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Savelugu-Nanton Extension Delivery Improvement Project (SNEDIP): Leveraging Public-Private Partnerships to Bring District-level Institutional Innovation to Extension Services in Northern Ghana

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MEAS/USAID-Ghana Intervention

August 2015



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Technical editing by Austen Moore, Katy Heinz. Production by Katy Heinz.

This paper was produced as part of the United States Agency for International Development (USAID) project “Modernizing Extension and Advisory Services” (MEAS).

www.meas-extension.org

Leader with Associates Cooperative Agreement No. AID-OAA-L-10-00003.

*The report was made possible by the generous support of the American people through USAID.
The contents are the responsibility of the authors and do not necessarily reflect the views of USAID or the United States government.*

Acknowledgments

A series of fruitful partnerships made possible the Savelugu-Nanton Extension Delivery Improvement Project (SNEDIP). Firstly, the SNEDIP project team would like to thank the USAID-Ghana Mission for their continuous commitment to providing effective extensions services in Ghana through their ongoing partnership with the MEAS Project. Without the generous support of USAID, this important work could not have taken shape.

There are many individuals in Ghana who have been instrumental to SNEDIP's achievements. Sincere thanks go out to Savelugu/Nanton's Municipal Chief Executive Honorable Abdauli Alhassan Red, Municipal Coordinating Director Mr. Issaka Basintale, and Municipal Director of Agriculture Mr. Francis Neindow, for providing critical collaboration throughout all of SNEDIP's activities. The active engagement, guidance, and support that each of these key agricultural decision makers has continuously offered is a central reason that SNEDIP has been able to demonstrate a model for productive private-public partnerships in extension.

It is also because of the hard work of Savelugu-Nanton's entire Municipal Department of Agriculture team that SNEDIP was able to directly provide over 1,000 farmers with valuable agricultural training. Sincerest appreciation for the efforts of the department's 15 Agricultural Extension Agents and five supervising officers who dedicated themselves to improving the services they offer farmers and made SNEDIP their own initiative, as well as supporting staff for their role in enabling meetings and field work.

To the 30 Farmer-Based Organizations and their 1,067 member farmers who gave their time and commitment to the training they received through this project: may your harvests be plentiful and profitable for years to come.

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Acronyms

AAB	Agriculture as a Business
AEA	Agricultural Extension Agent
AGRA	Alliance for a Green Revolution in Africa
EWB	Engineers Without Borders Canada
FBOs	Farmer-based Organization
ICTs	Information and Communications Technology
M&E	Monitoring and Evaluation
MA	Municipal Assembly
MDA	Municipal Department of Agriculture
MEAS	Modernizing Extension and Advisory Services
MOFA	Ministry of Food and Agriculture
NGO	Non-Governmental Organization
SNEDIP	Savelugu-Nanton Extension Delivery Improvement Project
USAID	United States Agency for International Development
ZOI	Zone of Influence

Background and Justification

A resurgent interest in agriculture's role in poverty reduction and global development has triggered renewed attention to the function of agricultural extension and advisory services. As systems designed to facilitate access to the knowledge, information, and technologies needed for those involved in agriculture to be productive, extension has the potential to directly improve the livelihoods of disadvantaged rural people at a magnitude that few other facilities can (Christoplos, 2010). However, extension systems face considerable challenges in serving farmers and are tasked with realizing this potential in a way that is both impactful and cost-effective.

Agricultural extension in Ghana is undergoing transitions towards participatory approaches, market-driven extension models, decentralization, and pluralism (Amezah & Hesse, 2004). Recent agricultural extension policy has emphasized these shifts towards promoting a robust agricultural sector and improving the livelihoods of Ghanaian farmers (Ministry of Food and Agriculture [MOFA], 2007).

Efforts to strengthen rural livelihoods in Ghana have led to the promotion of participatory and market-driven extension models. Extension services have been expanded to include not only production but also other aspects of value chain development, including financial management, record-keeping, marketing, post-harvest loss prevention, and value addition (Swanson, Bentz, & Sofranko, 1997). One component of market-driven extension has been an emphasis on group formation (World Bank, 2012) to give farmers a competitive advantage in the marketplace.

