i.e., feed mills and poultry farmers, has not been well established. Poultry farmers interviewed in the Ashanti and Brong-Ahafo regions that kept layers have continued to purchase soybean meal, which is mostly imported. They claim soy cake from YEDENT, in the Brong-Ahafo Region, is suitable for only broilers because the product makes the birds grow fat and, therefore, reduces egg size and laying percentage in layers. Ghana Nuts, a processing company at Techiman, used to produce soybean meal suitable for layers but has currently stopped production. A prominent feed mill also expressed concern about the protein content of locally produced soybean, which is usually less than 40 percent. They preferred to import soybean meal with about 48 percent protein content. Another operator of a feed mill in Accra expressed a preference for imported maize from Togo, where prices are relatively lower perhaps due to proximity and lower transport costs.

Testing for feed quality was lauded by all key informants and participants in focus groups. However, some feed mills expressed concerns about the delay in the release of test results by the laboratories of the University of Ghana and the Animal Research Institute. This was problematic for feed testing in the Greater Accra Region.

Formulation of feed to meet the genetic needs of birds was acknowledged by all poultry farmers as an excellent practice. But its implementation was a bit problematic, especially for smaller farmers who purchase all of their feed. First, there are several breeds of birds in Ghana and with varying genetic requirements. For this reason, feed mills are unable to produce to meet their specific needs without prior orders in economic quantities. Unfortunately, the sizes of such farms do not permit them to place orders that would be economical for the feed mills. Thus, only relatively large farms that formulate their own poultry feed are able to produce and use feed that meets the genetic needs of their birds.

The initial demonstrations in the Ashanti and Brong-Ahafo regions to show the effects of improved feed formulation technology and farm management were very successful. It motivated AMPLIFIES to organize more demonstrations, but the project did not consider the level of effort it required from PTOs. Thus, subsequent demonstrations did not turn out too well, and farmers complained about visible absence of PTOs and poor sanitation at some of the demonstration sites instead of best practices. In one demonstration for showing the effect of feeding per the genetics of the birds in the Ashanti Region, the organizers did not get the breed of the DOC right, thus, there was virtually no difference between the rate of growth of the chicks fed with the genetic feed and those fed with the commercial feed. Feed demonstrations were reported to have been provided for broilers only, while a majority of farmers stocked layers.

The size of storage facilities ought to meet the needs of the beneficiaries rather than the ‘one size fits all’ approach currently implemented. Farmers in the focus group in Ejura District said the warehouses were too small for even one farmer in that locality. This shortcoming has come to the notice of AMPLIFIES managers as one of the lessons learned, and the project is planning on providing larger storage facilities. Some lapses in the usage and management of the facility were also reported in the Northern Region, which will require some attention from the implementing partner in order to maximize the intended benefits.

Limited access to funds allocated for financial assistance to farmers came up strongly as one of the planned interventions that did not work as expected. Only 43 percent of respondents in the poultry farmers' survey reported improved access to finance from various sources. Within the Ghanaian context, the reported proportion accessing loans might seem reasonable. There is no evidence to suggest that training and technical assistance from AMPLIFIES had any influence on the application process. Contrary to expectations, out of the 72 respondent poultry farmers in the survey that reported having accessed loans, only two had been facilitated by AMPLIFIES. Apparently, during the initial introduction of the AMPLIFIES and GPP in Ghana, farmers got the impression that a large portion of the amount (\$56 million) earmarked for the two projects would be channeled into financial support to actors in the poultry feed value chain. The expectations for financial assistance were very high, and some actors of the value chain are beginning to express disappointment and, in extreme cases, perceived deceit. Unfortunately, the grant component of the project was managed by GPP, which was perhaps to the disadvantage of beneficiaries of AMPLIFIES.

4.4.4 Coordination with GPP and Other Donor Projects

Coordination with GPP in activity implementation had generally been fair. The two projects collaborated on a number of activities, which made some farmers see them as one project. Sixty-nine percent of interviewed crop farmers provided responses that indicated interaction with other USG-funded projects as a result of linkages by AMPLIFIES. Seventy-five percent of key informants expressed satisfaction with the level of coordination between AMPLIFIES and GPP, while the remaining informants were undecided. About 69 percent of respondent crop farmers also provided responses that suggest a linkage to other USG-funded projects on account of participation in the AMPLIFIES Project.

AMPLIFIES worked with the ADVANCE Project to select FBOs that received substantial technical assistance and crop production training from the latter project. Until ADVANCE started preparation for a close out, the project had provided complementary support for crop production to the FBOs. In effect, ADVANCE laid the necessary foundation among the farmer organizations, bringing them to a stage where the farmers were ready to take in the harvest and post-harvest training offered by AMPLIFIES.

Coordination with USAID Innovation Labs project through KSU has been very visible, and the partnership has provided access to innovative feed handling technology and management practices. It has contributed to the delivery of impressive outcomes for the project that transcend the immediate beneficiaries.

While works with USG-funded projects were satisfactorily coordinated, responses in the field portray mixed perceptions about coordination with local stakeholder entities. There seems to be a fair amount of interaction with MoFA through the Animal Production Directorate (APD), perhaps with an assumption that some directives will be given to district departments of agriculture. However, under the decentralized administrative system, any anticipated line of command no longer exists. AMPLIFIES, therefore, needed to coordinate work in the field directly with the district departments of agriculture. While some seemed to be involved in activity implementation, others claimed limited involvement with the project and, in extreme cases, a complete lack of knowledge about the project in their districts. Districts that reported a good working relationship with AMPLIFIES also reported significant benefits derived through activities of both parties.

A key member of the Ghana National Association of Poultry Farmers (GNAPF) expressed an opinion that AMPLIFIES did not work with the association as a body but interacted with selected members of the association. He acknowledged an initial interaction during the project design phase, but expressed concerns about not engaging the association to make input into the project's annual work plans or be involved in implementation.

The design of the project, which puts coordination with relevant projects at the center, is acknowledged as a major strength of AMPLIFIES. Evidently, coordination with USG-funded projects has been good and effective.

4.4.5 Unintended Outcomes

Apparently, the Animal Science Department of the University of Ghana had a mandate to reach out to farmers to provide extension advice. But the mandate had been overshadowed by research activities. Participation in the AMPLIFIES Project and increased interaction with poultry farmers presented the opportunity to increase their extension services to poultry farmers. Having gained knowledge about these extension services, increasing numbers of poultry farmers are now approaching the Department for extension advice.

As demand for eggs increased and layer production became attractive, the demand for layer feed by a group of farmers in Tarkwa, Western Region increased. Having observed this rapid expansion of the poultry business in Tarkwa, Sankofa Flour Mills initiated a program to provide technical assistance for an enhanced poultry feeding regime to members of the local poultry business association.

Training sessions and demonstrations strengthened interactions among poultry farmers, creating a forum and opportunities for sharing knowledge about production and market information. It also strengthened interactions between the government veterinary services providers and the poultry farmers in some of the Metropolitan, Municipal, and District Assemblies (MMDAs). The District Veterinary Officer in Ejisu in the Ashanti Region, for example, reported taking advantage of opportunities offered during AMPLIFIES training sessions to deliver needed extension services to farmers, which is common to most of the districts in Ashanti and Brong-Ahafo regions. Through these training sessions, farmers have gained better access to services provided by the district departments of agriculture.

In the Northern Region, the linkage of several FBOs with Opportunity International has provided many members access to credit facilities. In Savelugu, for example, three FBOs with 42 members accessed a total of GHS 9,408, which they have fully repaid.

One negative outcome that occurred during the evaluation was an outbreak of suspected new castle disease, which was attributed to poor precautionary measures for ensuring the biosecurity of a farm.

4.4.6 Conclusion on Project Implementation Effectiveness

Based on the evidence that most of the targets for performance indicators reported were achieved, the project can be said to have achieved its intended results and, thus, is effective. Most unintended results were positive indications of effectiveness. The evidence also shows crop farmers were more satisfied with the outcomes of the project than poultry farmers.

There is also evidence of shortfalls in the implementation of some activities involving poultry farmers. It is not too late to address these in order to achieve complete effectiveness by the close of the project and to the satisfaction of the poultry farmers, in particular.

4.5 Project Sustainability

Eighty-five percent of crop farmers and 80 percent of poultry farmers interviewed agreed they had acquired performance enhancing skills that they will continue to use for their enterprises after the AMPLIFIES Project ends.

As part of its sustainability strategy, AMPLIFIES identified volunteers among the FBOs to continue with the role played by the PHTOs. Peter Manuka, one of the farmer volunteers at Kwame Yeboah in the Brong-Ahafo Region, trained non-members who harvested more maize than he did. The beneficiaries have advised their wives to join his FBO. As a result of the FBO's growth through attraction of membership, two offshoot FBOs have emerged. In addition, local poultry farmers associations, especially those in the Brong-Ahafo Region, have been using their meetings as a platform to refresh their knowledge on feed formulation, biosafety measures, feed testing, and marketing strategies. These have implications for sustainability of gains made so far from the interventions.

Coordination with local institutions responsible for agriculture extension services such the district departments of agriculture has significant potential for sustaining gains made through AMPLIFIES. Unfortunately, key informants and members of focus groups expressed contrasting views about involvement of such institutions for the implementation of the project. While key officers of some district departments of agriculture reported their involvement with the project, others had very little or no knowledge about it. A spokesperson of one of the prominent feed mills also expressed a concern about the limited involvement of the local extension services institutions in all the events the firm participated in. Opportunities still exist to correct any lapses in coordination with local entities for effective and sustained delivery of training and extension advice. ADRA is already beginning to seek the involvement of district departments of agriculture, and a couple of them in the Greater Accra Region reported recent engagements by the project.

In FGDs, some DDAs reiterated sustainability of project benefits when they are involved in the implementation of extension-related components of the project. Even more so now that the implementation of new GoG programs, including Planting for Food and Jobs (PFJ) and Modernizing Agriculture in Ghana (MAG), have increased MMDAs' access to resources for extension services.

Gains from the egg consumption campaign appear to be threatened by the activities of some traditional medicine peddlers, who vigorously preach against egg consumption, saying it has adverse health effects. Also some traditional myths and misconceptions about egg consumption, even among the educated, are working against the gains of the egg consumption campaigns. There are postings on social media and campaigns in public places claiming local poultry farmers use unapproved fattening drugs to inject their birds. All these have negative effects on the expansion of local and foreign markets for Ghanaian poultry products. In order to address this, some business associations such as the Dormaa Poultry Farmers Association and the Dormaa Egg Sellers Association have taken steps to engage knowledgeable persons in public discussions on the benefits of egg consumption, using the local information centers and FM radio stations. Such efforts need to be scaled up.

The sustainability plan of using volunteers is a good idea, but not adequate to ensure sustainability of gains from the project once it ends. Past experience from other projects suggests it is not a sustainable practice. Fortunately, it is in the interest of operators of the enterprise poultry feed value chain to continue applying technologies and skills acquired if they intend to become and/or remain successful. Thus, the benefits derived from project activities can be self-sustaining. However, coordination with local entities can assure farmers' continued access to extension advice relevant for sustaining project gains.

4.6 Key Lessons Learned

The following are some of the lessons learned, and plans are underway for their implementation:

- During ADRA's interaction with crop farmers, it observed the need to also advise farmers on certain production issues that were beyond the scope of AMPLIFIES. Some of those issues could not be adequately separated or ignored even though they fell outside the mandate of AMPLIFIES. For example, in certain cases, PHTOs could not avoid teaching farmers essential production-related activities, which ADAVNCE II was supposed to have covered. Maize farmers in the focus group at Ejura-Sekyedumase District indicated the quality of their maize depended on the effective control of pests (especially the Fall Army Worm), soil fertility management, and the weather. They mentioned their deceased technical officer had regularly engaged them and their FBO members in discussions on some of these improved production and pre-harvest practices.
- Training in specific modules needs to be time-bound to coincide with the farming activity at the time in order to secure the attention of the farmers. For example, training in harvesting activities just before the time of harvest would be ideal, not at the time of land preparation.
- Agreements between and among actors of the value chain must be documented and signed as evidence in order to avoid arguments and altercations.
- Reactivating the feed millers association was found to be necessary for addressing issues of common interest, such as developing a bargaining strength to influence national policies that have implication for the success of their operations.
- GNAPF wants more involvement in program implementation rather than being limited to training participants.

5.0 RECOMMENDATIONS

5.1 Recommendations by Stakeholder

Some recommendations provided by interviewed stakeholders include the following:

- Consider biosecurity issues and improved sanitation when developing site selection for future demonstrations.
- Develop a 'Train the Trainer' program for GNAPF to expand the size of knowledgeable members, as well as follow-ups visits to farmers after training.

- Consider facilitating FBOs' access to quality maize shelling machines by the project for repayment by installment. Farmers expressed a view that current manual shelling processes are slow and often not completed in a day. Leaving maize in open spaces overnight attracted pilferage by neighbors and amounted to substantial losses.
- Train owner-farmers of toll mills to formulate and produce genetic feed to enable engender farmers' increased access to the product. Such formulation and production must have a recognized and acceptable system for quality assurance.

5.2 Recommendations Based on Findings and Conclusions

Based on the findings from the evaluation processes and subsequent conclusions, the following recommendations should be considered during the remaining period of project implementation:

- Clean up and update the farmers' database regularly to make it easier to identify active farmers and those that have completely left the business.
- Collaborate with the MMDA Departments of Agriculture to provide a platform for expanding the coverage of project interventions by leveraging resources. This would also ensure the sustainability of gains made since the presence of these institutions in the communities is indefinite.
- Explore strategic alliances with local entities that can carry on with some aspects of the project tasks. The egg campaign is an activity of relevance to a wider audience, far beyond the domains of the actors of the poultry value chains. On the national front, it is recommended AMPLIFIES identify strategic partners for a more sustainable National Egg Campaign. In targeting schools, for instance, there is a need for a campaign that extends beyond inclusion of eggs in school meals to those with the potential of influencing students' choices of meals that include eggs.
- Limit annual results surveys. The choice of planning and implementing annual surveys present significant cost and program management challenges. Farmers are also tired of going through lengthy interviews every year. Besides the large expenditure, its implementation requires significant time and level of effort by the staff for planning and execution, and takes them away from programmed tasks. Obtaining data for outputs/immediate results is fairly easy and has very little cost associated, so that must be done frequently. Understandably, the surveys were used for gathering data on outcomes or intermediate results. But the measurement of these results can be reserved for mid-term and end-of-project evaluations. Any follow-on project needs to consider using indicators for which data is easily obtained, perhaps from secondary sources.
- Control the damage caused by the misunderstanding about the implementation of grant component of the project. It is important to present the facts about the grants to AMPLIFIES beneficiaries. This can be useful in regaining trust of the poultry farmers. USDA should provide clarity on project activities to industry leaders, especially what project funds can and cannot be used for.
- Strengthen the Feed Millers' Association, which can deliver substantial benefits especially now, when members have expressed the need and willingness to coordinate efforts at seeking audience for addressing common objectives. Together they will be capable of providing feed testing facilities that can improve farmers' access to feed

testing. Responsible ownership can ensure the testing facility provides timely services that meet their individual needs.

- Examine the feasibility of establishing a central repository or resource center with tools for local artisans who service the equipment of clusters of toll or feed millers. Equipment like a hydraulic press and clamp meters to read energy consumption and determine running efficiency appear to be unavailable for use.
- Consider simpler naming of projects for easy of identification by farmers. Unlike AMPLIFIES, GPP was easily identified by poultry farmers probably because of the ease with which they could read and mention the acronym.

APPENDICES

Appendix 1. The Evaluation Statement of Work

STATEMENT OF WORK

Mid-Term Performance Evaluation of the AMPLIFIES Project

I. PURPOSE OF THE MID-TERM PERFORMANCE EVALUATION

The purpose of the mid-term performance evaluation is to determine the extent to which implementation of the Assisting Management in the Poultry and Layer Industries by Feed Improvement and Efficiency Strategies (AMPLIFIES) Project has progressed towards the attainment of its intended objective of “Increased poultry productivity and expanded trade of poultry products and by-products.” In addition to determining the attainment of targets of a number of key indicators, the evaluation will also determine what components and interventions of the project are working well and why, which perhaps are not and why, and to make mid-course corrections if necessary. These efforts are intended to help guide the implementation of activities in the remaining years of the project.

Audience and Intended Uses

The audience of the evaluation report will be the United States Department of Agriculture’s (USDA’s) Food for Progress (FFPr) program, specifically the Food for Development Branch in the Food Assistance Division (FAD), within the Office of Capacity Building and Development (OCBD) of the Foreign Agriculture Services (FAS), and the project Implementing Partners (IP), American Soybean Association’s (ASA) World Initiative for Soy in Human Health (WISHH) Program, the Adventist Development and Relief Agency (ADRA) Ghana and the Kansas State University. The results of the performance evaluation will be used by USDA FFPr, FAD, OCBD, FAS to better understand progress made by AMPLIFIES to date and, if necessary, suggest changes to strengthen the current implementation approach of the project. This exercise will also help the implementing partner (IP), ASA/WISHH, gain a new perspective about their strengths and weaknesses and provide an opportunity for leadership staff to adjust the program’s implementation strategies as appropriate.

II. SUMMARY INFORMATION

The USDA FFPr AMPLIFIES Project is a five-year project that contributes to USDA’s strategic objectives of “(1) Increase in agricultural productivity and (2) expanded trade in agricultural products.” The project will build the downstream value chain capacity for Ghana’s agriculture industry, specifically market linkages for locally produced maize and soy commodities utilized in feed and poultry production. The project seeks to increase the quantity and quality of poultry

feed, enhance feed processing efficiency, increase the trade of commercialized poultry feed and increase the trade of eggs.

Table 1: Project Identification data

Strategy/Project/Activity Name	Assisting Management in the Poultry and Layer Industries by Feed Improvement and Efficiency Strategies (AMPLIFIES) Project
Implementer	ASA /WISHH
Cooperative Agreement/Contract #	FCC-641-2015/016-00
Total Estimated Ceiling of the Evaluated Project/Activity(TEC)	\$14.8 million
Life of Strategy, Project, or Activity	October 1, 2015 – September 30, 2020
Active Geographic Regions	Greater Accra, Ashanti, Brong Ahafo and Northern Regions of Ghana, West Africa
Development Objective(s) (DOs)	Strategic Objectives Increase agricultural productivity Expanded trade of agricultural products (Domestic, Regional and International)

III. BACKGROUND

A. Description of the Problem, Context and History

Approximately half of Ghana’s population is engaged in agricultural activities, including the production of cereals, grains, staple crops, poultry and other commodities. The Ashanti, Greater Accra, and Brong Ahafo Regions, touted as the country’s “poultry belt,” have the greatest numbers of layer flocks among all regions, with Brong Ahafo accounting for nearly 30% of the total poultry population in Ghana (ASA, 2015:p6)¹⁸. About 90% of poultry production in Ghana is centered on layers. Prospects for both the broiler and layer industries are good, with consumer demand expected to continue to increase annually. However, Ghana’s economic climate faces high inflation, a depreciating cedi, unfavorable economies of scales, decreased demand for homegrown products and raw materials, rising import costs and stagnating growth.