The current extension system in Ghana is decidedly pluralistic, with a range of actors providing services to farmers. These actors include publically funded extension staff (e.g. MOFA, National Cocoa Board) mandated to serve farmers in their localities; non-governmental/non-profit organizations focus on achieving a range of social, economic and environmental objectives; and private sector companies such as input dealers and agro-processors seeking improvements in agri-product quantity and quality.

As the government shifts towards decentralization, decisions about public agricultural extension services have moved from the jurisdiction of the central Ministry of Food and Agriculture to the domain of district-level government authorities. This transfer has been lauded as a necessary step in creating a public extension system that is more responsive to local needs.

However, in 2012 USAID's centrally funded Modernizing Extension and Advisory Services (MEAS) project conducted a Rapid Scoping Mission of Ghana's extension system that found that significant challenges remain in operationalizing these transitions. Farmer-based organizations were often poorly coordinated, faced financial management challenges, and struggled with inadequate capacity in market-driven agriculture and high post-harvest losses (MEAS, 2012). At the same time, MOFA suffered from capacity deficiencies, logistical challenges, and funding constraints that affected the availability and quality of services it was able to provide to farmers. In particular, agricultural extension agents (AEAs) lacked the means to consistently interact with farmers but also had very low capacity in market-driven agriculture. Finally, district-level MOFA personnel faced new challenges in operating more autonomously and required higher ability to collaborate with district-level decision-makers and other extension actors in an increasingly decentralized and pluralistic system. This process is unfolding slowly and, at present, there is evidence of adverse effects on the availability of public resources to sustain the efforts of district-level

Departments of Agriculture to carry out their local agricultural development agendas. One of the primary challenges facing Ghana’s extension system remains how to enhance the efficiency of investments in extension to maximize their impact at the farm level.

Addressing these gaps required greater investment in developing the capacity of MOFA extension officers and strengthening the delivery of market-oriented extension training to farmer-based organizations (FBOs) in order for farmers to have the information and support required to improve their livelihoods, resiliency, and productivity. Therefore, the USAID-Ghana mission requested that the MEAS team undertake a series of activities aimed at strengthening extension service delivery in the Feed the Future Zone of Influence (ZOI) in northern Ghana.

Actors, Location, and Timeline

The Savelugu-Nanton Extension Delivery Improvement Project (SNEDIP) was created in response to the 2012 MEAS scoping mission and subsequent requests by USAID-Ghana to address identified gaps in extension service delivery. The project sought to investigate and demonstrate a model for effective district-level agricultural extension capable of leveraging existing resources to better serve farmers. SNEDIP was a nine-month pilot project under the MEAS project in Savelugu-Nanton municipality in Ghana’s Northern Region, within the Feed the Future ZOI.

Savelugu-Nanton Municipality is one of 26 administrative districts in Ghana’s Northern Region, is located directly north of the Northern Region’s capital city of Tamale, and has access to the region’s main paved highway corridor which reaches the Burkina Faso border (Ghana Districts, n.d.). The municipality is arid (600mm of rainfall annually), has one farming season (May to November), and staple crops cultivated include rice, maize, groundnuts, sorghum, yams, and cowpea. Over 43,000 of the municipality’s inhabitants are engaged in agricultural activities, making agriculture the primarily livelihood activity in Savelugu-Nanton.

Many extension service providers are active in Savelugu-Nanton. The public Department of Agriculture employs 15 Agricultural Extension Agents responsible for carrying out the municipality’s agricultural development program. In addition, many NGOs (e.g. Global Communities, Innovations for Poverty Action, International Institute of Tropical Agriculture) engage with farmer groups throughout the municipality on a variety of extension agendas. A number of private out-grower and credit lending schemes (e.g. Busaka AgriBusiness Centre, Masara N’Arziki) also provide services directly to farmers. However, extension services face several challenges in Savelugu-Nanton. These include public extension agents that are under-resourced and challenged to carry out field-level extension activities; lack of coordination among actors that produces service gaps and duplications; and ineffective use of resources. These factors undermine the quality and consistency of services available to farmers to improve their productivity and livelihoods. Similarities between Savelugu-Nanton municipality and those found throughout the rest of Ghana (MEAS, 2012, 2015) therefore made the municipality appropriate for this pilot project.

MEAS worked with Engineers Without Borders Canada (EWB) to implement the project at the field level due to EWB’s years of experience working embedded with district-level government in Savelugu-Nanton. Through EWB, the SNEDIP project partnered with the Municipal Department of Agriculture

(MDA) and the Municipal Assembly (MA) in Savelugu-Nanton. The SNEDIP pilot project was funded from October 2014 to June 2015.

Purpose and Objectives

The overarching purpose of SNEDIP was to strengthen farmer livelihoods, resiliency, and productivity in Savelugu-Nanton through targeted investment in the municipality's public extension services and institutional support to the local government. More specifically, the SNEDIP project increased farmers' access to quality extension services and developed farmers' capacity in market-driven agriculture, post-harvest loss prevention, and Information and Communications Technology (ICT)-based extension. Similarly, SNEDIP built the knowledge in and capacity of agricultural extension agents in market-oriented extension, post-harvest loss management, and ICT use in extension delivery. The project also improved coordination between MA and MDA representatives under a decentralized extension system. Finally, as a pilot project SNEDIP generated results, relevant lessons, and best practices that can be shared broadly but also allow scalability to other districts in the USAID Ghana Feed the Future ZOI.

The four overarching objectives of SNEDIP were:

- 1) Farmers and agriculturalists along the value chain receive improved extension services in order to improve resiliency, livelihoods, and productivity.
- 2) The capacity of actors within the district (and municipal) public extension system is strengthened in order to improve local agricultural extension service delivery.
- 3) Linkages and lines of communication between the Savelugu-Nanton MA and Savelugu-Nanton MDA are strengthened to better support decentralized agricultural extension processes.
- 4) Best practices and lessons learned in strengthening decentralized public extension services at the district (and municipal) level are documented, disseminated, and communicated widely to relevant stakeholders.

Activities and Approaches

The implementation of the SNEDIP project involved the following steps:

- 1) Coordinate Development Agendas and Identify Specific Priority Areas
- 2) Develop Curriculum in Priority Areas
- 3) Provide Capacity Building Training in Priority Areas to Extension Personnel
- 4) Facilitate the Delivery of Extension Services that Build the Capacity of FBOs in Priority Areas
- 5) Monitor Implementation and Evaluate Impact to Generate Lessons Learned and Best Practices for Scalability
- 6) Re-enforce Extension Service Coordination by Sharing Good Practices and Lessons Learned through SNEDIP with Decision-Makers in Extension

Step 1: Coordinate Development Agendas and Identify Specific Priority Areas

The goal of this activity was to determine specific priority areas through a participatory process and to strengthen interactions between the MDA and MA within a decentralized extension system.

First, in order to target relevant issues and address the real needs of the municipality, a thorough participatory process was facilitated by EWB to set the project's priority areas. EWB consulted with the Savelugu-Nanton Municipal Assembly and jointly identified elements built off of the MA's Strategic Development Plan that aligned with extension gaps found in the 2012 MEAS report. These areas were then vetted through consultation with the MDA, including multiple conversations with the MDA Director, to best incorporate the MDA's own Strategic Plan and findings from other MDA needs assessments. Stakeholders from EWB, the MDA, and the MA then met to finalize the overall objectives of the project.

As a result, project objectives not only aligned with the strategic plans of key decision-makers in extension but the process also strengthened decentralized extension by focusing on a participatory process between the Municipal Assembly and MDA. Reinforcing these institutional, district-/municipal-level systems through a participatory process was critical to strengthening the decentralization process and promoting positive and sustainable interaction and agenda setting for future extension programming.

After prioritization, the project engaged with the agricultural extension agents from the Savelugu-Nanton MDA to identify and prioritize specific programming interventions. Again through a participatory process, extension agents identified their own top capacity needs that best reflected the major needs of their client farmers. The three priority areas selected were:

- 1) Training to strengthen farmer-based organizations' capacity in agricultural business and marketing skills.
- 2) Farmer group training on effective post-harvest management practices.
- 3) Technical training in the use of ICTs to improve agricultural extension processes and outreach to farmers in Savelugu-Nanton.