The Government of Ghana (GOG) has identified the poultry sector as a key priority for economic development. Several GOG and donor programs have been designed to revitalize the country’s broiler industry and galvanize public-private sector partnerships to improve local feed processing capacities in the past two decades. Despite these efforts, multiple constraints remain along the poultry value chain’s full spectrum, with inefficiencies plaguing Ghana’s competitiveness in this sector. These include the high cost of feed ingredients, limited availability of quality of feed inputs, lack of awareness of quality standards, poor enforcement of

¹⁸ American Soybean Association, 2015. AMPLIFIES Ghana Life of Project Work Plan. USDA Agreement No. FCC-641-2015/010-00. Unpublished document submitted to the United States Department of Agriculture, Washington D.C, USA.

feed standards, outdated production and management practices, few feed processing or testing facilities, the absence of marketing and the utilization of poor feed formulations, among others.

Feed is the single greatest production cost driver for poultry producers. In Ghana, the cost of importing protein-rich feed ingredients is prohibitive, with current prices for US soybean meal estimated at \$800 per MT, including duty, storage, bagging and handling. Though Ghana does produce soy, yields are, however, low and the production is insufficient to meet the poultry industry's demands. In 2014, national soybean production was estimated to be 50,000 MT, which is far below the country's potential annual production of 143,000MT¹⁹. The availability of locally grown yellow maize for poultry feed is also inadequate, with 63,000-105,000 MT of mostly yellow maize being imported annually for poultry feed. Feed production is also impacted by high post-harvest losses, with on-farm storage losses for maize ranging from 30-50%.

The AMPLIFIES Ghana project aims to tackle the above production challenges by improving Ghana's poultry feed production capacity and strengthening key linkages along the poultry value chain. Specifically, it is designed to enhance the quality of poultry feed and its accessibility to poultry producers. Over its duration, the project will build the poultry industry's downstream value chain capacity by strengthening market linkages for locally produced poultry feed ingredients for poultry production.

B. Project Description

The AMPLIFIES project was designed to resolve the growth limiting inefficiencies in the poultry industry, with a particular emphasis on improving the poultry feed sector. The project will work with its partners to create a more efficient and cost-competitive poultry feed industry in Ghana. The project implementation approach will generate increased market opportunities for growers of the main feed ingredients, maize and soy, within Ghana, while creating end-market demand for the import of these products. Over its five-year lifespan, the project will "build the downstream value chain capacity for Ghana's agriculture industry, specifically strengthening market linkages for locally produced maize and soy commodities utilized in feed and poultry production" (ASA, 2016; p3)²⁰. The goal of the project will be achieved by the attainment of the following three objectives:

1. Increase agricultural productivity in the poultry value chain by increasing the quantity and lowering the cost of poultry feed through the reduction of post-harvest loss and procurement inefficiencies of primary feed ingredients (USDA FFPr SO1);
2. Increase agricultural productivity in the poultry sector by improving poultry feed quality through the improvement of feed testing capacity and the demonstration of the benefits of quality feed (USDA FFPr SO1); and
3. Increase trade of eggs through awareness campaigns and the trade of commercialized poultry feed through improved distribution networks (USDA FFPr SO2)

¹⁹ This is the Ministry of Food and Agriculture 2016 data, which can be obtained from this link:

http://mofa.gov.gh/site/wp-content/uploads/2018/05/Agric%20in%20Ghana%20F&F%202016_Final.pdf

²⁰ American Soybean Association, 2018. Project Monitoring Plan, AMPLIFIES Ghana Project. Unpublished document submitted to the United States Department of Agriculture, Washington D.C, USA.

The above strategic objectives will be attained through the implementation of the following key activities:

1. Training: Harvesting, Post-harvest handling and storage of feed inputs
2. Infrastructure: Post-harvest storage and aggregation of feed inputs
3. Capacity Building: Increase in efficiency in the procurement of feed ingredients
4. Adoption of improved poultry feed
5. Capacity Building: Improvements in Quality and Consistency of Feed Formulations
6. Capacity Building: Increased Feed Testing Capacity
7. Capacity Building: Increased Efficiency in Feed Processing
8. Marketing: Expansion of Poultry Feed Distribution Network
9. Financial Services: Loans for Investment in Feed Processing
10. Organize National Awareness Campaign to Promote Egg Consumption

Activity implementation will produce the following intermediate results (IRs) and Immediate Results (ImR):

Intermediate Results (IR)

1. Increased use of improved poultry production techniques and technologies (ties into FFPr 1.2--Increased Use of Improved Agricultural Techniques and Technologies)
2. Improved producer's access to improved feed (ties into FFPr 1.2--Increased Use of Improved Agricultural Techniques and Technologies)
3. Increased smallholder poultry producers' access to high value markets (ties into FFPr 2.3--Improved Transaction Efficiency)
4. Increased sales of poultry by-products (ties into FFPr 2.1--Increased Value Added to Post Production Agricultural Products)
5. Increased local demand for eggs (ties into FFPr 2.2--Increased Access to Markets to Sell Agricultural Products)

Immediate Results (ImR)

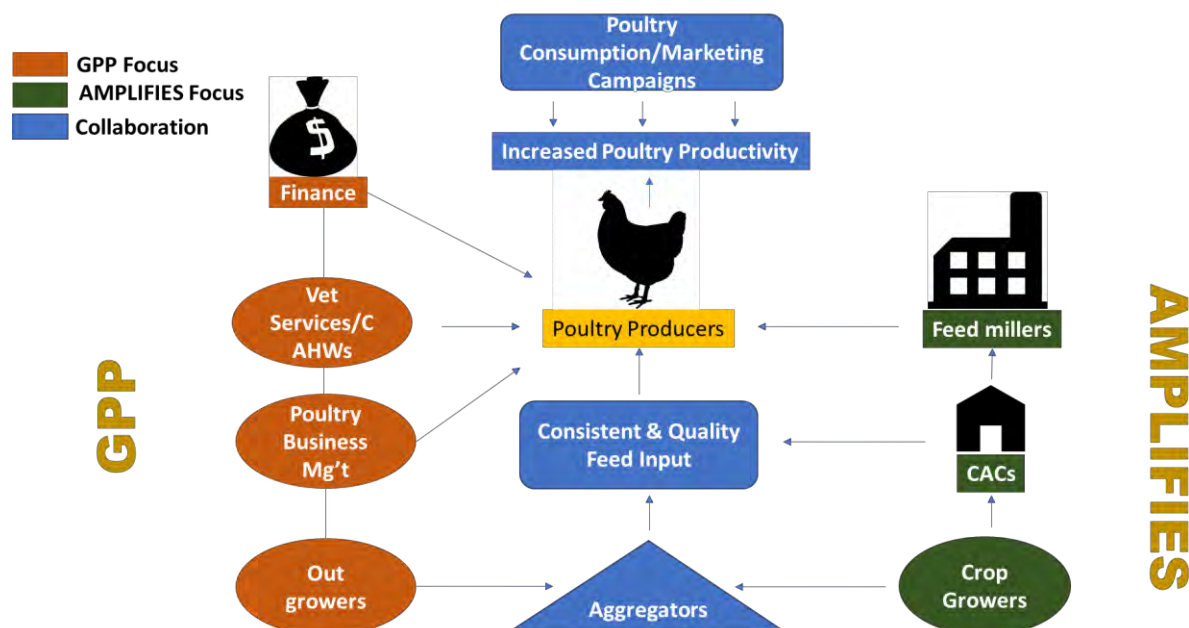
1. Increased knowledge by poultry producers of improved techniques and technologies (ties into FFPr 1.2.4--Increased Knowledge by Farmers of Improved Agricultural Techniques and Technologies)
2. Increased use of improved nutrient dense feed (ties into FFPr 1.2.1--Increased Availability of Improved Inputs)
3. Increased use of financial services for investment in poultry (ties into FFPr 1.2.3--Increased Use of Financial Services)
4. Increased local production of poultry feed (ties into FFPr 1.2.1--Increased Availability of Improved Inputs)
5. Improved technical formulations of feed (ties into FFPr 1.2.1--Increased Availability of Improved Inputs)
6. Reduced cost of feed manufacturing (ties into FFPr 1.2.1--Increased Availability of Improved Inputs)

7. Expanded national awareness of the benefits of egg consumption (ties into FFPr 2.2.1-- Improved Marketing of Agricultural Products)

The AMPLIFIES project implementation approach is collaborative in nature (see Figure 1 below). The project is working in close collaboration with the USDA-funded Ghana Poultry Project (GPP), which is managed by ACDI/VOCA, and the Ministry of Food and Agriculture (MoFA) and other relevant Ghanaian entities (e.g., the Ghana National Association of Poultry Farmers - GNAPF) to achieve USDA's strategic objective of increasing agricultural productivity and trade in Ghana. Whereas the GPP is in part, working with poultry farmers and key actors to increase productivity at the farm level, the AMPLIFIES project is working with feed and feed ingredient producers to ensure increased productivity and efficiency at the farm and feed mill level with in a special focus on the layer industry. The two projects work in concert to ensure increased demand and consumption of the locally produced poultry products in Ghana. The project is also coordinating with regional and district level associations in selecting beneficiaries (growers and producers) to benefit from the project interventions and activities.

The project is working in 26 districts in the Greater Accra (six districts), Ashanti (seven districts), Brong Ahafo (six districts) and Northern (seven districts) Regions of Ghana. Project activities in the Northern Region are focused on crop activities. In Ashanti and Brong Ahafo Regions, interventions are focused on both crop production and poultry. Focus activities in the Greater Accra Region is poultry production only. However, the National Awareness Campaign to promote egg consumption covers all the ten (10) administrative regions of Ghana.

Figure 1: AMPLIFIES Project Implementation Approach



Source: AMPLIFIES Ghana Project: Midterm Evaluation Planning Meeting. A presentation made at USAID/Ghana on April 28, 2018

IV. EVALUATION QUESTIONS

This evaluation has two purposes: 1) determine whether the project is implemented as intended and whether progress is being made towards the attainment of the project's goal and objectives; and 2) determine the results of key outcome and output indicators tracked by the project. In order to guide the evaluation, the following questions will be answered:

Relevance

1. To what extent is the project aligned with national policies and strategies for agriculture production?
2. How relevant is the project to the stated and immediate needs of stakeholders?

Effectiveness

1. To what extent is the project producing worthwhile results (outputs, outcomes) and/or meeting each of its objectives?
2. What, if any, unintended consequences can be attributed to the project?
3. To what extent has AMPLIFIES coordinated with the GPP and other USAID-funded projects such as the ADVANCE program and MoFA, other donor projects and the private sector to achieve the overall objective of strengthening the downstream value chain capacity for Ghana's poultry industry?

Efficiency

1. To what extent is the relationship between inputs and outputs timely, cost-effective and to the expected standards?
2. Were inputs converted into outputs in a timely and cost-effective manner?

Sustainability

1. To what extent are the project results likely to continue after the project?
2. Is stakeholder buy-in likely to continue or be increased after the current contract period?

Apart from providing answers for the above listed evaluation questions, the team of evaluators will conduct a quantitative survey to provide annual results for the indicators in Annex 2. The data collection tools, sample size and method of collecting data have all been determined. The evaluation team would be responsible for implementing the annual survey as part of the mid-term evaluation of the AMPLIFIES project.

V. EVALUATION DESIGN AND METHODOLOGY

This performance evaluation is focused on AMPLIFIES implementation, results and immediate outcomes in relation to the project logic and how the activities are perceived and valued by stakeholders. It is anticipated that a cross-sectional approach will be adopted for this evaluation. Data will be collected from a representative sample at midterm (one point of the project implementation) to estimate results of a number of indicators from which inferences can be made regarding the project relevance, effectiveness, efficiency and sustainability. USDA and the project implementing partners are interested in obtaining a snapshot at midterm and across different subgroups receiving services from the AMPLIFIES Project.

It is generally anticipated that the Consultants will employ appropriate scientific data collection methods and a mix of qualitative and quantitative analysis methods, including data triangulation, to arrive at the evaluation findings that fully respond to the evaluation questions and make recommendation thereof.

The performance evaluation will cover AMPLIFIES operations since inception, with the key respondents being the project staff, staff of the donor (USDA in Ghana and Washington), the project target beneficiaries, including poultry producers, feed mill operators, crop farmers and staff of partner government institutions such as the Ministry of Food and Agriculture's (MOFA's) Animal Production Directorate (APD). Data collection for the key outcome/output indicators will focus on all project beneficiaries who have received interventions since the inception of the project. Depending on the number of target respondents, a census approach may be employed by the Consultants to collect representative data.

- The Consultants are required to share all data collection tools with USDA and AMPLIFIES Project via METSS II Project for review and feedback and or discussion, with sufficient time, before they are applied in the field. They should utilize, to the extent possible various data collection methods including but not limited to the following:
 1. **Review of Existing Documentation:** Project documents that should be reviewed may include but not limited to the AMPLIFIES Project Agreement Attachment A, baseline report, quarterly and semi-annual progress reports, annual beneficiary-based survey reports, project monitoring and evaluation plans, project monitoring plans (PMP), and any other assessment reports related to the AMPLIFIES project.
 2. **Key Informant Interviews:** The team is expected to hold interviews with key partners of the project particularly the AMPLIFIES Project, and other partners including actors in the private sector (crop farmers and poultry farmers) who have been engaged in the project implementation.

Survey of Beneficiaries: The team is expected to cover a representative sample of project beneficiaries, institutions and private sector entities who have benefited from the AMPLIFIES project implementation since its inception.

VI. DELIVERABLES AND REPORTING REQUIREMENTS

Evaluation Work plans: The Consultants (otherwise also called Evaluation Team) will prepare a detailed work plan and activity schedule to be submitted to the Chief of Operations (COO) of the METSS II Project for approval no later than five (5) working days after the award. The work plans should describe all activities, including timeframes and sequencing, research design and methodology, sample size estimation and the selection of sampled respondents, draft data collection tools and an analysis plan, and a timeline for training enumerators and conducting data collection. The METSS II Project's Research, Monitoring and Evaluation Unit, AMPLIFIES Project's M&E Unit and USDA Foreign Agricultural Service (FAS) Food for Progress (FFPr) Analyst will review the submitted work plans and provide written comments no later than five (5) working days after receipt of the detailed work plan. The consultants must receive approval of the work plans before beginning the field work.

In-briefing: Within a day of arrival in Ghana (i.e., if Consultants are outside of Ghana), the evaluation team will have an in-briefing with the METSS II Project, USDA/FAS FFPr staff, and key members of the AMPLIFIES project team (e.g., Chief of Party, M&E Manager, MIS Specialist) for introductions and to discuss the evaluation team's understanding of the assignment, initial assumptions, evaluation questions, methodology, and work plans, and/or to adjust the Statement of Work (SOW), if necessary.

Mid-term Briefing and Interim Meetings: The consulting team is expected to hold a midterm briefing with METSS II Project, USDA/FAS FFPr Analyst and key members of the AMPLIFIES project team on the status of the evaluation, including potential challenges and emerging opportunities. The team will also provide the METSS II Chief of Operations with periodic briefings and feedback on the team's findings, as agreed upon during the in-briefing. If desired or necessary, weekly briefings by phone can be arranged.

Final Exit Briefing: The Consultants are expected to hold a final exit briefing prior to leaving the country to discuss the status of data collection and preliminary findings. The team will present the major findings of the evaluation to METSS II Project, AMPLIFIES project and USDA partners (as appropriate and as defined by USDA) through a PowerPoint presentation prior to the team's departure from the country. The team will consider partner comments and revise the draft report as appropriate.

Draft Evaluation Report: The draft evaluation report should be consistent with the guidance provided in the reporting requirement sub-section. The report will address each of the questions identified in Section IV of this SOW and any other issues the team considers to have a bearing on the objectives of the evaluation. Any such issues can be included in the report only after consultation with METSS II. Once the initial draft report is submitted to the METSS II Project Chief of Operations, the METSS II RM&E team, the USDA/FAS FFPr Analyst and the AMPLIFIES project, contributors from each faction will take nine (9) business days to review and submit comments on the initial draft. The Consultants will integrate the comments into the draft report and submit the final draft report within five (5) business days to METSS II Project. Each reviewing team (METSS II Project RM&E, AMPLIFIES M&E and USDA) will take five (5) business days to review and submit final comments on the final draft

Final Evaluation Report: The Consultants will be asked to take no more than three (3) business days to respond/incorporate the final comments from METSS II Project, USDA and AMPLIFIES. The evaluation team leader will then submit the final report to the METSS II Project Chief of Operations. All project data and records will be submitted in full and should be in electronic form in an easily readable format, organized and documented for use by those not fully familiar with the project or evaluation, and owned by USDA.

The final report will be edited/formatted and presented to USDA and AMPLIFIES approximately one month after it has reviewed the content and approved the final revised version of the report.

Report Delivery: The Consultants shall submit the final report to METSS II Chief of Operations in electronic format (Microsoft Word) as well as printed and bound copies (Three copies in English) no later than three (3) working days of the receipt of the comments.

VII. EVALUATION TEAM COMPOSITION

The evaluation team will consist of a team leader and two technical experts. A representative from METSS II Project and USDA may be asked to join the evaluation and participate in the evaluation processes. It is anticipated that the Consultants should have the following experience:

1. Knowledge of US Government supported programs,
2. Technical competence in the field of Agriculture, particularly the poultry sub-sector, agribusiness and agricultural value chains, economics, public policy, or related fields; and
3. Experience with quantitative and qualitative data collection procedures, and management of surveys, including survey data analysis using appropriate statistical analysis packages such as Stata, SPSS Epi Info etc.

Team Leader/ Expert in Agricultural Sciences/ Applicable Social Science: Qualification and Experience

1. Specialist should have a post graduate degree in agriculture sciences, economics, or an applicable social science field. S/he should have at least 10 years senior level experience working in the agricultural sector in a developing country context.
2. S/he should have extensive experience in project management, conducting both qualitative and quantitative evaluations/ assessments and strong familiarity with the poultry industry in Ghana. Excellent oral and written skills are required.
3. The Team Leader should also have experience in leading evaluation teams and preparing high quality documents. The Team Leader will take specific responsibility for assessing and analyzing the project's progress towards achieving its targets, factors for such performance, benefits/impact of the strategies, and compare with other possible options. S/he will also suggest ways of improving the present performance of the project, if any.
4. Good interpersonal and diplomatic skills.
5. S/he will provide leadership for the team, finalize the evaluation design, coordinate activities, arrange periodic meetings, consolidate individual input from team members, and coordinate the process of assembling the final findings and recommendations into a high quality document. S/he will write the final report. S/he will also lead the preparation and presentation of the key evaluation findings and recommendations to METSS II Project, USDA and AMPLIFIES.

Senior Evaluation Specialist: Qualification and Experience

1. Master's Degree or equivalent in an agricultural field (Agricultural economics, agribusiness, animal science, agricultural extension and rural sociology, or any other relevant agricultural field), social sciences or related relevant fields.
2. Must have a minimum of 8 years conducting both qualitative and quantitative evaluations/assessments around agriculture productivity, value chain enhancement, improving capacity for service delivery and policy formulation in developing countries.

3. Good interpersonal and diplomatic skills.
4. Excellent oral and written communication skills in English

Other Team Members: Qualifications and Experience

A proven record of leadership in research, sound technical knowledge and relevant experience in the agricultural sector, social sciences or related relevant fields are required. Experience in program design and implementation, analysis and report writing are an advantage;

1. Experience in conducting both qualitative and quantitative evaluations/assessments around improving capacity for service delivery and policy formulation;
2. A proven team player experience; and
3. Excellent spoken and written skills in English.

The evaluation team shall demonstrate familiarity with USDA's evaluation policies and guidelines.

All team members will be required to provide a signed statement attesting to a lack of conflict of interest or describing any existing conflict of interest.

VIII. EVALUATION SCHEDULE

Period of Performance Evaluation

Work is to be carried out over a period of approximately 10 weeks, beginning on or about October 29, 2018 with field work and draft report completed by January 4, 2019 and final report and close out concluding January 26, 2019.

Illustrative Schedule

Timing (Anticipated submission date)	Anticipated Duration (Days)	Proposed Activities
October 29, 2018		Evaluation contract awarded to Consultants
November 5, 2018	5	Consultants prepare and submit a detailed evaluation work plan to METSS II Project
November 7, 2018	1	Evaluation team (Consultants) conducts in-brief with METSS II, USDA and AMPLIFIES on evaluation work plan
November 12 2018		USDA, METSS II and AMPLIFIES review evaluation work plan and submit feedback to evaluation team
November 15, 2018	2	Evaluation team integrates comments into work plan and submits final document to METSS II Project
November 19, 2018	3	Evaluation team completes pre-testing of evaluation instruments/tools
November 24, 2018	5	Evaluation team trains evaluation/survey enumerators
December 10, 2018	15	Collect data from evaluation respondents in the project target areas
December 20, 2018	6	Data Analysis
December 28, 2018	6	Write draft report and submit preliminary findings
January 4, 2019		USDA, METSS II and AMPLIFIES review evaluation

Timing (Anticipated submission date)	Anticipated Duration (Days)	Proposed Activities
		draft report and submit feedback to evaluation team
January 12, 2018	3	Evaluation team incorporates comments and prepare final evaluation report
January 26, 2019	3	Evaluation team Leader submits formatted Final Evaluation Report

Payment Schedule

Payment under the prospective evaluation contract shall be as follows:

- a. 30% upon submission of Evaluation Work Plan to METSS II Chief of Operations.
- b. 45% upon submission of Draft Evaluation Report to METSS II Chief of Operations.
- c. 25% upon submission of Final Evaluation Report to METSS II Chief of Operations.

Schedule for preparing the work plans and evaluation design

The Consultants should plan to receive all key documents, and prepare a detailed work plan for the performance evaluation and submit same to the METSS Chief of Operations for review prior to the commencement of field work. It is expected, within the period of preparing the detailed work plan that the team members in country will begin to make key contacts and plan the recruitment of enumerators for the data collection phase of the evaluation. Key contacts should also be obtained for interviews and discussions in Ghana with project staff, and beneficiaries. Most of this work should be done through meetings and site visits. The team will work through METSS II Chief of Operations and the AMPLIFIES Chief of Party or their designees to support setting up of as many meetings and interviews as possible.

Schedule for collecting data

The focus at the beginning of this period should be on meeting with USDA, METSS II, staff of AMPLIFIES, and gathering and reviewing data not already available. The evaluation team should also solidify plans for meetings and visits to beneficiaries and stakeholders to gather qualitative data. The team should strategically finalize their recruitment and plans for training data collectors, which should take place immediately after finalizing the detailed work plan and evaluation data collection tools. Data collection for the outcome indicators will be done using tablets. The electronic data capture tool, simulating the data collection tools for the quantitative element of the evaluation has been designed and ready for use. The training of enumerators will be based on both the paper questionnaire and electronic version of the questionnaire.

It is expected that the evaluation team will randomly sample beneficiaries to collect adequate data for the evaluation report. As time allows, the team will begin analyzing data and preparing the first few sections of the final report.

Data Analysis

The team of consultants are expected to immediately start data analysis using appropriate methods as indicated in the detailed evaluation work plan. The analysis will serve as basis for the completion of the evaluation and survey reports.

IV. FINAL REPORT FORMAT

The evaluation final report should include an executive summary; introduction; background of the project context; the evaluation purpose and questions; the methodology; the limitations to the evaluation; key findings, conclusions, and recommendations; and lessons learned (if applicable).

The evaluation report should be easily understood and should identify key points clearly, distinctly, and succinctly. The findings should be presented as analyzed facts, evidence, and data and not based on anecdotes, hearsay, or simply the compilation of people's opinions.

The **Executive Summary** should be 2-5 pages in length and present a concise and accurate statement of the most critical elements of the report. It should summarize key points (purpose and background, evaluation questions, methods, findings, and conclusions).

The report should provide a brief **Background** information, which should include country and/or sector context; specific problem or opportunity the intervention addresses; and the development hypothesis, theory of change, or simply how the intervention addresses the problem. Describe the specific strategy, project, activity, or intervention to be evaluated including (if available) award numbers, award dates, funding levels, and implementing partners

The **Evaluation Purpose and Questions** should state the purpose of, audience for, and anticipated use(s) of the evaluation. Clearly state the evaluation questions in this section.

Explain the evaluation or survey **Methodology** in detail and clearly state sources of information. Disclose limitations to the evaluation, especially, those associated with the methodology (e.g. selection bias, recall bias, unobservable differences between comparator groups, etc.).

NOTE: A summary of methodology can be included in the body of the report, with the full description provided as an annex.

Findings, Conclusions, and Recommendations: Address all evaluation questions in this Statement of Work (SOW) or document why some evaluation questions and/or comments from METSS II Project or USDA/AMPLIFIES have not been addressed for approval.

If evaluation findings assess person-level outcomes, they should also be separately assessed for both males and females.

Findings and conclusions should be specific, concise, and supported by strong quantitative or qualitative evidence. If recommendations are included, separate them from findings and conclusions. Recommendations should be supported with specific findings and should be action-oriented, practical and specific.

The **Annexes** to the report shall include:

- The Evaluation SOW;
- Any statements of difference regarding significant unresolved differences of opinion by USDA, METSS II Project, AMPLIFIES, implementers, and/or members of the consulting team;
- Indicator data result tables with accompanying statistics
- All data collection and analysis tools used in conducting the evaluation and/or survey, such as questionnaires, checklists, and discussion guides;
- All sources of information, properly identified and listed;
- Signed disclosure of conflict of interest forms for all evaluation team members, either attesting to a lack of conflict of interest or describing existing conflict of; and
- Summary information about evaluation team members, including qualifications, experience, and role on the team.

The final version of the evaluation report will be submitted to USDA and AMPLIFIES in hard copy as well as electronically. The report format should be restricted to Microsoft products and 12- point Times New Roman font type should be used throughout the body of the report, with page margins 1” top/bottom and left/right. The report should not exceed 30 pages, excluding references and annexes.

The evaluation team leader shall incorporate METSS II Project, AMPLIFIES, and USDA’s comments and submit the final report to USDA in electronic format (Microsoft Word) as well as printed and bound copies (Three copies in English) no later than six working days of the receipt of the comments.

X. CRITERIA TO ENSURE THE QUALITY OF THE EVALUATION REPORT

Per this SOW, an independent report shall be prepared for the evaluation in accordance with USDA Evaluation Policy. The draft and final evaluation reports will be evaluated against the following criteria to ensure the quality meets the minimum standards of a USDA-sponsored evaluation:

- The evaluation reports should represent a thoughtful, well-researched, and well-organized effort to objectively evaluate the project.
- The report should be easily understood and should identify key points clearly, distinctly, and succinctly.
- The executive summary of the report should present a concise and accurate statement of the most critical elements of the report.
- The report should adequately address all evaluation questions included in the statement of work, or the evaluation questions subsequently revised and documented in consultation and agreement with METSS II Project, AMPLIFIES, and USDA.
- The methodology should be explained in detail and all sources of information properly identified in the report.

- Limitations to the evaluation should be adequately disclosed in the report, with particular attention to the limitations associated with the methodology (selection bias, recall bias, unobservable differences between comparator groups, etc.).
- Findings should be presented as analyzed facts, evidence, and data and not based on anecdotes, hearsay, or simply the compilation of people's opinions.
- Findings and conclusions should be specific, concise, and supported by strong quantitative or qualitative evidence.
- If findings assess person-level outcomes, they should also be separately assessed for both males and females.
- Recommendations should be supported by a specific set of findings and should be action-oriented, practical and specific.

XI. EVALUATION MANAGEMENT

Logistical Support

The METSS II Project will take lead in making all the necessary logistical arrangement to enable the team of consultants to complete this task according to plan and on time. METSS II will collaborate with the AMPLIFIES project to help the evaluation team identify key documents, and arrange for meetings with stakeholders. The evaluation team is responsible for arranging other meetings as identified during the course of the evaluation and may request support from METSS II and AMPLIFIES. In all these arrangements the USDA/FAS FFPr Analyst should be notified prior to each of these meetings.

The USAID METSS II Project will be responsible for arranging vehicles needed for site visits, including meetings and will assist with hotel arrangements, if necessary, however, the evaluation team members will be required to make their own payments. METSS II will make available their conference room or another convenient location upon request of the evaluation team as work space. The team of consultants are however expected to use their own computers.

Technical Direction

Technical direction during the performance of the evaluation will be provided by the METSS II Chief of Operations, who will be the point of contact for the Consultant's Team during performance. The METSS II Chief of Operations will manage the evaluation in consultation with the USDA FAS FFPr Analyst

The METSS II Chief of Operations is the only authorized official to make changes to the terms and conditions of the evaluation contract. In the event that the Consultant believes that it is required to perform activities outside the evaluation contract, it must immediately contact/inform the METSS II Chief of Operations before performing these tasks. The Consultant will not be paid any amount in excess of the evaluation budget set forth in the evaluation contract.

CRITERIA EVALUATING THE TECHNICAL PROPOSAL

Technical proposals will be evaluated based on the criteria outlined below.

Technical Evaluation Criteria	Points
Technical Approach	50
Personnel	50
Total Possible Evaluation Point	100

Applicants/Consultants should note that these criteria and sub-criteria serve: (a) as the standard against which the proposal will be evaluated, and (b) to identify the significant matters that Applicant should address in their proposal. The specific evaluation criteria are as follows:

Technical Approach – (50 points)

The technical approach should address the following sub-criteria which will be considered in the evaluation of the proposal:

- A clear strategy to address the evaluation questions, and achieve the evaluation requirements.
- Degree or extent to which the Applicant's technical approach, methodology and activities has the potential to accomplish the tasks within the implementation period.
- Clear articulation of anticipated challenges and description of how they will be addressed.
- An illustrative work plan with timeframes and durations for mobilizing staff, field work, data analysis, and reporting. Work plan should demonstrate logical linkages between task areas and timeframes that combine a strong balance of rigor and reflection.

Personnel (50 points)

Clear, concise and defined proposed key personnel, their role, responsibility, qualification and relevant experience. Include CVs of proposed key personnel, illustrating experience in similar assignments, and references. Refer to Section VII for the required qualification and experience of the required team members for the evaluation.

Cost Proposal Evaluation

Contract award will be made on a best value basis, where all non-cost (technical) factors will be significantly more important than cost. The Consultants should have the structure that will allow it to provide the best value and greatest results at the lowest cost. The price proposal of the contract period shall be evaluated in terms of reasonableness and realism to determine the appropriate cost for the work including the Consultant's understanding of the work, and their ability to perform the work.

INSTRUCTIONS FOR SUBMISSION OF PROPOSAL

Questions and/or enquiries concerning this SOW should be sent by no later than October 17, 2018 at 16:00 hours via email to: procurement@metssghana.org Subject: AMPLIFIES Project Performance Evaluation Solicitation # METSS-2018-203. No phone calls, please. Any

information given to one Applicant concerning this SOW will be furnished to all others who have also applied for the detailed SOW.

Proposals are due on October 22, 2018, 17:00 hours GMT (13:00 EST). Your Proposal in response to this SOW must be sent to procurement@metssghana.org. Subject: AMPLIFIES Project Performance Evaluation Solicitation # METSS-2018-203.

METSS II complies with U.S. Sanctions and Embargo laws and Regulations including Executive Order 13224 on Terrorist Financing, which effectively prohibits transactions with persons or entities that commit, threaten to commit or support terrorism. Any person or entity that participates in this SOW process, either as a consulting firm, or a team of evaluation experts, must certify as part of the bid that they are not on the U.S. Department of Treasury Office of Foreign Assets Control (OFAC), Specially Designated Nationals (SDN) List and is eligible to participate. METSS II shall disqualify any Proposal received from any individual or entity that is found to be on the List or otherwise ineligible.

Applicant(s) are expected to examine the specifications and all instructions contained in this document including the terms and conditions of the resulting contract. Failure to do so will be at the Applicant(s) risk. Applicants are responsible for all costs associated with preparation and submission of their bid package. METSS II will not reimburse bidders for costs of preparing bids.

Applicant(s) must include a completed *Technical Proposal Submission Sheet* which should be requested alongside the detailed SOW by sending an email to procurement@metssghana.org.

Technical proposals will be evaluated for technical merit, and must include:

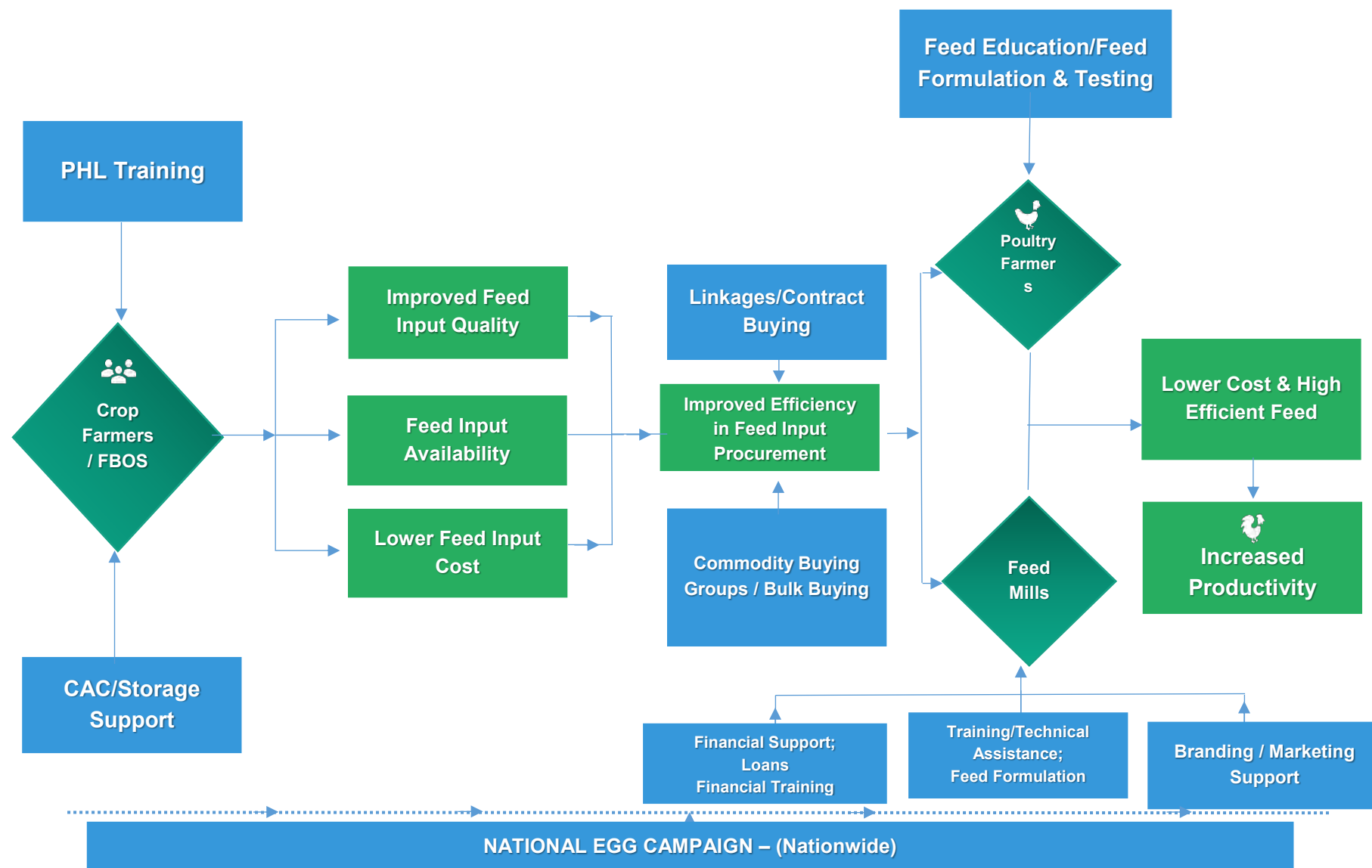
- a. Resumes for all key personnel including CVs, past experience, and at least 3 references for each key personnel
- b. A clearly articulated strategy to address the evaluation questions, and expected outputs detailed in the Statement of Work
- c. Discussion of a strategy, methodology and activities to accomplish the tasks within the implementation period
- d. Anticipated challenges and their resolutions in the operating areas and provision of a strategy to address challenges and explore opportunities to resolve the challenges.
- e. An illustrative work plan with logical linkages between task areas.

It is important for prospective applicants to state clearly all its on-going evaluations with USDA, USAID and other donors in the submission of its technical proposal. This will assist METSS II and USDA assess the impact of the prospective applicant's existing work on the anticipated tasks.

AWARD

Award will be made to that Applicant/Consultant whose proposal provides the government with the best value, all factors considered.