Step 2: Develop Curriculum in Priority Areas

Specific curriculum was developed to build capacity in the three aforementioned priority training areas. However, rather than create new curricula for each training area, EWB, MEAS, and the Savelugu-Nanton MDA elected to modify an existing training tool called Agriculture as a Business (AAB), which is designed to build the skills of public agricultural extension agents to strengthen farmer-based organizations in market-oriented agriculture. The AAB tool, operationalized as facilitator cards with relevant pictures, local stories, and Ghanaian proverbs to explain concepts in locally-relevant terms, was developed by MOFA and EWB in the Northern and Upper Eastern Regions of Ghana through an extensive, multiyear process of working with farmer groups and extension agents beginning in 2006. The tool provides a strong, tested foundation for SNEDIP's farmer training activities.

In order to ensure that training targeted the co-defined priority areas, AAB was adapted throughout the project and expanded with the involvement of extension agents and subject matter specialists from

MOFA and MEAS. Two new cards were developed, one on managing post-harvest losses and one on farmer-citizen engagement through ICTs. Training on post-harvest loss management was independently developed by EWB while trainings on ICT usage in extension were created through the integration of existing MEAS training materials. The resulting SNEDIP training curriculum included 12 trainings on a range of topics but designed to be a comprehensive and holistic program that merged the three priority areas, building skills and knowledge at each step. The eventual curriculum included:

- Group formation and registration
- Election of leadership within farmers’ groups
- Managing membership within farmer’s groups
- Financial management within farmers’ groups
- Access to and usage of agricultural credit
- Business planning within farmers’ groups
- Identifying market opportunities
- Crop decision-making (when/what to plant)
- Creating linkages to markets
- Record-keeping
- Post- harvest loss management
- Farmer-citizen engagement

Step 3: Provide Capacity Building Training in Priority Areas to Extension Personnel

SNEDIP’s activities were intentionally designed with a capacity-building focus in mind. By prioritizing activities which build skills that farmers and AEAs can use to improve their long-term productivity, such as organizational skills, ICT literacy, and group support structures, SNEDIP demonstrated a commitment to creating changes which can be sustained past the project’s lifecycle. For instance, rather than simply offering isolated trainings, effort was made to actively reinforce and build forward upon each training so that farmers and AEAs developed the confidence to use new skills and knowledge independently.

Along these lines, trainings in AAB by the SNEDIP program built off of prior capacity-building exercises conducted with the Savelugu-Nanton MDA on the AAB curriculum. The EWB team worked through the AAB curriculum again with AEAs to reinforce past learning and address any gaps in understanding. Separate trainings that represented new information were conducted with AEAs in basic computer literacy (as part ICT skills training) and in triple-bagging methods (as part of post-harvest loss management training). Trainings occurred on a bi-weekly basis and cover one AAB card per session.

Because the SNEDIP project sought to foster participatory approaches in extension, SNEDIP explicitly encouraged peer-to-peer learning between AEAs to increase the sustainable adoption of training materials. MDA staff were trained as a team and EWB facilitated these participatory meetings so that extension agents supported each other in building critical skills and sharing knowledge on how to

creatively use the AAB tool to improve their FBO's capacities, both holistically and in the three targeted priority areas. By encouraging AEAs to share their skills, expertise, and work together to come up with creative ways to address farmers' needs, SNEDIP sought to promote a sustainable training model and demonstrate a financially viable means of improving the overall capacity of the public extension sector.

Step 4: Facilitate the Delivery of Extension Services that Build the Capacity of FBOs in Priority Areas

Among its findings, the 2012 MEAS scoping mission and subsequent field research found that district-level AEAs were significantly constrained in their ability to travel to the field and interact with farmers due to lack of fuel allowances. Efforts to improve extension officer capacity would not be effective unless this barrier was addressed. As a result, the SNEDIP project prioritized facilitating the delivery of improved extension services by providing nominal fuel allowances to AEAs.

Each AEA worked with two farmer-based organizations, allowing the project to directly support 30 FBOs and 1067 total farmers. The extension agents used the AAB tool to conduct 12 weekly extension visits to each FBO over the course of the SNEDIP timeframe, taking them through AAB's training curriculum. The focus of these trainings was to strengthen the groups' market-based agricultural knowledge and skills as they prepared for a new season.