ANNEX 1: AMPLIFIES GHANA PROJECT'S THEORY OF CHANGE



ANNEX 2: LIST OF AMPLIFIES PROJECT'S INDICATORS FOR FY 2018 ANNUAL INDICATOR SURVEY

No.	Results Area	Indicator Title	Level of Disaggregation
1	Improved Post-harvest infrastructure	Total increase in installed storage capacity (dry or cold storage) as a result of USDA assistance	Dry storage, Cold storage, New storage, and Refurbished storage
2	Increased Efficiency in Feed Production	Cost of complete poultry feed analysis per test (in USD)	
3	Increased Efficiency in Feed Production	Average cost of production of locally produced feed per kilogram (in USD)	Total Average Average for layers , Average for broilers , and Average for pre-mix
4	Increased Efficiency in Feed Production	Production cycle (length of time for a bird to attain 1.5 kilograms) for broilers fed feed (in weeks)	Broiler fed only self-hand mixed Boiler fed only locally purchased commercial feed Broilers fed only improved formulated feed
5	Increased Efficiency in Feed Production	Average cost of broiler feed per bird per production cycle for broilers fed feed (in USD)	Broilers fed only self-hand mixed feed Broilers fed only locally purchased commercial feed Broilers fed only improved formulated feed
6	Increased Efficiency in Feed Production	Average cost of layer feed per hen per life cycle (from day-old chick to spent hen) for layers fed feed (in USD)	Layers fed only self-hand mixed feed Layers fed only locally purchased commercial feed Layers fed only improved formulated feed
7	Increased Efficiency in Feed Production	Egg production per hen per life cycle for layers fed only self-hand mixed feed (Total number of eggs)	Layers fed only self-hand mixed feed Layers fed only locally purchased commercial feed Layers fed only improved formulated feed
8	Increased Efficiency in Feed Production	True cost per egg from layer fed feed (total cost of feed per hen/total eggs produced per hen) in USD	Layer fed only self-hand mixed feed Layers fed only locally purchased commercial feed Layers fed only improved formulated feed
9	Increased Agricultural Productivity	Total number of individuals benefiting directly as a result of USDA assistance	Male & Female; and New & Continuing
10	Increased Agricultural Productivity	Total number of individuals benefiting indirectly as a result of USDA assistance	Male & Female; and New & Continuing

No.	Results Area	Indicator Title	Level of Disaggregation
11	Increased Agricultural Productivity	Number of jobs attributed to USDA assistance	Male & Female
12	Improved Capacity of Key Groups in the Agriculture Production Sector (Coops and Small Shareholder Farmers)	Number of private enterprises, producers organizations, water users associations, women's groups, trade and business associations, and community-based organizations (CBOs) that applied improved techniques and technologies as a result of USDA assistance	Farmer-Based Organizations & Crop Aggregation Centers New & Continuing
13	Increased Use of Improved Agricultural Techniques and Technologies	Number of individuals who have applied new techniques or technologies as a result of USDA assistance	Male & Female; and New & Continuing
14	Increased Use of Financial Services	Number of loans disbursed as a result of USDA assistance	
15	Increased Use of Financial Services	Number of individuals receiving financial services as a result of USDA assistance	Male & Female
16	Increased Use of Financial Services	Value of loans provided as a result of USDA assistance	Male; Female; Joint; Not applicable
17	Improved Farm Management (Operations, Financial)	Number of individuals who have applied improved farm management practices (i.e. governance, administration, or financial management) as a result of USDA assistance	Male & Female
18	Increased Access to Markets to Sell Agricultural Products	Value of sales by project beneficiaries	Type of Crop: Soybean & Maize; Type of feed: Layer feed, Broiler feed, Poultry feed mixes, Other poultry feed, table eggs
19	Increased Access to Markets to Sell Agricultural Products	Volume of commodities (metric tons) sold by project beneficiaries	Type of Crop: Soybean & Maize, Type of Feed: Layer feed, Broiler feed, Poultry feed mixes, Other poultry feed, Poultry Products: Table eggs
20	Increased Access to Markets to Sell Agricultural Products	Annual per capita consumption of eggs in Ghana	Average number of eggs

Appendix 2. The Evaluation Matrix

Evaluation Questions	Data Needed	Sources of Data	Data Collection Method	Data Analysis Method	Handling Potential Limitations
Relevance					
To what extent is the project aligned with national policies and strategies for agriculture production?	Data on National Policies and Strategies for agriculture production.	MoFA and the National Development and Planning Commission.	Desk review of relevant documents of the source institutions.	Descriptive analysis to establish expected alignment to SDG, Comprehensive Africa Agriculture Development Programme (CAADP), GoG agenda for growth, Ghana Agricultural Investment Plan (GhAIP).	No potential limitations.
How relevant is the project to the stated and immediate needs of stakeholders?	Needs of stakeholders.	Stakeholder entities: 1) GoG (APD/Veterinary Services Directorate [VSD]/Assemblies); 2) USDA; 3) Program managers; 4) Maize and soybean farmers; 5) Reed millers; 6) Poultry farmers, etc.	Desk review of needs in the poultry sub-sector. Ascertain respondents' perception about the relevance of the project in meeting their needs. A number of statements in favor of the relevance of project intervention are presented to respondents who are expected to select responses to demonstrate the extent to which they agree with the statement. Responses will be used to determine respondents' perception about the relevance of the project.	Percentages will be estimated for the number of respondents that select each of the five responses determining the extent of agreement with statements in favor of the relevance of the project. Qualitative analysis will involve a description of percent respondents that provide responses in favor or not in favor of statements suggesting relevance of the project.	Setting-up meetings with key informants will be one of the early tasks of the evaluation team to ensure their availability during the scheduled evaluation period and avoid potential delays.
Effectiveness					
To what extent is the project producing worthwhile results (outputs, outcomes) and/or meeting each of its objectives?	Data recorded for output and outcome indicators.	Beneficiary stakeholders.	Desk review of scheduled progress reports and complemented with a survey that seeks beneficiaries' perception about meeting intended objectives. The team will also use semi-structured interviews with key informants and focus groups to obtain perceptions of stakeholders of the extent to which project results are meeting the following objectives: 1) Increase agricultural productivity in the poultry value chain by increasing the quantity and	Quantitative analysis of survey data to derive midterm values for indicators. Trend analysis of data over the period since project inception. Compare targets and actual results so far from desk review. In addition, percent of responses in favor of each level will be estimated and discussed as evidence of respondents' perception.	Currently, the questions coded for CAPI cannot elicit data for three of the outcome indicators. Thus, it has to be revised to ensure data can be obtained for all

Evaluation Questions	Data Needed	Sources of Data	Data Collection Method	Data Analysis Method	Handling Potential Limitations
			lowering the cost of poultry feed; 2) increase agricultural productivity in the poultry sector by improving poultry feed quality through the improvement of feed testing capacity; and 3) increase trade of eggs through awareness campaigns and the trade of commercialized poultry feed through improved distribution networks. Perceptions will be obtained through responses to a set of statements which respondents will be required to indicate their levels of agreement graded from 1 to 5.		the indicators. Revisions will include making provision for capturing data at the required disaggregated levels.
What, if any, unintended consequences can be attributed to the project?	Positive and negative externalities.	All stakeholder entities.	Through semi-structured interviews with: 1) Project staff, 2) key informants of collaborating organizations; and 3) focus groups of beneficiaries and collaborators, information will be sought for observed unintended results (positive and negative) that can be linked to the project interventions. Open-ended questions will be used to elicit information for answering this question because the possibilities are wide and they cannot be predetermined for coding in the questionnaire.	Qualitative analysis of responses regarding externalities. The implications of any unintended outcomes will be discussed. Should any negative externalities be found, recommendations will be made for addressing those externalities.	Even though close-ended questions tend to facilitate easy analysis of data, the evaluation will use direct and open-ended questions. Open-ended questions place no limits on answer options and are more likely to provide opportunities for respondents to identify unintended outcomes. In addition, evidence of such externalities will be sought.

Evaluation Questions	Data Needed	Sources of Data	Data Collection Method	Data Analysis Method	Handling Potential Limitations
To what extent has AMPLIFIES coordinated with the GPP and other USAID-funded projects such as the ADVANCE program and MoFA, other donor projects and the private sector to achieve the overall objective of strengthening the downstream value chain capacity for Ghana's poultry industry?	Program coordination with other projects.	AMPLIFIES, GPP, and other USAID-funded projects with similar efficiency and productivity objectives and working in the zone of influence.	Review work plans to identify possible planned coordination with other USAID-funded projects, especially GPP, and review project implementation reports to verify actual coordination efforts. Semi-structured interviews with key informants of AMPLIFIES, USDA GPP, USAID-ADVANCE II, and USAID-Innovation Labs will be used to seek information about program coordination.	Qualitative analysis of responses regarding coordination with others. The implications of the observation will be discussed.	Evidence of coordination will be obtained to inform conclusions by the evaluators. Timely arrangements for meetings are critical to ensure availability of key informants for timely completion of the evaluation.
Efficiency					
To what extent is the relationship between inputs and outputs timely, cost effective and to the expected standards? Were inputs converted into outputs in a timely and cost-effective manner?	Feed conversion ratio (FCR), weeks to maturity and total eggs per hen per life cycle.	Beneficiary farmers and other enterprises along the downstream poultry value chain.	Elicit data from sampled farmers. The current survey instrument has been reviewed with an aim to determine its adequacy in supporting a cost effectiveness analysis, having realized its limitation in supporting cost effectiveness analysis. If not, an addendum will be developed prior to the survey.	A comparative analysis of FCR and its implications for bird maturity time and cost of feeding. Thus, the feed conversion ratios will be estimated for broilers and layers using data derived from the survey and compare findings with known estimates in other countries. We will discuss implications and estimate cost effectiveness of poultry production and discuss findings and implications.	The major concern is the availability of reliable farm records to enable the estimation of FCR.
Sustainability					
To what extent are the project results	Information on internal and	Key stakeholders, including the	Semi-structured interviews with key informants and focus groups will include	A combination of descriptive qualitative and quantitative	Availability of physical

Evaluation Questions	Data Needed	Sources of Data	Data Collection Method	Data Analysis Method	Handling Potential Limitations
likely to continue after the project?	external structures and processes for ensuring sustainability, including exit strategies.	beneficiary crop and poultry farmers and support institutions – MoFA.	discussions of processes and structures that provide the environment for sustaining gains made through the projects. It will also seek evidence of continued commitment to maintenance procedures for storage facilities and financing other structures and systems established under the project. Structured interviews with sampled beneficiary farmers will also include questions that will elicit information on the continued ability of beneficiaries to deliver project results.	analysis of data from structured interviews with farmers will be complemented with descriptive information from interviews with key informants of selected stakeholder institutions.	evidence that corroborate any intentions for sustaining the results after the project is important but often limited. To address this potential limitation, the evaluators will identify a proxy for which data will help in drawing conclusions. Participants of districts-based focus groups are likely to draw attention to local scenarios as evidence.
Is stakeholder buy-in likely to continue or be increased after the current contract period?	Information on levels of commitment to continuity such as budgets and staffing.	All stakeholders, including GoG institutions and the project beneficiaries.	Semi-structured interviews with key informants of institutions and focus group discussions will seek information on levels of institutional continued commitment to carry-on after the contract. Questions will also elicit information on the capacity of collaborating with local institutions to deliver and sustain or improve the project results.	A combination of descriptive qualitative and quantitative analysis of data from structured interviews with farmers will be complemented with descriptive information from interviews with key informants.	The issue of obtaining evidence applies here too.

Appendix 3. Copies of Data Collection Tools

A3.1. Survey Questionnaire for Beneficiary Crop Farmers

A. FOR FIELD STAFF		
A1	Date:	
A2	Questionnaire Number:	
A3	Survey Start Time:	
A4	Enumerator Name:	
A5	Supervisor Name:	
B. KNOWLEDGE OF PROJECT		
B1	Do you know about the AMPLIFIES project? ☐ Yes ☐ No	
B2	If yes, what do you know about the AMPLIFIES project? _____	
C. CONSENT		
You are invited to participate in this Mid-Term Evaluation of AMPLIFIES Implementation. You have been identified as a beneficiary of the AMPLIFIES Ghana project funded by the United States Department of Agriculture (USDA). I will like to ask you some questions about your involvement in the project and how it has affected your work as a maize or soybean farmer. In this survey, approximately 467 crop farmers will be asked to complete a questionnaire that elicits information to ascertain the relevance, efficiency, effectiveness and sustainability of interventions undertaken through the AMPLIFIES project. It will take approximately one and a half hours to complete the questionnaire. Your participation in this evaluation is completely voluntary. There are no foreseeable risks associated with this project beneficiary survey. Much as it is very important for us to obtain your opinion as input for a good evaluation, if you feel uncomfortable answering any questions, you can withdraw from the evaluation at any point. Your interview responses will be strictly confidential and data from this evaluation will be reported only in the aggregate. Your information will be coded and will remain confidential. If you have questions at any time about the interview or the procedures, you may contact Dr. Adeline Ofori-Bah at 0269600300 or by email at adeline.ofori-bah@mande.solutions. C1. Do you want to proceed with this interview? ☐ Yes ☐ No C2. If no, why not? _____		
D. FARMER INFORMATION (to be verified by enumerator)		
D1	Region	Preloaded
D2	District	Preloaded
D3	Community	Preloaded
D4	FBO	Preloaded
D5	Farmer's Name	Preloaded
D6	Gender	Preloaded
D7	Age	Preloaded
D8	Marital Status	Preloaded
D9	Telephone number	Preloaded
D10	GPS coordinates	Preloaded
D11	Respondent's crop that benefited from AMPLIFIES assistance: ☐ Maize ☐ Soybean ☐ Both	
D12	Number of household members that own separate farm(s) with the same crop: _____	
D13	Do these household members also benefit from the AMPLIFIES project? ☐ Yes ☐ No	
E. HARVESTING/POST-HARVEST TRAININGS AND APPLICATION OF TECHNIQUES		
E1	Have you received any training on how to harvest your crops, post-harvest handling and storage of your crops? ☐ Yes ☐ No	
E2	What new things did you learn about harvesting? Select as many as applicable. ☐ Avoidance of cobs heaping during harvesting ☐ Maturity indicators: proper harvesting time based on signs (Black layer at tip of crop, over half of crops	

	bending) ☐ Harvesting on time and collection from field to avoid animal destruction, theft and bush fires ☐ Making adequate preparation before harvesting (e.g. Early transportation from field) ☐ Farm Sanitation ☐ Other, specify _____																																																																																																									
E3	What new things did you learn about post-harvest handling? Select as many as applicable. • ☐ Use of tarpaulin • ☐ Sorting before threshing • ☐ Use of threshers and shellers ☐ Other, specify _____																																																																																																									
E4	What new things did you learn about storage? Select as many as applicable. • ☐ Correct techniques for constructing local cribs • ☐ Storage using PICS/ZeroFly and Hermetic bags • ☐ Correct usage of chemicals (fostozin) • ☐ Reducing mycotoxin through proper drying before storage • ☐ Storage on pallets • ☐ Use of moisture meters • ☐ DICE (Dry, Inspect, Clean and Examine) • ☐ Efficient and effective use of insecticides • ☐ Other, specify _____																																																																																																									
E5	Which of these new techniques/technologies learnt from AMPLIFIES training did you apply in the following years? Tick the applicable box. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">New Techniques and Technologies</th><th colspan="2">2017</th><th colspan="2">2018</th></tr> <tr> <th></th><th>Season 1</th><th>Season 2</th><th>Season 1</th><th>Season 2</th></tr> </thead> <tbody> <tr> <td>Harvesting</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Avoidance of cobs heaping during harvesting</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Maturity indicators: proper harvesting time based on signs (Black layer at tip of crop, over half of crops bending)</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Harvesting on time and collection from field to avoid animal destruction, theft and bush fires</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Making adequate preparations before harvesting (e.g. Early transportation from field)</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Farm Sanitation</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Other, Harvesting (specify) _____</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Post-harvest</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Use of tarpaulin</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Sorting before threshing</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Use of threshers and shellers</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Other, Post-harvest (specify) _____</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Storage</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Correct techniques for constructing local cribs</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Storage using PICS bags</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Correct usage of chemicals (fostozin)</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Storage on pallets</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Reducing mycotoxin through proper drying before storage</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Efficient and effective use of insecticides</td><td></td><td></td><td></td><td></td></tr> </tbody> </table>	New Techniques and Technologies	2017		2018			Season 1	Season 2	Season 1	Season 2	Harvesting					Avoidance of cobs heaping during harvesting					Maturity indicators: proper harvesting time based on signs (Black layer at tip of crop, over half of crops bending)					Harvesting on time and collection from field to avoid animal destruction, theft and bush fires					Making adequate preparations before harvesting (e.g. Early transportation from field)					Farm Sanitation					Other, Harvesting (specify) _____					Post-harvest					Use of tarpaulin					Sorting before threshing					Use of threshers and shellers					Other, Post-harvest (specify) _____					Storage					Correct techniques for constructing local cribs					Storage using PICS bags					Correct usage of chemicals (fostozin)					Storage on pallets					Reducing mycotoxin through proper drying before storage					Efficient and effective use of insecticides				
New Techniques and Technologies	2017		2018																																																																																																							
	Season 1	Season 2	Season 1	Season 2																																																																																																						
Harvesting																																																																																																										
Avoidance of cobs heaping during harvesting																																																																																																										
Maturity indicators: proper harvesting time based on signs (Black layer at tip of crop, over half of crops bending)																																																																																																										
Harvesting on time and collection from field to avoid animal destruction, theft and bush fires																																																																																																										
Making adequate preparations before harvesting (e.g. Early transportation from field)																																																																																																										
Farm Sanitation																																																																																																										
Other, Harvesting (specify) _____																																																																																																										
Post-harvest																																																																																																										
Use of tarpaulin																																																																																																										
Sorting before threshing																																																																																																										
Use of threshers and shellers																																																																																																										
Other, Post-harvest (specify) _____																																																																																																										
Storage																																																																																																										
Correct techniques for constructing local cribs																																																																																																										
Storage using PICS bags																																																																																																										
Correct usage of chemicals (fostozin)																																																																																																										
Storage on pallets																																																																																																										
Reducing mycotoxin through proper drying before storage																																																																																																										
Efficient and effective use of insecticides																																																																																																										

	Use of moisture meters DICE (Dry, Inspect, Clean and Examine) Other, Storage (specify) _____ •																																
E6	Please explain why you have not applied the other techniques or technologies listed?																																
F. PRODUCTIVITY																																	
F1	What land size did you cultivate for the following crops in the following years? (Hint: This should only be answered when a farmer applied one or more harvesting technique) <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="3">Crop</th><th colspan="4">Land Size (Acres)</th></tr> <tr> <th colspan="2">2017</th><th colspan="2">2018</th></tr> <tr> <th>Season 1</th><th>Season 2</th><th>Season 1</th><th>Season 2</th></tr> </thead> <tbody> <tr> <td>Maize</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Soybean</td><td></td><td></td><td></td><td></td></tr> </tbody> </table>						Crop	Land Size (Acres)				2017		2018		Season 1	Season 2	Season 1	Season 2	Maize					Soybean								
Crop	Land Size (Acres)																																
	2017		2018																														
	Season 1	Season 2	Season 1	Season 2																													
Maize																																	
Soybean																																	
F2	What is your total production; how many of the 100kg bags did you produce in the following years? <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="3">Crop</th><th colspan="4">Total Production (100kg bags)</th></tr> <tr> <th colspan="2">2017</th><th colspan="2">2018</th></tr> <tr> <th>Season 1</th><th>Season 2</th><th>Season 1</th><th>Season 2</th></tr> </thead> <tbody> <tr> <td>Maize</td><td></td><td></td><td></td><td></td></tr> <tr> <td>Soybean</td><td></td><td></td><td></td><td></td></tr> </tbody> </table>						Crop	Total Production (100kg bags)				2017		2018		Season 1	Season 2	Season 1	Season 2	Maize					Soybean								
Crop	Total Production (100kg bags)																																
	2017		2018																														
	Season 1	Season 2	Season 1	Season 2																													
Maize																																	
Soybean																																	
F3	If production increases, would it be the effect of any of the following? ☐ Increased land size ☐ Application of improved production technology ☐ Control of fall army worm ☐ Application of improved harvesting technology ☐ Other, specify _____																																
F4	If production did not increase, would it be the effect of any of the following? ☐ Decreased land size ☐ Not applying improved production technology ☐ Not applying improved harvesting technology ☐ Attack by fall army worm ☐ Other, specify _____																																
F5	Kindly provide the under-listed information on your harvest for the last two years: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Year</th><th colspan="3">Maize</th><th colspan="3">Soybean</th></tr> <tr> <th>Quantity consumed (Home and gift in kg)</th><th>Quantity sold (in kg)</th><th>Quantity lost after harvest (in kg)</th><th>Quantity consumed (Home and gift in kg)</th><th>Quantity sold (Kg)</th><th>Quantity lost after harvest (in kg)</th></tr> </thead> <tbody> <tr> <td>2017</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>2018</td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>						Year	Maize			Soybean			Quantity consumed (Home and gift in kg)	Quantity sold (in kg)	Quantity lost after harvest (in kg)	Quantity consumed (Home and gift in kg)	Quantity sold (Kg)	Quantity lost after harvest (in kg)	2017							2018						
Year	Maize			Soybean																													
	Quantity consumed (Home and gift in kg)	Quantity sold (in kg)	Quantity lost after harvest (in kg)	Quantity consumed (Home and gift in kg)	Quantity sold (Kg)	Quantity lost after harvest (in kg)																											
2017																																	
2018																																	
F6	What was the cause of any post-harvest loss? ☐ Late harvesting ☐ Spillage during post- harvest handling ☐ Destruction during storage ☐ Other, specify _____																																
F7	Are any of your farming activities mechanized? ☐ Yes ☐ No																																
F8	If yes, at which stage do you mechanize your farming? ☐ Land preparation/Ploughing ☐ Sowing																																

	☐ Harvesting ☐ Post-harvest handling ☐ Other, specify _____																																		
G. SALES																																			
G1	Kindly provide sales information of your produce: <table border="1"> <thead> <tr> <th rowspan="2">Year</th> <th colspan="3">Maize</th> <th colspan="3">Soybean</th> </tr> <tr> <th>Output sold (bags of 100kg)</th> <th>Unit price (GHS)</th> <th>Total sale (GHS)</th> <th>Output sold (bags of 100kg)</th> <th>Unit price (GHS)</th> <th>Total sale (GHS)</th> </tr> </thead> <tbody> <tr> <td>2016</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2017</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2018</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Year	Maize			Soybean			Output sold (bags of 100kg)	Unit price (GHS)	Total sale (GHS)	Output sold (bags of 100kg)	Unit price (GHS)	Total sale (GHS)	2016							2017							2018						
Year	Maize			Soybean																															
	Output sold (bags of 100kg)	Unit price (GHS)	Total sale (GHS)	Output sold (bags of 100kg)	Unit price (GHS)	Total sale (GHS)																													
2016																																			
2017																																			
2018																																			
G2	How much of it was sold to an actor in the poultry sector (amount/volume)? <table border="1"> <thead> <tr> <th rowspan="2">Year</th> <th colspan="3">Maize</th> <th colspan="3">Soybean</th> </tr> <tr> <th>Output sold (bags of 100kg)</th> <th>Unit price (GHS)</th> <th>Total sale to poultry sector (GHS)</th> <th>Output sold (bags of 100kg)</th> <th>Unit price (GHS)</th> <th>Total sale poultry sector (GHS)</th> </tr> </thead> <tbody> <tr> <td>2016</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2017</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2018</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Year	Maize			Soybean			Output sold (bags of 100kg)	Unit price (GHS)	Total sale to poultry sector (GHS)	Output sold (bags of 100kg)	Unit price (GHS)	Total sale poultry sector (GHS)	2016							2017							2018						
Year	Maize			Soybean																															
	Output sold (bags of 100kg)	Unit price (GHS)	Total sale to poultry sector (GHS)	Output sold (bags of 100kg)	Unit price (GHS)	Total sale poultry sector (GHS)																													
2016																																			
2017																																			
2018																																			
H. EMPLOYMENT																																			
H1	How many members are in your household (including children)? Males (<i>18 years+</i>) _____ Male (<i><18 years old</i>) _____ Female (<i>18 years+</i>) _____ Female (<i><18 years old</i>) _____																																		
H2	How many household members actively work on your farm? (<i>do not include children/only adults about ≥18 years old</i>) Male _____ Female _____																																		
H3	Have you employed any additional farm hands or staff during the past year ? ☐ Yes ☐ No																																		
H4	If yes, how many and for how long were they engaged? Male _____ Duration (in months) _____ Female _____ Duration (in months) _____																																		

I PERCEPTION OF RELEVANCE

Rate the extent to which you agree or disagree with the following statements:

		Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Not Decided
I1	Your training needs were adequately addressed by the training programs conducted by the AMPLIFIES project.						
I2	The content of training programs were prepared in response to trainee's skills and knowledge needs.						
I3	You were helped in diagnosing your own technical assistance needs.						
I4	The content of AMPLIFIES training was appropriate for your day-to-day work performance.						

15	The capacity building program of AMPLIFIES was relevant for increasing productivity on my farm.						
----	---	--	--	--	--	--	--

J PERCEPTION OF EFFECTIVENESS

Rate the extent to which you agree or disagree with the following statements

		Strongly disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Strongly agree	Not decided
J1	Overall, you have been satisfied with the interventions of the AMPLIFIES project						
J2	You have acquired some post-harvest management skills from the AMPLIFIES project.						
J3	You are confident that managers of AMPLIFIES have adequate capacity building skills.						
J4	Through interventions of the AMPLIFIES project, you had better access to market for your produce.						
J5	Through interventions of the project, you were able to increase your revenue from the sale of your produce.						
J6	Through interventions of AMPLIFIES, you had access to better storage for your crop output.						
J7	Through referrals by AMPLIFIES, your production activity benefited from interventions by other USAID/USDA projects.						
J8	I will recommend training by AMPLIFIES to other farmers of same crop.						

K PERCEPTION OF EFFICIENCY

Rate the extent to which you agree or disagree with the following statements:

		Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Not decided
K1	You were able to sell your crop output when you wanted to do so.						
K2	You were able to sell your crop output at the existing market price.						
K3	You were able to store your produce that you didn't want to sell immediately after harvest, and at an affordable cost.						
K4	You have benefited from a CAC near you.						
K5	You have seen significant reduction in post-harvest losses of your crop.						

L PERCEPTION OF SUSTAINABILITY

Rate the extent to which you agree or disagree with the following statements:

		Strongly disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Strongly agree	Not decided
L1	You have acquired some performance changing skills that you intend to continue using even when the project ends.						
L2	You have developed and maintained contacts with public extension services as a result of support from AMPLIFIES project.						
L3	You are confident that benefits from the project will be sustained in the absence of AMPLIFIES						
L4	Capacity building support from the project helped you set realistic goals and will continue to do so.						
L5	Existing agricultural policies can ensure that gains made through AMPLIFIES are sustained.						
L6	There is significant incentive from continued application of technology and management skills acquired through the project.						
L7	Complementary inputs (resources or technology) are accessible to support gains from capacity building.						
L8	Existing local public entities will ensure that gains made through AMPLIFIES are sustained.						

L9. Did any staff of the AMPLIFIES project visit you after the training session(s)?

☐ Yes ☐ No

L10. To what extent were follow-up visits after capacity building events useful in your performance? *Please circle the number that most closely reflects the respondent's assessment.*

Not useful at all

Extremely useful

1

2

3

4

5

6

Kindly explain the reason for your rating.

.....

L11. What kind of follow-up support, besides financing, would help you apply acquired knowledge and skills, and sustain your effort(s)?

.....

L12. Did you encounter any obstacles in trying to apply the knowledge and skills acquired from the AMPLIFIES project?

☐ No

☐ Yes. Please select as many as applicable, the conditions listed below that prevented the application of the acquired skills to your job. Place '1' in the box next to the condition that seemed to be the most important obstacle, '2' next to the second most important obstacle, and so on.

☐ Knowledge/Skill were not relevant for my production activity.

☐ My employers were not supportive enough.

☐ I did not have access to the necessary equipment/technology.

☐ The prevailing legislation/culture/politics in the community did not permit the application of ideas discussed in training.

☐ Experienced financial constraints in applying Knowledge/Skill acquired.

☐ Resistance from other entities or departments whose support was necessary

☐ Other, specify

M UNINTENDED EFFECTS OF AMPLIFIES

M1. Please describe any unintended results (positive or negative) of the AMPLIFIES project that you observed or that were reported to you by other crop farmers.

N RECOMMENDATIONS

N1. Would you recommend the AMPLIFIES project to other crop farmers?

☐ Yes ☐ No ☐ Maybe

N2. From your experience with the AMPLIFIES project, do you have any recommendations for improving future projects aimed at increasing productivity of poultry feed and feed input production?

O1. Survey End Time: _____

A3.2. Questionnaire for Beneficiary Poultry Farmers

A. FOR FIELD STAFF	
A1	Date:
A2	Questionnaire Number:
A3	Survey Start Time:
A4	Enumerator Name:
A5	Supervisor Name:
B. KNOWLEDGE	
B1. Do you know about the AMPLIFIES project? ☐ Yes ☐ No	
B2. If yes, what do you know about the AMPLIFIES project? _____	
C. CONSENT	
You are invited to participate in this Mid-Term Evaluation of AMPLIFIES Implementation. You have been identified as a beneficiary of the AMPLIFIES Ghana project funded by the United States Department of Agriculture (USDA). I will like to ask you some questions about your involvement in the project and how it has affected your work as poultry farmer. In this survey, approximately 611 poultry farmers will be asked to complete a questionnaire that elicits information to ascertain the relevance, efficiency, effectiveness and sustainability of interventions undertaken through the AMPLIFIES project. It will take approximately one and a half hours to complete the questionnaire. Your participation in this evaluation is completely voluntary. There are no foreseeable risks associated with this project beneficiary survey. Much as it is very important for us to obtain your opinion as input for a good evaluation, if you feel uncomfortable answering any questions, you can withdraw from the evaluation at any point. Your interview responses will be strictly confidential and data from this evaluation will be reported only in the aggregate. Your information will be coded and will remain confidential. If you have questions at any time about the interview or the procedures, you may contact Dr. Adeline Ofori-Bah at 0269600300 or by email at adeline.ofori-bah@mande.solutions. C1. Do you want to proceed with this interview? ☐ Yes ☐ No C2. If no, why not? _____	
D. FARMER INFORMATION	
D1. Region: D2. District: D3. Community: D4. Farm Code D5. Farm Name: D6. Respondent's Name: D7. Respondent's Position on the Farm: D8. Gender: ☐ Male ☐ Female D9. Age: ☐ 18-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ Above 60 D10. Marital Status: D11. Telephone number: D12. GPS coordinates Longitude..... Latitude..... D13. Number of household members that own a separate poultry farm(s): _____ D14. Do these household members also benefit from the AMPLIFIES project? ☐ Yes ☐ No D15. No. of years' experience in the Poultry sub-sector: _____	
E. PARTICIPATION IN AMPLIFIES ACTIVITIES	
E1. Respondent's poultry activity benefited from AMPLIFIES assistance: ☐ Broilers ☐ Layers & Eggs ☐ Both layers and broilers	

E2. In what year did you receive your first training (be it one-on-one), technical assistance or attended any AMPLIFIES event)? _____
E3. Did you received any training (be it one-on-one), technical assistance or attended any AMPLIFIES events in 2018? ☐ Yes ☐ No
E4. If yes, what new thing(s) did you learn from AMPLIFIES assistance in 2018? Select as many answer options as applicable. • ☐ Feeding to genetics and age of birds manufacturing • ☐ Use of good quality ingredients ☐ Farm record keeping ☐ Good storage practices ☐ Use of good quality ingredients ☐ Packaging of feed ☐ Use of feed nutritionist in formulating diets ☐ Mycotoxin testing (e.g. Aflatoxin testing) ☐ Uniformity testing and analysis ☐ Testing for moisture ☐ Farm sanitation ☐ Management and maintenance of feed processing (e.g. Maintenance of lift of auger) ☐ Other, specify _____

5. Which of these techniques/technologies learned did you apply in your poultry business in the years listed? *Select as many answer options as applicable.*

Techniques/technologies learned	2017	2018
Feeding to genetics and age of birds		
On farm feed manufacturing		
Use of good quality ingredients		
Farm Record Keeping		
Good storage practices		
Use of good quality ingredients		
Feed testing		
Packaging of feed		
Use of feed nutritionist in formulating diets		
Mycotoxin testing (e.g. Aflatoxin testing)		
Uniformity testing and analysis		
Testing for moisture		
Feed handling techniques		
Farm sanitation		
Management and maintenance of feed processing (e.g. Maintenance of lift of auger)		
Other, specify _____		

F. FARM OPERATIONS AND PRODUCTIVITY

F1. Is your poultry farming business registered?

- ☐ Yes ☐ No

F2. What type of production system do you employ?

- ☐ Free Range
- ☐ Semi-Intensive
- ☐ Deep litter
- ☐ Battery cage
- ☐ Other, specify _____

F3. What is your current bird capacity (# of birds you are able to produce)?

Broilers _____ Layers _____ Cockerels _____

F4. How many birds do you currently have on your farm (# of birds you are currently producing)?

Broilers _____ Layers _____ Cockerels _____

F5. Please describe your production cycle for the following: *(please tick the boxes that apply)*

	Continuous (All year round)	Seasonal (Festival & Holidays)	Custom (Special occasions)	Number of production cycles in 2018
Broilers				
Layers				
Cockerels				

F6. In the table below indicate the type of feed you use for your birds. Select as many options as applicable.

Bird type	Only self-hand mixed feed	Only locally purchased commercial feed	Only improved formulated feed
Broilers			
Layers			

F7. State in the table below, the number of birds produced in each production cycle in 2018.

	(i) Period (dates)	(ii) Number of birds produced	(iii) Number of birds sold	(iv) Unit Price	(v) Revenue	(vi) Total cos feed
Broiler-Cycle 1						
Broiler-Cycle 2						
Broiler-Cycle 3						
Layer Pen 1						
Layer Pen 2						
Layer Pen 3						

F8. Kindly provide the input and output information from your last production cycle.

Item	Quantity	Unit Price	Cost of item
Input (Products that move in)			
Day old chicks			
Feed			
Medicine/vaccine			
Mineral supplements			
Weight of DOC			
Fixed Inputs			
Capital			
Maintenance of machinery and Infrastructure			
Rent			
Interest paid			
Salaries of permanent staff			
Output (Products that move out)			
Birds produced			
Eggs			
Manure			
DOC			
Weight of bird at sale (kg)			

F9. What was your average monthly production and average value of sales per month (in GHS) of table eggs in 2018?

	Number of crates of eggs (assuming 30 eggs per crate)	Price per crate (GHS)	Total Revenue (GHS)
Table eggs			

F10. What is the average number of eggs produced per hen per life cycle? _____

F11. In how many weeks does your bird start laying? _____

F12. For how many weeks did your layers lay eggs during the last production cycle? _____

F13. We will now be asking a few questions to determine the true cost of producing an egg for on farm?

F13a. On average, how many hens do you have in a pen each month? _____

F13b. On average, how much feed (*in kg*) do you give per pen per month? _____

F13c. On average, how much do you spend on feed (*in GHS*) per pen per month? _____

F13d. On average, how many table eggs are produced per pen per month? _____

F14. At what weight do you take your broilers to the market (*maturity weight in kg*)? _____

F15. How long does the bird take to reach the maturity weight (*maturity time in weeks*)? _____

F16. What is the usual end market for your products? Indicate the percent quantity of your products to the following markets:

_____ % Open market

_____ % Distributors/Wholesalers

_____ % Direct retail supply

_____ % Other, specify _____

G. DIRECT AND INDIRECT BENEFICIARIES, JOBS CREATED

G1. How many members are in your household (*including children*)?

Males (*18 years+*) _____ Male (*<18 years old*) _____

Female (*18 years+*) _____ Female (*<18 years old*) _____

G2. How many household members actively work on your farm? (*do not include children/only adults above 18 years*)

Male _____

Female _____

G3. Have you employed any additional farm hands or staff during the past year?

[] Yes [] No

G4. If yes, how many and for how long were they engaged?

Male _____ Duration (in months) _____

Female _____ Duration (in months) _____

H. PROCUREMENT OF FEED AND FEED INPUTS

H1. Do you produce your own poultry feed?

[] All the time [] Sometimes [] Not at all

H2. What is your source of poultry feed? (select more than one answer if multiple sources, ranking from the highest to the lowest where 1 is for the highest and 3 for the lowest)

[] Self-mixing/Concentrates

[] Commercial feed mills

[] On-site feed mills/processing plant

[] Other, specify _____

H3. If you mix your own feed and don't purchase commercial feed, state the reason for your decision.

H4. What would your usual feed typically consist of? (*you can select more than one*)

[] Maize

[] Maize bran

[] Wheat bran

[] Soybean meal

[] Fishmeal

[] Concentrates

- [] Premix
 [] Oyster shell
 [] Essential amino acids (lysine, methionine, etc.)

H4a. Kindly estimate the percentage composition of each ingredient? *(you can select more than one)*

- ____ % Maize
 ____ % Maize bran
 ____ % Wheat bran
 ____ % Soybean meal
 ____ % Fishmeal
 ____ % Concentrates
 ____ % Premix
 ____ % Oyster shell
 ____ % Essential amino acids (lysine, methionine, etc.)

H5. From where do you procure the following feed ingredients? *(please tick)*

	Open market	Aggregators	Farm gates	Imported	Other (specify)
White Maize					
Yellow Maize					

H5a. If you buy from an aggregator or directly from farmers, can you please name them?

Name of processor	Location	Telephone Number
White Maize		
Yellow Maize		

H6. How do you procure your soybean based feed ingredients? *(please tick)*

	Local soy processors	Imported	Other (specify)
Soybean meal/cake			

H6a. Is there any particular reason(s) for your choice above?

- [] No reason
 [] Imported soy ingredients more quality
 [] Local soy ingredients cheaper
 [] Local soy ingredients is of more quality
 [] Imported soy ingredients cheaper
 [] Local soy ingredients easily available
 [] Imported soy ingredients easily available
 [] Other, specify _____

H6b. If you buy Soybean meal/cake from local soy processors please name them?

Name of processor	Location	Telephone Number

H7. Can you please estimate your average monthly demand for the following in metric tons *(1000kg=1 Ton)*:

White Maize _____

Yellow Maize _____
Soybean meal/cake _____

H8. How much do you spend to produce a 50kg bag of the following feed (in GHS): Note: if you produce a larger quantity of feed please estimate the cost of producing this feed in the smaller quantity specified.

Chick Mash _____
Grower Mash _____
Layer Mash _____
Broiler (Starter) _____
Broiler (Grower) _____

H9. Do you regularly request feed testing/Analysis/Quality control?

☐ Yes ☐ No

H9a. If yes, what type of feed testing do you undertake?

H9b. If yes, where?

☐ University of Ghana
☐ KNUST
☐ Food Research Institute
☐ Animal Research Institute
☐ Ghana Standards Board
☐ Food and Drugs Board
☐ Other, specify _____

H10 If yes, how much does it cost for a complete feed analysis per test? (in GHS) _____

H11 If yes, what is the average turnaround time for your feed testing results? _____

I. STORAGE

I1 Do you have a storage facility for your feed ingredients?