The SNEDIP project also targeted indirect impacts within FBOs' communities to increase the impact of programming. Farmers who were not FBO members frequently attended AAB sessions and gained access to the information. Because SNEDIP deliberately promoted peer-to-peer learning, trainings utilized participatory teaching techniques that leveraged opportunities for farmers to communicate and learn from each other to benefit non-FBO members. Finally, the SNEDIP project created videos of the longer-term experiences of past FBOs who have participated in AAB as a means of using ICT and peer-to-peer testimony to influence adoption of AAB's extension messages among presently participating FBOs. Video viewing sessions which included this AAB testimony video and other videos chosen by the AEAs based on their groups' individual needs and the training priority areas were shown in each of the 30 involved communities to reach an even broader audience. Videos were shown using the MDA's existing mobile extension video unit, which was made available to the MDA by the Alliance for a Green Revolution in Africa (AGRA) and Trias Ghana.



Figure 1: AEAs and farmers discussing how to achieve effective agricultural extension in Savelugu-Nanton

Step 5: Monitor Implementation and Evaluate Impact to Generate Lessons Learned and Best Practices for Scalability

The SNEDIP project was intended as a pilot project with the express objective to determine best practices and lessons learned for scalability to other districts. As a result, EWB and MEAS developed and utilized a strong monitoring and evaluation plan to assess implementation and evaluate the impacts of

SNEDIP, along with specific tools to track progress towards indicators. Monitoring and evaluation was conducted through:

- 1) AEA baseline surveys
- 2) Farmer baseline surveys
- 3) Pre- and post-tests before and after trainings
- 4) AEA endline surveys
- 5) Farmer endline surveys
- 6) On-going qualitative feedback during bi-weekly AEA meetings and bi-weekly high level MDA meetings
- 7) Follow-up visits to participating FBOs by AEA supervisors to ascertain training quality
- 8) Weekly pre- and post FBO training session planning sheets completed by AEA supervisors and submitted to their supervisors.
- 9) On-going qualitative feedback during quarterly MA reporting meetings
- 10) Post-project interviews with MA staff, MDA personnel, and participating farmers

Monitoring was utilized to identify successes and failures in implementation but also to allow for in-stream modifications to programming. First, progress in building the capacity of AEAs was tracked through the use of pre- and post-tests at each training. These data allowed the SNEDIP project to determine how AEAs' knowledge, skills, attitude levels, along with intentions to adopt new techniques, changed as a result of training. AEAs also provided regular documentation of their weekly interactions with FBOs. Each AEA completed weekly pre- and post-FBO training session planning sheets and submitted these to their supervisors. These planning session sheets were assessed by EWB and emergent themes were incorporated into the agenda of the bi-weekly AEA peer-to-peer meetings facilitated by EWB. Ideas generated in these meetings were used to modify or adapt upcoming FBO trainings as needed. Submission of planning sheets was required for receipt of fuel allowances, which led to 100% compliance by AEAs. The information the sheets collected proved instrumental in determining how each AEA was progressing through the AAB training curriculum with the FBOs and to identify areas which required support. Finally, bi-weekly meetings with AEAs and MDA administrators, and quarterly meetings with MA representatives, provided qualitative context to other data.

Several methods were used for impact evaluation. First, EWB and MEAS created and utilized baseline instruments to gauge the knowledge, skills, and attitudes of both farmers and AEAs on the prioritized training areas. Data were collected prior to programming with AEAs and their corresponding FBOs. Following implementation of the full AAB curriculum, farmer and AEA endline data was collected to track changes resulting from the SNEDIP project. Additionally, qualitative interviews were conducted with participating farmers, MDA representatives (AEAs and administrators) involved in implementation, and MA staff involved in planning to provide context to the overall impact evaluation.

Step 6: Re-enforce Extension Service Coordination by Sharing Good Practices and Lessons Learned through SNEDIP with Decision-Makers in Extension

In order to enhance knowledge sharing and coordination, SNEDIP's Project Manager represented the project at Savelugu-Nanton's Agricultural Sector Coordinating Meeting in May to publicize the team's work and create support for extension coordinating activities. In the final month of the project, the SNEDIP team also hosted a cumulative stakeholders meeting at Savelugu-Nanton's MDA. The meeting created an important space for 83 farmers, representing the participating 30 FBOs who had been engaged in SNEDIP, to have a dialogue with the MDA, MA and development partner decision-makers about the direction and value of extension services in the municipality, building off of experiences within SNEDIP itself. At the international level, the Project Manager also represented the pilot at the 2015 *Strengthening Extension and Advisory Services for Lasting Impacts* symposium held by MEAS in Washington, DC in early June. Participation in this event allowed findings, lessons learned, and recommendations from SNEDIP to be shared with global extension professionals and stakeholders.