☐ Yes ☐ No

I1a. If yes, what is the size of the storage facility (in metric tons)? _____

J. ACCESS TO FINANCIAL SERVICES

J1. Have you ever received a loan or grant for your poultry farming activities?

☐ Yes ☐ No

J1a. If yes, from where?

☐ Bank
☐ Lending firm
☐ Micro Finance Institution
☐ Friends/family members
☐ Other, specify _____

J1b. If yes, when did you access the loan or grant?

☐ 2017
☐ 2018

J1c. If yes, who facilitated access to loan or grant?

☐ Self
☐ AMPLIFIES project Staff
☐ Other project staff
☐ Other, specify _____

J1d. If yes, what amount did you receive _____? (in GHS)

J1e. If yes, what was it used for?

☐ Build infrastructure
☐ Procure feed ingredients
☐ Buy day old chicks
☐ Purchase plants and equipment
☐ Other, specify _____

J2. Have you ever been rejected or denied a loan or grant application?

☐ Yes ☐ No

J2a. If yes, what was the reason?

- ☐ No documentation
☐ No collateral
☐ No guarantor
☐ Other, specify _____

K PERCEPTION OF RELEVANCE

Rate the extent to which you agree or disagree with the following statements:

		Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Not Decided
K1	Your training needs were adequately addressed by the training programs conducted by the AMPLIFIES project.						
K2	AMPLIFIES project objectives had a strong link with the objectives of the Ghana Poultry sector.						
K3	The content of training programs were prepared in response to trainee's skills and knowledge needs.						
K4	Job profile of the individual within a beneficiary enterprise was considered in selecting trainees for specific training programs.						
K5	You were helped in diagnosing your own technical assistance needs.						
K6	The content of AMPLIFIES training was appropriate for the day-to-day work performance on your farm.						
K7	The capacity building program of AMPLIFIES was relevant for increasing productivity on your poultry farm.						

L PERCEPTION OF EFFECTIVENESS

Rate the extent to which you agree or disagree with the following statements:

		Strongly disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Strongly agree	Not decided
L1	Overall, you have been satisfied with the interventions of the AMPLIFIES project						
L2	You have acquired some cost saving skills from the AMPLIFIES project.						
L3	Through interventions of AMPLIFIES, you had improved access to finance for your poultry farming activity.						
L4	You are confident that managers of AMPLIFIES have adequate capacity building skills.						
L5	Through interventions of the project, you had better access to lower priced poultry feed.						
L6	Through interventions of the project, you had timely access to poultry feed throughout the year.						

L7	Through interventions of the project, you were able to increase the output of your poultry farm.						
L8	Through interventions of AMPLIFIES, you had access to better storage for your feed.						
L9	Through referrals by AMPLIFIES, your production activity benefited from interventions by other USAID/USDA projects such as GPP.						
L10	You can attest to some improvement in the poultry sector as a result of the AMPLIFIES project.						

M PERCEPTION OF EFFICIENCY

Rate the extent to which you agree or disagree with the following statement:

		Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Not decided
M1	Through interventions of the project, you were able to reduce the Feed Conversion Ratio for your poultry.						

N PERCEPTION OF SUSTAINABILITY

Rate the extent to which you agree or disagree with the following statements:

		Strongly disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Strongly agree	Not decided
N1	You have acquired some performance changing skills that you intend to continue using even when the project ends.						
N2	You have developed and maintained contacts with public extension services as a result of support from AMPLIFIES project.						
N3	You are confident that benefits from the project will be sustained in the absence of AMPLIFIES						
N4	Capacity building support from the project helped you set realistic goals and will continue to do so.						
N5	Existing agricultural policies can ensure that gains made through AMPLIFIES are sustained.						
N6	There is significant incentive from continued application of technology and management skills acquired through the project.						
N7	Complementary inputs (resources or technology) are accessible to support gains from capacity building.						
N8	Existing local public entities will ensure that gains made through AMPLIFIES are sustained.						

N9. Did any staff of the AMPLIFIES project visit you after the training session(s)?

[] Yes [] No

N10. To what extent were follow-up visits after capacity building events, useful in your work performance? *Please circle the number that closely reflects your assessment.*

Not useful at all 1 2 3 4 5 6 Extremely useful

Kindly explain the reason for your rating

.....
.....
.....

N11. What kind of follow-up support, besides financing, would help you apply acquired knowledge and skills, and sustain your effort(s)?

.....
.....
.....

N12. Did you encounter any obstacles in trying to apply the knowledge and skills acquired from the AMPLIFIES project?

- ☐ No
- ☐ Yes. Please select as many as applicable, the conditions listed below that prevented the application of the acquired skills to your job. Place '1' in the box next to the condition that seemed to be the most important obstacle, '2' next to the second most important obstacle, and so on.
 - ☐ Knowledge/Skill were not relevant for my production activity.
 - ☐ My employers were not supportive enough.
 - ☐ I did not have access to the necessary equipment/technology.
 - ☐ The prevailing legislation/culture/politics in the community did not permit the application of ideas discussed in training.
 - ☐ Experienced financial constraints in applying Knowledge/Skill acquired.
 - ☐ Resistance from other entities or departments whose support was necessary
 - ☐ Other, specify

O UNINTENDED EFFECTS OF AMPLIFIES

O1. Please describe any unintended results (positive or negative) of the AMPLIFIES project that you observed or that were reported to you by other poultry farmers.

.....
.....
.....

P RECOMMENDATIONS

P1. Would you recommend the AMPLIFIES project to other poultry farmers?

[] Yes [] No [] Maybe

P2. From your experience with the AMPLIFIES project, do you have any recommendations for improving future projects aimed at increasing productivity of poultry feed and feed input production?

.....
Q1. Survey End Time:

A3.3. Checklist of Questions for Focus Groups (Crop Farmers)

1. Name District: _____
2. What activities have you seen AMPLIFIES implement in this District?
3. Why did soybean and maize farmers participate in the project?
4. What are some of the topics covered in training by AMPLIFIES project?
- A RELEVANCE**
4. Did the training provide knowledge relevant for soybean and maize production? If yes, explain its relevance.
5. Which of the following objectives of AMPLIFIES are relevant for the development of the Ghanaian Poultry Sector:
 - Increase the quantity and lowering the cost of poultry feed by reducing harvest and post-harvest losses and addressing procurement inefficiencies of primary feed ingredients;
 - Improve the quality and consistency of poultry feed through enhanced feed testing capacity, controlled and practical feeding demonstrations, feed formulation training, and one-on-one technical assistance;
 - Enhance feed processing efficiency through technology transfer and on-site training;
 - Increase the trade of commercialized poultry feed through improved distribution networks and marketing;
 - Increase trade of eggs through awareness campaigns and the trade of commercialized poultry feed through improved distribution networks and marketing.
- B EFFECTIVENESS**
6. In your opinion, can interventions of the project address knowledge and skills needs for enhanced poultry feed production?
7. Overall, have you been satisfied with the interventions of the AMPLIFIES project?
8. Has access to finance improved for beneficiary feed mills; kindly provide some evidence?
9. Which of the program activities did not work as well as expected and what factors could have caused the poor results.
- C EFFICIENCY**
10. Can you provide any evidence to support a view that interventions of the AMPLIFIES project has enhanced beneficiaries access to markets.
- D SUSTAINABILITY**
11. What evidence demonstrates existence of adequate maintenance procedures for storage infrastructure?
12. Is there evidence of maintenance procedures being followed?
13. Have capacities of local extension entities that service poultry production been developed and maintained through the AMPLIFIES project to ensure that results achieved can be sustained when the project ends?
14. Is the budget for extension services to reduce post-harvest losses adequate and stable enough to ensure that gains made are sustained?
15. Please list in the space provided below any unintended results (positive or negative) of the AMPLIFIES project that you have observed or reported to you.

16. From your experience with the AMPLIFIES project, do you have any recommendation for improving future projects aimed at increasing productivity of poultry, poultry feed and feed input production?

A3.4. Checklist of Questions for Focus Groups (Poultry Farmer)

1 Name of District: _____

A RELEVANCE

2. Which of the following objectives of AMPLIFIES are relevant for the development of the Ghanaian Poultry Sector:

- Increase the quantity and lowering the cost of poultry feed by reducing harvest and post-harvest losses and addressing procurement inefficiencies of primary feed ingredients;
- Improve the quality and consistency of poultry feed through enhanced feed testing capacity, controlled and practical feeding demonstrations, feed formulation training, and one-on-one technical assistance;
- Enhance feed processing efficiency through technology transfer and on-site training;
- Increase the trade of commercialized poultry feed through improved distribution networks and marketing;
- Increase trade of eggs through awareness campaigns and the trade of commercialized poultry feed through improved distribution networks and marketing.

3. Did you participate in discussions on support for enhanced access to quality poultry feed and feed inputs prior to the design of the AMPLIFIES project?

4. In your opinion, can interventions of the project address knowledge and skills needs for enhanced poultry production practices and output?

B EFFECTIVENESS

5. Overall, have you been satisfied with the interventions of the AMPLIFIES project?

6. Has access to finance improved for beneficiary poultry and crop farmer and feed mills; kindly provide some evidence?

7. Can you provide any evidence to support a view that interventions of the AMPLIFIES project has enhanced beneficiaries access to markets.

8. Is there evidence to demonstrate enhanced access to quality poultry feed as a result of the AMPLIFIES project interventions.

9. Can you provide evidence of increased consumption of eggs?

10. Which of the program activities did not work as well as expected and what factors could have caused the poor results.

11. Do you have evidence to suggest that there has been an awareness campaign to promote egg consumption?

C EFFICIENCY

14. Does the evidence demonstrate reduction in feed conversion ratio and thus, reduction in the time (weeks) for poultry to reach a target weight.

15. Can you provide examples of efficiency effects of the AMPLIFIES project?

D SUSTAINABILITY

16. What evidence demonstrates existence of adequate maintenance procedures for storage infrastructure?

17. Is there evidence of maintenance procedures being followed?

18. Have capacities of local extension entities that service poultry production been developed and maintained through the AMPLIFIES project to ensure that results achieved can be sustained when the project ends?

19. Is the budget for extension services for the poultry sector adequate and stable enough to ensure that gains made are sustained?

20. Please state any evidence of social, economic and governance structures and processes observed that motivate any confidence about sustaining gains made from the AMPLIFIES project.

21. Please list in the space provided below any unintended results (positive or negative) of the AMPLIFIES project that you have observed or reported to you.

22. From your experience with the AMPLIFIES project, do you have any recommendation for improving future projects aimed at increasing productivity of poultry, poultry feed and feed input production?

A3.5. Check list of Questions for Key Informants

You are invited to participate in our Mid-Term Evaluation of AMPLIFIES Implementation. In this key informants' interview, approximately 30 people will be asked to complete a questionnaire that elicits information to ascertain the relevance, efficiency, effectiveness and sustainability of interventions undertaken through the AMLPIFIES project. It will take approximately 45 minutes to complete the questionnaire.

Your participation in this evaluation is completely voluntary. There are no foreseeable risks associated with this key informants' evaluation interview. Much as it is very important for us to obtain your opinion as input for a good evaluation, if you feel uncomfortable answering any questions, you can withdraw from the evaluation at any point.

Your interview responses will be strictly confidential and data from this evaluation will be reported only in the aggregate. Your information will be coded and will remain confidential. If you have questions at any time about the interview or the procedures, you may contact Dr. Adeline Ofori-Bah at 0269600300 or by email at adeline.ofori-bah@mande.solutions.

A PERSONAL DATA

- 1 Name (Optional): _____
- 3 No. of years' experience in the Poultry sub-sector: _____
4. Highest Education Qualification: _____
- 5 Field of Professional Expertise: _____
- 6 Select from the following occupation category the one that applies to you:
 - ☐ Sector Association Member
 - ☐ Public Service
 - ☐ Staff of Project /Funding Agency
 - ☐ Other, explain _____

B RELEVANCE

- 7 Rate the extent to which you agree or disagree with the following statements:

		Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Not Decided
i	Ghana's policies for the poultry sub-sector informed the designing of the planned interventions of AMPLIFIES.						
ii	The AMPLIFIES project was designed in consultation with the industry leaders of the Poultry Sector.						
iii	The Ghana National Associations Poultry Farmers understand and identified the need for interventions implemented by the AMPLIFIES project.						
iv	There was a high degree of congruence between training needs of beneficiaries and the objectives of training programs conducted by the AMPLIFIES project.						
v	AMPLIFIES project objectives had a strong link with the objectives of the Ghana Poultry sector.						
vi	The content of training programs were prepared in response to beneficiaries' skills and knowledge needs.						
vii	Job profile of the individual within a beneficiary enterprise was considered for the selection of trainees for specific training programs.						
viii	Project activities were planned and implemented to help achieve specific poultry sector goals.						

x	Project beneficiaries were helped in diagnosing their own technical assistance needs.						
---	---	--	--	--	--	--	--

C EFFECTIVENESS

8 Rate the extent to which you agree or disagree with the following statement

		Strongly disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Strongly agree	Not decided
i	Overall, you have been satisfied with the interventions of the AMPLIFIES project						
ii	Beneficiary poultry farmers and feed producers have acquired some cost saving skills from the AMPLIFIES project.						
iii	Through interventions of AMPLIFIES, beneficiaries had improved access to finance for their poultry/crop farming activity.						
iv	You are confident that managers of AMPLIFIES have adequate capacity building skills.						
v	Beneficiary farmers and feed mills now have access to better market for their produce.						
vi	Through interventions of AMPLIFIES, you had better access to veterinary services.						
vii	A vibrant campaign to increase egg consumption is on-going						
viii	You have seen evidence of achieving objectives of increased consumption of eggs						
ix	You can attest to some improvement in the poultry sector as a result of the AMPLIFIES project.						
x	Coordination between AMPLIFIES on one hand and GPP and other USAID/USDA projects is satisfactory.						

9. Which activities of the project in your opinion, did not work as well as expected and what could be the reason?

10. Which activities of the project in your opinion, worked very well and resulted in the expected outcomes and what could be the reason?

D EFFICIENCY

11. Rate the extent to which you agree or disagree with the following statements:

		Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Not decided
i	The evidence show that beneficiaries were able to reduce the Feed Conversion Ratio for their poultry as a result of AMPLIFIES interventions.						
ii	The evidence show that beneficiary farmers were able to increased crop output with the same farm size.						

iii	Poultry feed producers experienced lower cost of production						
iv	The quality of locally produced poultry feed has improved as a result of the capacity enhancing interventions of AMLPIFIES project						

E SUSTAINABILITY

12. Rate the extent to which you agree or disagree with the following statement

		Strongly disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Strongly agree	Not decided
i	Capacities of local extension entities for servicing poultry production have been developed and maintained through the AMPLIFIES project to ensure that results achieved can be sustained when the project ends.						
ii	Capacity building support from the project helped you set realistic goals and will continue to do so.						
iii	Existing agricultural policies can ensure that gains made through AMPLIFIES are sustained.						
iv	There is significant incentive from continued application of technology and management skills acquired through the project.						
v	Complementary inputs (resources or technology) are accessible to support gains from capacity building.						
vi	Existing local public entities will ensure that gains made through AMPLIFIES are sustained.						

13. To what extent were follow-up visits after capacity building events, observed to be useful in beneficiaries' production performance? Please circle the number that closely reflects your assessment.

Not useful at all 1 2 3 4 5 6 Extremely useful

Kindly explain the reason for your rating

.....

14. Please state any evidence of social, economic and governance structures and processes observed that motivate any confidence about sustaining gains made from the AMPLIFIES project.

15. Please list in the space provided below any unintended results (positive or negative) of the AMPLIFIES project that you have observed or reported to you.

16. From your experience with the AMPLIFIES project, do you have any recommendation for improving future projects aimed at increasing productivity of poultry, poultry feed and feed input production?

Appendix 4. List of Information Sources

Table A4.1. Key Informants Interviewed

Name	Organization	Position	Location	Date Interviewed
Ligaya Diaz	ASA	COP	Accra	31/1/19
Comfort Kyerewa Acheampong	AMPLIFIES	Technical Specialist	Accra	31/1/19
Cephas Agbesi Tsikudo	ASA	M&E Manager	Accra	31/1/19
Isaac Kankam Boadu	ADRA	Project Manager	Accra	31/1/19
Antumwini Solomon Domayen	ADRA	Field Project Officer	Accra	31/1/19
Emmanuel Awude	ADRA	M&E Manager	Accra	31/1/19
Juliana Amfo-Darko	ADRA	Credit Officer	Techiman	25/2/19
Abdul Rahman Alhassan	ADRA	PHTO	Tamale	21/2/19
Mahmud Makama Abdul Kadir	ADRA	PHTO	Tamale	21/2/19
Kofi Peter Manuka	FBO	Treasurer	Kwame Yeboah, Techiman	24/2/19
Dr. Stark	KSU	Grain Specialist	By Email	
Dr. Nortey	Animal Science Dept., UG		Accra	4/3/2019
Ms. Sandra Tagoe	Sankofa Flour Mills Ltd	Sales Manager	Tema	4/3/2019
Mr. Quaye	Kosher Feed Mills Ltd	CEO	Accra	22/2/19
Mr. Bekoe	APD	Ag. Director	Accra	
Noah Kwasi Bioh	AGRICARE	HR & Administrative Manager	Kumasi	28/2/19
Ms. Gifty Darkoh	APD	Ashanti Regional APD Officer	Methodist Church, Dakodwam, Kumasi	26/2/19
Ishmael Amanor	AMPLIFIES	Feed Technical Officer	AMPLIFIES Office, Danyame, Kumasi	28/2/19
Mr. V. O. Oppong	Ghana National Association of Poultry Farmers	National Chairman	Kumasi	27/2/19
Mr. Joseph Amoako Nketiah	Ghana National Poultry Farmers Association	Ashanti Regional Secretary	Mr. Amoako Nketia's Residence, Akropong Ashanti, Kumasi	28/2/19
Dei Kusi	Ghana National Association of Poultry Farmers	Acting Brong-Ahafo Regional Chairman	Dormaa Ahenkro	22/2/19
Mr. Amanor Affoh	YEDENT	Finance Officer	Sunyani	21/2/19
Augustine Manu		Farmer/ Maize Aggregator	Amasu, Dormaa Municipality	
Kenneth Oppong		Maize Aggregator	Berekum	22/2/19
Eunice Konadu	APD	Brong-Ahafo Regional	Sunyani	21/2/19

Atepim		Animal Production Officer		
Mr Joseph Amoako Nketiah	Ghana National Poultry Farmers Association	Ashanti Regional Secretary	Kumasi	28/2/19
Adams Alhassan	Poultry Farmers Association, Tema District	Member	Tema	9/2/19
Mr. Odoi	Poultry Farmers Association, Tema District	Member	Tema	9/2/19

Table A4.2. Participants in Focus Group Discussions

Focus Group	Representation	Number of Persons	Date	Venue/Location	District	Gender Composition	
						Male	Female
1	METSS; MOFA (MIS, AEA, DDA, Vet); Gingani; FBOs (Farmers);	8	8/2/19	MOFA Office, Kumbungu	Kumbungu	5	3
2	METSS; MOFA (AEAs, District Director); FBOs (Farmers);	6	8/2/19	District Director's Office. Tolon	Tolon	3	3
3	METSS; MOFA (MIS, Livestock Officer, AEAs, Municipal Director); FBOs (Duko; Bunlung; Kamontooni - Farmers)	10	9/2/19	PD Unit, Veterinary College, Pong-Tamale	Savelugu	9	1
4	MOFA (Head of Dept; Municipal Livestock Officer); PTO; K.C. Farms (Production Manager)	4	14/2/19	Agric Office, Bortianor	Ga South	4	1
5	A maize grower, one maize aggregator, Feed Miller, Poultry farmers, Egg sellers, the District Veterinary Officer, a representative of the District Director of Agriculture, and Field Staff of AMPLIFIES	14	22/2/19	Dormaa Ahenkro	Dormaa Central District	13	1
6	Poultry farmers, a representative each of the Egg sellers Association and Live birds Sellers Association, the District Director of Agriculture and two Field staff of AMPLIFIES	13	25/2/19	AD&ADEL Restaurant,	Wenchi Municipality	11	2
7	Poultry Farmers and Egg Sellers Association at Techiman	7	26/2/19	Trinity Foundation Ministry	Techiman	7	0
8	Maize farmers, Veterinary, MOFA, AMPLIFIES	11	27/2/19	MoFA Conference Room, Ejura	Ejura	11	0
9	PTOs; MOFA (Director, VSD); Farmers, Billa Farms (CEO); Ashanti Regional Poultry Assoc. (Secretary)	13	1/3/19	MoFA Conference Room	Ejisu	10	3

Appendix 5. Disclosure of any Conflict of Interest



USAID
FROM THE AMERICAN PEOPLE

METSS
Technical Support Services

Evaluation Conflict of Interest Form

Name: Adeline Ofori-Bah Position: Consultant Institution/Firm: M+E Solutions

1. I am an employee of USAID or another U.S. Government agency. Yes: ☐ No: ☒

2. I have a compensated or uncompensated relationship, executive position, or a significant financial interest in:

☐ A) A business which markets, produces, or has in pre-market testing a product or service that USAID would either evaluate or further develop

☐ B) A business that does business with USAID and/or the entity being evaluated and in which I am in a position to influence that relationship

☐ C) A sponsor of a project with which I am involved as COR/AOR, Office Director, or technical office staff overseeing project implementation

☒ D) None of the above

(If you checked a, b, or c, describe):

3. Are there any other matters bearing on conflict of interest or commitment that you wish to disclose to USAID that would compromise objectivity in this evaluation?

None

Name/Position: Adeline Ofori-Bah, M+E Consultant

Signature: [Signature]

Date: 13/Nov 2018

Name of Supervisor/Team Lead: _____

Signature: _____

Date: _____



METSS

Name: DR ALBERT OBENG MENSAH Position: SR LECTURER Institution/Firm: UNIVERSITY OF CAPE COAST

1. I am an employee of USAID or another U.S. Government agency. Yes: _____ No: ☒

2. I have a compensated or uncompensated relationship, executive position, or a significant financial interest in:

_____ A) A business which markets, produces, or has in pre-market testing a product or service that USAID would either evaluate or further develop

_____ B) A business that does business with USAID and/or the entity being evaluated and in which I am in a position to influence that relationship

_____ C) A sponsor of a project with which I am involved as COR/AOR, Office Director, or technical office staff overseeing project implementation

☒ D) None of the above

(If you checked a, b, or c, describe):

3. Are there any other matters bearing on conflict of interest or commitment that you wish to disclose to USAID that would compromise objectivity in this evaluation?

Name/Position: DR. ALBERT OBENG NIENSAH

Signature: Date: 13-11-2018

Name of Supervisor/Team Lead: _____

Signature: _____ Date: _____

Appendix 6. Estimations to Derive Quantitative Evidence

Table A6.1. Proportional Distribution of Crop Farmers' Responses to Statements Expressing the Relevance of Interventions of the AMPLIFIES Project

Statements expressing the relevance of AMPLIFIES interventions	Extent of crop farmers' agreement with statement in favor of relevance if interventions	Proportional distribution of farmers' responses	Percent distribution of farmers' responses	Distribution of responses that disagree vs. agree with statement	Average distribution of responses for all questions assessing perception about relevance of interventions
I1. Your training needs were adequately addressed by the training programs conducted by the AMPLIFIES project.	Strongly Disagree	0.0044743	0.44743	2.01343	
	Somewhat Disagree	0.01566	1.566		
	Neither Agree nor Disagree	0.0850112	8.50112		
	Somewhat Agree	0.1006711	10.06711	87.69575	
	Strongly Agree	0.7762864	77.62864		
	Not Decided	0.0178971	1.78971		
					1.8456375
I2. The content of training programs were prepared in response to trainee's skills and knowledge needs.	Strongly Disagree	0.0022371	0.22371	2.23713	
	Somewhat Disagree	0.0201342	2.01342		89.395976
	Neither Agree nor Disagree	0.0626398	6.26398		
	Somewhat Agree	0.1431767	14.31767	89.48546	
	Strongly Agree	0.7516779	75.16779		
	Not Decided	0.0201342	2.01342		
I3. You were helped in diagnosing your own technical assistance needs.	Strongly Disagree	0.0067114	0.67114	1.78971	
	Somewhat Disagree	0.0111857	1.11857		
	Neither Agree nor Disagree	0.0447427	4.47427		
	Somewhat Agree	0.1588367	15.88367	91.7226	
	Strongly Agree	0.7583893	75.83893		
	Not Decided	0.0201342	2.01342		
I4. The content of AMPLIFIES training was appropriate for your day-to-day work performance.	Strongly Disagree	0.0044743	0.44743	1.34228	
	Somewhat Disagree	0.0089485	0.89485		
	Neither Agree nor Disagree	0.0581655	5.81655		
	Somewhat Agree	0.1319911	13.19911	91.05146	
	Strongly Agree	0.7785235	77.85235		
	Not Decided	0.0178971	1.78971		
I5. The capacity building program of AMPLIFIES was relevant for increasing productivity on your farm.	Strongly Disagree	0.0022371	0.22371	2.68456	
	Somewhat Disagree	0.0246085	2.46085		
	Neither Agree nor Disagree	0.0805369	8.05369		
	Somewhat Agree	0.1543624	15.43624	87.02461	
	Strongly Agree	0.7158837	71.58837		
	Not Decided	0.0223714	2.23714		

Table A6.2. Proportional Distribution of Crop Farmers' Responses to Statements Expressing the Efficiency of Interventions of the AMPLIFIES Project

Statements in favor of efficiency of interventions	Extent of crop farmers' agreement with statement in favor of efficiency of interventions	Proportional distribution of farmers' responses	Percent distribution of farmers' responses	Distribution of responses that Disagree vs. Agree with the statement	Average distribution of responses for all questions assessing perception about efficiency of interventions
K1. You were able to sell your crop output when you wanted to do so.	Strongly Disagree	0.0178971	1.78971	11.63311	
	Somewhat Disagree	0.098434	9.8434		
	Neither Agree nor Disagree	0.0760626	7.60626		
	Somewhat Agree	0.1767338	17.67338	78.74721	
	Strongly Agree	0.6107383	61.07383		
	Not Decided	0.0201342	2.01342		
K2. You were able to sell your crop output at the existing market price.	Strongly Disagree	0.0134228	1.34228	11.18568	
	Somewhat Disagree	0.098434	9.8434		
	Neither Agree nor Disagree	0.0290828	2.90828		
	Somewhat Agree	0.1946309	19.46309	83.44519	
	Strongly Agree	0.639821	63.9821		
	Not Decided	0.0246085	2.46085		14.451902
K3. You were able to store your produce that you didn't want to sell immediately after harvest, and at an affordable cost.	Strongly Disagree	0.0067114	0.67114	2.90828	
	Somewhat Disagree	0.0223714	2.23714		77.897092
	Neither Agree nor Disagree	0.0738255	7.38255		
	Somewhat Agree	0.1991051	19.91051	88.36689	
	Strongly Agree	0.6845638	68.45638		
	Not Decided	0.0134228	1.34228		
K4. You have benefited from a CAC near you.	Strongly Disagree	0.3624161	36.24161	42.72931	
	Somewhat Disagree	0.064877	6.4877		
	Neither Agree nor Disagree	0.0425056	4.25056		
	Somewhat Agree	0.0917226	9.17226	50.33557	
	Strongly Agree	0.4116331	41.16331		
	Not Decided	0.0268456	2.68456		
K5. You have seen significant reduction in post-harvest losses of your crop.	Strongly Disagree	0.0134228	1.34228	3.80313	
	Somewhat Disagree	0.0246085	2.46085		
	Neither Agree nor Disagree	0.0626398	6.26398		
	Somewhat Agree	0.147651	14.7651	88.5906	
	Strongly Agree	0.738255	73.8255		
	Not Decided	0.0134228	1.34228		

Table A6.3. Proportional Distribution of Crop Farmers' Responses to Statements Expressing the Effectiveness of Interventions of the AMPLIFIES Project

Statements in favor of effectiveness of interventions	Extent of crop farmers' agreement with statement in favor of effectiveness of interventions	Proportional distribution of farmers' responses	Percent distribution of farmers' responses	Distribution of responses that Disagree vs. Agree with the statement	Average distribution of responses for all questions assessing perception about effectiveness of interventions
J1. Overall, you have been satisfied with the interventions of the AMPLIFIES project	Strongly Disagree	0.0067114	0.67114	1.78971	
	Somewhat Disagree	0.0111857	1.11857		
	Neither Agree nor Disagree	0.082774	8.2774		
	Somewhat Agree	0.1275168	12.75168	88.36689	
	Strongly Agree	0.7561521	75.61521		
	Not Decided	0.01566	1.566		
					5.36912625
J2. You have acquired some post-harvest management skills from the AMPLIFIES project.	Strongly Disagree	0.0044743	0.44743	1.11857	
	Somewhat Disagree	0.0067114	0.67114		
	Neither Agree nor Disagree	0.0559284	5.59284		
	Somewhat Agree	0.1051454	10.51454	91.27517	
	Strongly Agree	0.8076063	80.76063		
	Not Decided	0.0201342	2.01342		
					84.92729375
J3. You are confident that managers of AMPLIFIES have adequate capacity building skills.	Strongly Disagree	0.0067114	0.67114	1.34228	
	Somewhat Disagree	0.0067114	0.67114		
	Neither Agree nor Disagree	0.0894855	8.94855		
	Somewhat Agree	0.1096197	10.96197	87.91946	
	Strongly Agree	0.7695749	76.95749		
	Not Decided	0.0178971	1.78971		
J4. Through interventions of the AMPLIFIES project, you had better access to market for your produce.	Strongly Disagree	0.0201342	2.01342	10.51454	
	Somewhat Disagree	0.0850112	8.50112		
	Neither Agree nor Disagree	0.0693512	6.93512		
	Somewhat Agree	0.1879195	18.79195	80.53692	
	Strongly Agree	0.6174497	61.74497		
	Not Decided	0.0201342	2.01342		
J5. Through interventions of the project, you were able to increase your revenue from the sale of your produce.	Strongly Disagree	0.0201342	2.01342	10.29082	
	Somewhat Disagree	0.082774	8.2774		
	Neither Agree nor Disagree	0.082774	8.2774		
	Somewhat Agree	0.1767338	17.67338	80.3132	
	Strongly Agree	0.6263982	62.63982		
	Not Decided	0.0111857	1.11857		
J6. Through interventions of AMPLIFIES, you had access to	Strongly Disagree	0.0246085	2.46085	5.59284	
	Somewhat Disagree	0.0313199	3.13199		
	Neither Agree nor Disagree	0.0626398	6.26398		

Statements in favor of effectiveness of interventions	Extent of crop farmers' agreement with statement in favor of effectiveness of interventions	Proportional distribution of farmers' responses	Percent distribution of farmers' responses	Distribution of responses that Disagree vs. Agree with the statement	Average distribution of responses for all questions assessing perception about effectiveness of interventions
better storage for your crop output.	Somewhat Agree	0.1655481	16.55481	86.57718	
	Strongly Agree	0.7002237	70.02237		
	Not Decided	0.01566	1.566		
J7. Through referrals by AMPLIFIES, your production activity benefited from interventions by other USAID/ USDA projects.	Strongly Disagree	0.0604027	6.04027	13.19911	
	Somewhat Disagree	0.0715884	7.15884		
	Neither Agree nor Disagree	0.163311	16.3311		
	Somewhat Agree	0.1610738	16.10738	69.12751	
	Strongly Agree	0.5302013	53.02013		
	Not Decided	0.0134228	1.34228		
J8. I will recommend training by AMPLIFIES to other farmers of same crop.	Strongly Disagree	0.0022371	0.22371	0.44742	
	Somewhat Disagree	0.0022371	0.22371		
	Neither Agree nor Disagree	0.0178971	1.78971		
	Somewhat Agree	0.1073826	10.73826	95.30202	
	Strongly Agree	0.8456376	84.56376		
	Not Decided	0.0246085	2.46085		

Table A6.4. Proportional Distribution of Crop Farmers' Responses to Statements Expressing the Sustainability of Results of the AMPLIFIES Project Interventions

Statements in favor of sustainability of intervention results	Extent of crop farmers' agreement with statement in favor of sustainability of intervention results	Proportional distribution of farmers' responses	Percent distribution of farmers' responses	Distribution of responses that Disagree vs. Agree with the statement	Average distribution of responses for all questions assessing perception about sustainability of intervention results
L1. You have acquired some performance changing skills that you intend to continue using even when the project ends.	Strongly Disagree	0.0111857	1.11857	5.81656	3.08760125
	Somewhat Disagree	0.0469799	4.69799		
	Neither Agree nor Disagree	0.0738255	7.38255		88.6465325
	Somewhat Agree	0.1006711	10.06711	85.68232	
	Strongly Agree	0.7561521	75.61521		
	Not Decided	0.0111857	1.11857		
L2. You have developed and maintained contacts with	Strongly Disagree	0.0178971	1.78971	4.47427	
	Somewhat Disagree	0.0268456	2.68456		
	Neither Agree nor Disagree	0.0425056	4.25056		

Statements in favor of sustainability of intervention results	Extent of crop farmers' agreement with statement in favor of sustainability of intervention results	Proportional distribution of farmers' responses	Percent distribution of farmers' responses	Distribution of responses that Disagree vs. Agree with the statement	Average distribution of responses for all questions assessing perception about sustainability of intervention results
public extension services as a result of support from AMPLIFIES project	Somewhat Agree	0.2013423	20.13423	90.1566	
	Strongly Agree	0.7002237	70.02237		
	Not Decided	0.0111857	1.11857		
L3. You are confident that benefits from the project will be sustained in the absence of AMPLIFIES	Strongly Disagree	0.0022371	0.22371	1.11856	
	Somewhat Disagree	0.0089485	0.89485		
	Neither Agree nor Disagree	0.0402685	4.02685		
	Somewhat Agree	0.1118568	11.18568	92.84116	
	Strongly Agree	0.8165548	81.65548		
	Not Decided	0.0201342	2.01342		
L4. Capacity building support from the project helped you set realistic goals and will continue to do so	Strongly Disagree	0.0044743	0.44743	1.11857	
	Somewhat Disagree	0.0067114	0.67114		
	Neither Agree nor Disagree	0.064877	6.4877		
	Somewhat Agree	0.1767338	17.67338	90.82774	
	Strongly Agree	0.7315436	73.15436		
	Not Decided	0.01566	1.566		
L5. Existing agricultural policies can ensure that gains made through AMPLIFIES are sustained.	Strongly Disagree	0.0031602	0.31602	2.55316	
	Somewhat Disagree	0.0223714	2.23714		
	Neither Agree nor Disagree	0.1029083	10.29083		
	Somewhat Agree	0.2192394	21.92394	85.45862	
	Strongly Agree	0.6353468	63.53468		
	Not Decided	0.01566	1.566		
L6. There is significant incentive from continued application of technology and management skills acquired through the project.	Strongly Disagree	0.0067114	0.67114	2.01342	
	Somewhat Disagree	0.0134228	1.34228		
	Neither Agree nor Disagree	0.0715884	7.15884		
	Somewhat Agree	0.1722595	17.22595	89.48546	
	Strongly Agree	0.7225951	72.25951		
	Not Decided	0.0134228	1.34228		
L7. Complementary inputs (resources or technology) are accessible to support gains	Strongly Disagree	0.0246085	2.46085	5.59284	
	Somewhat Disagree	0.0313199	3.13199		
	Neither Agree nor Disagree	0.0760626	7.60626		
	Somewhat Agree	0.3489933	34.89933	85.2349	
	Strongly Agree	0.5033557	50.33557		

Statements in favor of sustainability of intervention results	Extent of crop farmers' agreement with statement in favor of sustainability of intervention results	Proportional distribution of farmers' responses	Percent distribution of farmers' responses	Distribution of responses that Disagree vs. Agree with the statement	Average distribution of responses for all questions assessing perception about sustainability of intervention results
from capacity building.	Not Decided	0.01566	1.566		
L8. Existing local public entities will ensure that gains made through AMPLIFIES are sustained.	Strongly Disagree	0.0044743	0.44743	2.01343	
	Somewhat Disagree	0.01566	1.566		
	Neither Agree nor Disagree	0.0738255	7.38255		
	Somewhat Agree	0.2706935	27.06935	89.48546	
	Strongly Agree	0.6241611	62.41611		
	Not Decided	0.0111857	1.11857		

Table A6.5. Proportional Distribution of Poultry Farmers' Responses to Statements Expressing the Relevance of Interventions of the AMPLIFIES Project

Statements in favor of relevance of interventions	Extent of crop farmers' agreement with statement in favor of relevance of interventions	Proportional distribution of farmers' responses	Percent distribution of farmers' responses	Distribution of responses Disagree vs. Agree
Your training needs were adequately addressed by the training programs conducted by the AMPLIFIES project.	Strongly Disagree	0.01778	1.778	3.55556
	Somewhat Disagree	0.01778	1.778	
	Neither Agree Nor Disagree	0.06667	6.667	
	Somewhat Agree	0.22222	22.222	81.77778
	Strongly Agree	0.59556	59.556	
	Not Decided	0.08000	8.000	
AMPLIFIES project objectives had a strong link with the objectives of the Ghana Poultry sector.	Strongly Disagree	0.03111	3.111	4.44444
	Somewhat Disagree	0.01333	1.333	
	Neither Agree Nor Disagree	0.12000	12.000	
	Somewhat Agree	0.23556	23.556	75.55556
	Strongly Agree	0.52000	52.000	
	Not Decided	0.08000	8.000	
The content of training programs were prepared in response to trainee's skills and knowledge needs.	Strongly Disagree	0.02667	2.667	3.55556
	Somewhat Disagree	0.00889	0.889	
	Neither Agree Nor Disagree	0.06667	6.667	
	Somewhat Agree	0.25778	25.778	81.33334
	Strongly Agree	0.55556	55.556	
	Not Decided	0.08444	8.444	
Job profile of the individual within a beneficiary enterprise was considered in	Strongly Disagree	0.07556	7.556	10.66667
	Somewhat Disagree	0.03111	3.111	
	Neither Agree Nor Disagree	0.15111	15.111	