Measurable Outcomes and Targeted Outputs

The following sub-sections describe the outcomes, indicators, and targeted outline in SNEDIP’s monitoring and evaluation plan:

Objective 1: Farmers and Farmer-Based Organizations

Farmers and agriculturalists along the value chain received improved extension services in order to improve resiliency, livelihoods, and productivity.

Through strengthened extension services within the three priority areas, SNEDIP aimed to support improvements in farmer’s livelihoods, resiliency, and productivity.

Table 1

Objective 1				
Measurable Outcomes		Indicators	Targeted Outputs	Data Source
1) Improved extension services received	A) Increased farmer contact with MOFA extension services	Number of AEA visits to FBOs	360 visits by AEA to FBOs	AEA training session reports
		Number of farmers served by Savelugu-Nanton AEAs	986 farmers served through FBOs involved in SNEDIP	AEA training session reports
		Indirect impacts to non-participant farmers	2,000 non-participant farmers receive extension information through FBOs involved in SNEDIP	AEA training session reports; Farmer baseline-endline data
		Frequency of contacts (both face-to-face and through ICTs) by MOFA extension	50% increase in contacts, as reported by farmers	Farmer baseline-endline data
	B) Improved quality of extension services received by farmers from MOFA	Quality of extension services received by farmers from MOFA	20% increase in quality of services, as reported by farmers	Farmer baseline-endline data
2) Increased FBO functioning	A) Stronger functioning of executive and group processes	Progress on AAB benchmarks	20 (of 30) FBOs reach stage 4 (of 4) by the end of SNEDIP timeline	AEA training session reports
	B) Regularized FBO meetings	Frequency of FBO meetings	1 weekly meeting per FBO, as reported by AEAs	AEA training session reports

	C) Evidence of group market-based planning moving in to next season	Development of market-based business plan	20 (of 30) FBOs develop a market-based business plan by the end of SNEDIP timeline	AEA training session reports
3) Increased farmer capacity in market-oriented agriculture	A) Increased knowledge of the 10 original AAB topic areas	Knowledge levels of the 10 AAB topic areas	20% increase in knowledge, as reported by farmers	Farmer baseline-endline data
	B) Increased skill in the 10 original AAB topic areas	Skill levels in the 10 AAB topic areas	20% increase in skill, as reported by farmers	Farmer baseline-endline data
	C) Improved attitudes about the 10 original AAB topic areas	Attitudes about the 10 AAB topic areas	20% improvement in attitudes, as reported by farmers	Farmer baseline-endline data
	D) Increased intention to adopt newly-learned techniques in the 10 original AAB topic areas	Intention to adopt newly-learned techniques in the 10 AAB topic areas	20% increase in the intention to adopt newly-learned techniques, as reported by farmers	Farmer baseline-endline data
4) Improved post-harvest loss prevention	A) Increased knowledge of post-harvest loss prevention techniques	Knowledge levels of post-harvest loss prevention techniques	20% increase in knowledge, as reported by farmers	Farmer baseline-endline data
	B) Increased skills in post-harvest loss prevention techniques	Skill levels in post-harvest loss prevention techniques	20% increase in skill, as reported by farmers	Farmer baseline-endline data
	C) Improved attitudes about post-harvest loss prevention techniques	Attitudes about post-harvest loss prevention techniques	20% improvement in attitudes, as reported by farmers	Farmer baseline-endline data
	D) Increased intention to adopt newly-learned post-harvest loss prevention techniques	Intention to adopt newly-learned post-harvest loss prevention techniques	20% increase in the intention to adopt newly-learned techniques, as reported by farmers	Farmer baseline-endline data
(5) Increased agricultural yields and incomes	A) Anticipated increases in agricultural yields	Perceived benefits of knowledge and skill development	80% of farmers believe involvement in SNEDIP will increase agricultural yields	Farmer endline data
	B) Anticipated increases in agricultural incomes	Perceived benefits of knowledge and skill development	80% of farmers believe involvement in SNEDIP will increase agricultural incomes	Farmer endline data

Objective 2: Targeted Support to Public Extension Services

The capacity of actors within the district (and municipal) public extension services system was strengthened in order to improve local agricultural extension service delivery.