Statements in favor of relevance of interventions	Extent of crop farmers' agreement with statement in favor of relevance of interventions	Proportional distribution of farmers' responses	Percent distribution of farmers' responses	Distribution of responses Disagree vs. Agree
selecting trainees for specific training programs.	Somewhat Agree	0.20889	20.889	63.11111
	Strongly Agree	0.42222	42.222	
	Not Decided	0.11111	11.111	
You were helped in diagnosing your own technical assistance needs.	Strongly Disagree	0.04444	4.444	5.77777
	Somewhat Disagree	0.01333	1.333	
	Neither Agree Nor Disagree	0.14667	14.667	
	Somewhat Agree	0.24444	24.444	71.55555
	Strongly Agree	0.47111	47.111	
	Not Decided	0.08000	8.000	
The content of AMPLIFIES training was appropriate for the day-to-day work performance on your farm.	Strongly Disagree	0.01778	1.778	2.66667
	Somewhat Disagree	0.00889	0.889	
	Neither Agree Nor Disagree	0.08000	8.000	
	Somewhat Agree	0.16444	16.444	80.44444
	Strongly Agree	0.64000	64.000	
	Not Decided	0.08889	8.889	
The capacity building program of AMPLIFIES was relevant for increasing productivity on your poultry farm.	Strongly Disagree	0.02222	2.222	4.88889
	Somewhat Disagree	0.02667	2.667	
	Neither Agree Nor Disagree	0.09333	9.333	
	Somewhat Agree	0.23556	23.556	76.44445
	Strongly Agree	0.52889	52.889	
	Not Decided	0.09333	9.333	

Table A6.6. Proportional Distribution of Poultry Farmers' Responses to Statements Expressing the Effectiveness of Interventions of the AMPLIFIES Project

Statements in favor of effectiveness of interventions	Extent of crop farmers' agreement with statement in favor of effectiveness of interventions	Proportional distribution of farmers' responses	Percent distribution of farmers' responses	Distribution of responses Disagree vs. Agree
Overall, you have been satisfied with the interventions of the AMPLIFIES project	Strongly Disagree	0.04000	4.000	5.77778
	Somewhat Disagree	0.01778	1.778	
	Neither Agree Nor Disagree	0.07556	7.556	
	Somewhat Agree	0.23556	23.556	78.22223
	Strongly Agree	0.54667	54.667	
	Not Decided	0.08444	8.444	
You have acquired some cost saving skills from the AMPLIFIES project.	Strongly Disagree	0.02667	2.667	5.77778
	Somewhat Disagree	0.03111	3.111	
	Neither Agree Nor Disagree	0.10222	10.222	
	Somewhat Agree	0.24889	24.889	74.66667
	Strongly Agree	0.49778	49.778	
	Not Decided	0.09333	9.333	
Through interventions	Strongly Disagree	0.29333	29.333	35.55555

Statements in favor of effectiveness of interventions	Extent of crop farmers' agreement with statement in favor of effectiveness of interventions	Proportional distribution of farmers' responses	Percent distribution of farmers' responses	Distribution of responses Disagree vs. Agree
of AMPLIFIES, you had improved access to finance for your poultry farming activity.	Somewhat Disagree	0.06222	6.222	
	Neither Agree Nor Disagree	0.12444	12.444	
	Somewhat Agree	0.15111	15.111	43.11111
	Strongly Agree	0.28000	28.000	
	Not Decided	0.08889	8.889	
You are confident that managers of AMPLIFIES have adequate capacity building skills.	Strongly Disagree	0.02667	2.667	4.44445
	Somewhat Disagree	0.01778	1.778	
	Neither Agree Nor Disagree	0.08889	8.889	
	Somewhat Agree	0.17333	17.333	77.33333
	Strongly Agree	0.60000	60.000	
	Not Decided	0.09333	9.333	
Through interventions of the project, you had better access to lower priced poultry feed.	Strongly Disagree	0.24889	24.889	34.22222
	Somewhat Disagree	0.09333	9.333	
	Neither Agree Nor Disagree	0.16000	16.000	
	Somewhat Agree	0.12000	12.000	41.77778
	Strongly Agree	0.29778	29.778	
	Not Decided	0.08000	8.000	
Through interventions of the project, you had timely access to poultry feed throughout the year.	Strongly Disagree	0.23556	23.556	31.55556
	Somewhat Disagree	0.08000	8.000	
	Neither Agree Nor Disagree	0.13333	13.333	
	Somewhat Agree	0.17778	17.778	45.77778
	Strongly Agree	0.28000	28.000	
	Not Decided	0.09333	9.333	
Through interventions of the project, you were able to increase the output of your poultry farm.	Strongly Disagree	0.05333	5.333	8.88889
	Somewhat Disagree	0.03556	3.556	
	Neither Agree Nor Disagree	0.13333	13.333	
	Somewhat Agree	0.19556	19.556	67.55556
	Strongly Agree	0.48000	48.000	
	Not Decided	0.10222	10.222	
Through interventions of AMPLIFIES, you had access to better storage for your feed.	Strongly Disagree	0.16000	16.000	24
	Somewhat Disagree	0.08000	8.000	
	Neither Agree Nor Disagree	0.16444	16.444	
	Somewhat Agree	0.16889	16.889	50.22222
	Strongly Agree	0.33333	33.333	
	Not Decided	0.09333	9.333	
Through referrals by AMPLIFIES, your production activity benefited from interventions by other USAID/USDA projects	Strongly Disagree	0.21778	21.778	25.77778
	Somewhat Disagree	0.04000	4.000	
	Neither Agree Nor Disagree	0.16000	16.000	
	Somewhat Agree	0.15111	15.111	49.33333
	Strongly Agree	0.34222	34.222	

Statements in favor of effectiveness of interventions	Extent of crop farmers' agreement with statement in favor of effectiveness of interventions	Proportional distribution of farmers' responses	Percent distribution of farmers' responses	Distribution of responses Disagree vs. Agree
such as GPP.	Not Decided	0.08889	8.889	
You can attest to some improvement in the poultry sector as a result of the AMPLIFIES project.	Strongly Disagree	0.03111	3.111	4.44444
	Somewhat Disagree	0.01333	1.333	
	Neither Agree Nor Disagree	0.14222	14.222	
	Somewhat Agree	0.22667	22.667	69.77778
	Strongly Agree	0.47111	47.111	
	Not Decided	0.11556	11.556	
Through interventions of the project, you were able to reduce the Feed Conversion Ratio for your poultry.	Strongly Disagree	0.05778	5.778	8
	Somewhat Disagree	0.02222	2.222	
	Neither Agree Nor Disagree	0.19111	19.111	
	Somewhat Agree	0.22667	22.667	60.88889
	Strongly Agree	0.38222	38.222	
	Not Decided	0.12000	12.000	

Table A6.7. Proportional Distribution of Poultry Farmers' Responses to Statements Expressing the Sustainability of Interventions of the AMPLIFIES Project

Statements in favor of sustainability of interventions	Extent of crop farmers' agreement with statement in favor of sustainability of interventions	Proportional distribution of farmers' responses	Percent distribution of farmers' responses	Distribution of responses Disagree vs. Agree
You have acquired some performance changing skills that you intend to continue using even when the project ends.	Strongly Disagree	0.01333	1.333	1.77777
	Somewhat Disagree	0.00444	0.444	
	Neither Agree Nor Disagree	0.09333	9.333	
	Somewhat Agree	0.25778	25.778	80.44445
	Strongly Agree	0.54667	54.667	
	Not Decided	0.08444	8.444	
You have developed and maintained contacts with public extension services as a result of support from AMPLIFIES project.	Strongly Disagree	0.16000	16.000	20.88889
	Somewhat Disagree	0.04889	4.889	
	Neither Agree Nor Disagree	0.13778	13.778	
	Somewhat Agree	0.29778	29.778	57.77778
	Strongly Agree	0.28000	28.000	
	Not Decided	0.07556	7.556	
You are confident that benefits from the project will be sustained in the absence of AMPLIFIES	Strongly Disagree	0.03556	3.556	8.44445
	Somewhat Disagree	0.04889	4.889	
	Neither Agree Nor Disagree	0.12889	12.889	
	Somewhat Agree	0.28889	28.889	68.88889
	Strongly Agree	0.40000	40.000	
	Not Decided	0.09778	9.778	
Capacity building support from the project helped you set	Strongly Disagree	0.03556	3.556	4.88889
	Somewhat Disagree	0.01333	1.333	
	Neither Agree Nor	0.16889	16.889	

Statements in favor of sustainability of interventions	Extent of crop farmers' agreement with statement in favor of sustainability of interventions	Proportional distribution of farmers' responses	Percent distribution of farmers' responses	Distribution of responses Disagree vs. Agree
realistic goals and will continue to do so.	Disagree			
	Somewhat Agree	0.28000	28.000	69.33333
	Strongly Agree	0.41333	41.333	
	Not Decided	0.08889	8.889	
Existing agricultural policies can ensure that gains made through AMPLIFIES are sustained.	Strongly Disagree	0.13778	13.778	20.44445
	Somewhat Disagree	0.06667	6.667	
	Neither Agree Nor Disagree	0.19111	19.111	
	Somewhat Agree	0.22667	22.667	50.66667
	Strongly Agree	0.28000	28.000	
	Not Decided	0.09778	9.778	
There is significant incentive from continued application of technology and management skills acquired through the project.	Strongly Disagree	0.02667	2.667	5.33334
	Somewhat Disagree	0.02667	2.667	
	Neither Agree Nor Disagree	0.20000	20.000	
	Somewhat Agree	0.27111	27.111	64.88889
	Strongly Agree	0.37778	37.778	
	Not Decided	0.09778	9.778	
Complementary inputs (resources or technology) are accessible to support gains from capacity building.	Strongly Disagree	0.08000	8.000	19.55556
	Somewhat Disagree	0.11556	11.556	
	Neither Agree Nor Disagree	0.22667	22.667	
	Somewhat Agree	0.24889	24.889	48
	Strongly Agree	0.23111	23.111	
	Not Decided	0.09778	9.778	
Existing local public entities will ensure that gains made through AMPLIFIES are sustained.	Strongly Disagree	0.12000	12.000	23.55556
	Somewhat Disagree	0.11556	11.556	
	Neither Agree Nor Disagree	0.20000	20.000	
	Somewhat Agree	0.23111	23.111	44.88889
	Strongly Agree	0.21778	21.778	
	Not Decided	0.11556	11.556	

Table A6.8. Values of Commodities Sold by Crop Beneficiary Farmers

Crop/Year	Gender Disaggregation	Value of Sales GHS	Value of Sales USD (average exchange rate: 4.35)
Maize 2016	Male	1129620	259683
	Female	955195	219585
Maize 2017	Male	1464739	336722
	Female	1536820	353292
Maize 2018	Male	1779520	409085
	Female	1319390	303308
Soybean 2016	Male	46880	10777
	Female	699728	160857
Soybean 2017	Male	101710	23382
	Female	1160950	266885
Soybean 2018	Male	93990	21607
	Female	1067580	245421

Table A6.9. Summary of Average Weight of Broiler at Sale

. summarize mb16					
Variable	Obs	Mean	Std. Dev.	Min	Max
mb16	34	2.538235	1.08209	0	5

Table A6.10. Tabulation of Sources of Loans for Poultry Farmers (STATA)

. tabulate mb33a1 mb33a		
	Have you ever received a loan or grant for your poultry farming activities	
If Yes, from where	Yes	Total
Bank	55	55
Lending firm	2	2
Micro Finance Institu	9	9
Friends/Family member	3	3
Other Specify	3	3
Total	72	72

Table A6.11. FTE of Jobs Created by Crop Farmers

Farmer Category		Level of Estimate	Jobs Created
Total		Sample Estimate	163
		Population Estimate	953
Crop Farmers	Female	Sample Estimate	17
		Population Estimate	117
	Male	Sample Estimate	113
		Population Estimate	759
Poultry Farmers	Male	Sample Estimate	33
		Population Estimate	74

Table A6.12. Summary of Respondent Crop Farmers Training in New Technology

Respondents	Participated in AMPLIFIES Training	Did Not Participate in AMPLIFIES Training	TOTAL
Male	269	4	273
Female	172	3	175
Total	441	7	448

Table A6.13. Summary of Poultry Farmers Training in New Technology

Respondents	Male	Female	Total
Received training or technical assistance	169	18	187
Did not receive training or technical assistance	49	13	62
Total	218	31	249

Table A6.14. Total Estimated Short-Term Training Received by Beneficiary Farmers

		Male	Female	Total
Crop Farmers	Sample	269	172	441
	Population	1,812	1,159	2,971
Poultry Farmers	Sample	169	19	188
	Population	415	47	461.3173
Total		2,227	1,205	3,432

Table A6.15. Estimated Production Cost of Poultry Feed

	GHS/50 kg	GHS/Per kg	USD/kg *
Chick Marsh	305.8	6.116	1.41
Grower Marsh	224.8	4.496	1.03
Layer Marsh	310.4	6.208	1.43
Broiler Starter	528.5	10.57	2.43
Broiler Grower	394.9	7.898	1.82
Average	352.88	7.0576	1.62

*/ Using exchange rate of GHS 4.35

Table A6.16. Summary Estimates of Land Size Under Improved Technology

Land Size Under Improved Technologies (Acres)	2017	2018
SOYBEAN	609	613
MAIZE	1556	3583
Total land area (acres) (Total for Sample size of 444)	2165	4196
Total land area (acres) (Total for Population size of 3018)	14,716.15	28,521.46

--	--

```
. total f1a2018a, over(e5b7)
```

Total estimation	Number of obs	=	437
_subpop_1: e5b7 = Yes, Season 1 _subpop_2: e5b7 = Yes, Season 2 _subpop_3: e5b7 = Yes, both No: e5b7 = No			

Over	Total	Std. Err.	[95% Conf. Interval]	
f1a2018a				
_subpop_1	711	64.81443	583.6124	838.3876
_subpop_2	0	(omitted)		
_subpop_3	1474	282.9477	917.889	2030.111
No	6	3.508232	-.895149	12.89515

```
. total f1a2018c, over(e5b7)
```

Total estimation	Number of obs	=	194
_subpop_1: e5b7 = Yes, Season 1 _subpop_2: e5b7 = Yes, Season 2 _subpop_3: e5b7 = Yes, both No: e5b7 = No			

Over	Total	Std. Err.	[95% Conf. Interval]	
f1a2018c				
_subpop_1	3	3	-2.916995	8.916995
_subpop_2	22	5.537749	11.07772	32.92228
_subpop_3	1373	305.8423	769.7775	1976.222
No	0	(omitted)		

`. total f1a2017a, over(e5b8)`

Total estimation Number of obs = 260

 _subpop_1: e5b8 = Yes, Season 1
 _subpop_2: e5b8 = Yes, Season 2
 _subpop_3: e5b8 = Yes, both
 No: e5b8 = No

Over	Total	Std. Err.	[95% Conf. Interval]
f1a2017a			
_subpop_1	616	44.95053	527.485 704.515
_subpop_2	3	.	.
_subpop_3	274	137.4731	3.292678 544.7073
No	23	10.21763	2.879791 43.12021

`. total f1a2017c, over(e5b8)`

Total estimation Number of obs = 260

 _subpop_1: e5b8 = Yes, Season 1
 _subpop_2: e5b8 = Yes, Season 2
 _subpop_3: e5b8 = Yes, both
 No: e5b8 = No

Over	Total	Std. Err.	[95% Conf. Interval]
f1a2017c			
_subpop_1	31	25.3683	-18.95438 80.95438
_subpop_2	3	.	.
_subpop_3	629	496.5546	-348.7983 1606.798
No	8	8	-7.753324 23.75332

```

. total f1a2018a1, over(e5b7)

Total estimation                               Number of obs   =       444

    _subpop_1: e5b7 = Yes, Season 1
    _subpop_2: e5b7 = Yes, Season 2
    _subpop_3: e5b7 = Yes, both
           No: e5b7 = No

```

Over	Total	Std. Err.	[95% Conf. Interval]	
f1a2018a1				
_subpop_1	279	28.64764	222.6978	335.3022
_subpop_2	0 (omitted)			
_subpop_3	320	300.004	-269.608	909.608
No	8	4.332347	-.5145064	16.51451

```

. total f1a2018c1, over(e5b7)

Total estimation                               Number of obs   =       140

    _subpop_1: e5b7 = Yes, Season 1
    _subpop_2: e5b7 = Yes, Season 2
    _subpop_3: e5b7 = Yes, both
           No: e5b7 = No

```

Over	Total	Std. Err.	[95% Conf. Interval]	
f1a2018c1				
_subpop_1	0 (omitted)			
_subpop_2	0 (omitted)			
_subpop_3	14	6.691076	.7705545	27.22945
No	0 (omitted)			

```
. total f1a2017a11, over(e5b8)
```

Total estimation

Number of obs

=

444

_subpop_1: e5b8 = Yes, Season 1

_subpop_2: e5b8 = Yes, Season 2

_subpop_3: e5b8 = Yes, both

No: e5b8 = No

Over	Total	Std. Err.	[95% Conf. Interval]	
f1a2017a11				
_subpop_1	270	23.91096	223.007	316.993
_subpop_2	0	(omitted)		
_subpop_3	319	300.0164	-270.6323	908.6323
No	284	272.7759	-252.0955	820.0955

```
. total f1a2017c11, over(e5b8)
```

Total estimation

Number of obs

=

141

_subpop_1: e5b8 = Yes, Season 1

_subpop_2: e5b8 = Yes, Season 2

_subpop_3: e5b8 = Yes, both

No: e5b8 = No

Over	Total	Std. Err.	[95% Conf. Interval]	
f1a2017c11				
_subpop_1	0	(omitted)		
_subpop_2	0	(omitted)		
_subpop_3	20	9.434496	1.347495	38.6525
No	0	(omitted)		

```
.
```

```
. mean mb17, over(mb10aa)
```

1: mb10aa = 1

Over	Mean	Std. Err.	[95% Conf. Interval]	
mb17				
1	10.95745	2.439643	6.046701	15.86819

```
. mean mb17, over(mb10ab)
```

Mean estimation Number of obs = 47

1: mb10ab = 1

Over	Mean	Std. Err.	[95% Conf. Interval]	
mb17				
1	8.851064	.6718736	7.498652	10.20348

```
. mean mb17, over(mb10ac)
```

Mean estimation Number of obs = 8

```
1: mb10ac = 1
```

Over	Mean	Std. Err.	[95% Conf. Interval]	
mb17 1	5.5	1	3.135376	7.864624

Note: md17 is the number of for attaining maturity weight.

mb10aa is broiler fed only self-hand mixed

mb10ab is boiler fed only locally purchased commercial feed

mb10ac is broilers fed only improved formulated feed

```
. mean mb12, over(mb10ba)
```

1: mb10ba = 1

```
. mean mb12, over(mb10bb)
```

```
1: mb10bb = 1
```

```
. mean mb12, over(mb10bc)
```

1: mb10bc = 1

Note: md12 is the number of eggs per hen per cycle
mb10ba is layer fed only self-hand mixed
mb10bb is layer fed only locally purchased commercial feed
mb10bc is layer fed only improved formulated feed