Public agricultural extension agents are well-positioned to facilitate support for farmer groups in their areas of operation. SNEDIP aimed to build AEAs' capacities in participatory extension approaches as well as within the three co-defined priority areas so that AEAs may be a more effective resource for farmers.

Table 2

Objective 2				
Measurable Outcomes		Indicators	Targeted Outputs	Data Source
Improved extension services provided	Increased MOFA extension contact with farmers	Number of AEA visits to FBOs	360 visits by AEAs to FBOs	AEA training session reports
		Number of farmers served by Savelugu-Nanton AEAs	986 farmers served through FBOs involved in SNEDIP	AEA training session reports
	Increased use of ICTs to improve access to relevant agricultural information	Frequency of ICT-based contacts by MOFA extension	20% increase in ICT-based contacts by MOFA extension, as reported by farmers	Farmer baseline-endline data
	Improved quality of extension services delivered by MOFA	Quality of extension services received by farmers from MOFA	20% increase in quality of services, as reported by farmers	Farmer baseline-endline data
Increased AEA capacity to facilitate market-oriented agriculture among FBOs	Increased knowledge of the 10 original AAB topic areas	Knowledge levels of the 10 AAB topic areas	20% increase in knowledge, as reported by AEAs	AEA baseline-endline data
	Increased skill in the 10 original AAB topic areas	Skill levels in the 10 AAB topic areas	20% increase in skill, as reported by AEAs	AEA baseline-endline data
	Improved attitudes about the 10 original AAB topic areas	Attitudes about the 10 AAB topic areas	20% improvement in attitudes, as reported by AEAs	AEA baseline-endline data
	Increased implementation of trainings using newly-learned techniques in the 10 original AAB topic areas	Implementation of trainings using newly-learned techniques in the 10 original AAB topic areas	80% of AEAs implement 10 (of 10) AAB trainings	AEA baseline-endline data; AEA training session reports
Improved teaching capacity in post-harvest	Increased knowledge of post-harvest loss prevention techniques	Knowledge levels of post-harvest loss prevention techniques	20% increase in knowledge, as reported by AEAs	AEA baseline-endline data
	Increased teaching skills in post-harvest loss prevention techniques	Skill levels in post-harvest loss prevention techniques	20% increase in skill, as reported by AEAs	AEA baseline-endline data

loss prevention	Improved attitudes about post-harvest loss prevention techniques	Attitudes about post-harvest loss prevention techniques	20% improvement in attitudes, as reported by AEAs	AEA baseline-endline data
	Increased implementation of trainings using newly-learned post-harvest loss prevention techniques	Implementation of trainings using newly-learned post-harvest loss management techniques	80% of AEAs implement post-harvest loss management training	AEA baseline-endline data; AEA training session reports
Improved capacity to utilize ICTs in extension	Increased knowledge of ICT usage in extension	Knowledge levels of ICT usage in extension	20% increase in knowledge, as reported by AEAs	AEA baseline-endline data
	Increased skills in ICT usage in extension	Skill levels in ICT usage in extension	20% increase in skills, as reported by AEAs	AEA baseline-endline data
	Improved attitudes about ICT usage in extension	Attitudes about ICT usage in extension	20% improvement in attitudes, as reported by AEAs	AEA baseline-endline data
	Increased usage of newly-learned ICT techniques	Implementation of trainings using newly-learned techniques in ICTs	20% increase in ICT use in extension, as reported by AEAs	AEA baseline-endline data; AEA training session reports
Improved knowledge sharing processes within the MDA extension staff team	Increased use of peer-to-peer knowledge sharing and peer support opportunities	Information from individual experiences and individual training is shared amongst MDA AEAs	100% of bi-weekly meetings involve peer-to-peer knowledge sharing	AEA training session reports

Objective 3: Strengthening Decentralization Process

Linkages and lines of communication between the Savelugu-Nanton MA and Savelugu-Nanton MDA were strengthened to better support decentralized agricultural extension processes.

The decentralization of governance in Ghana means that municipal and district assemblies are now directly responsible for budget oversight in their jurisdiction, including extension services. SNEDIP helped to sensitize MA decision makers about agricultural extension to strengthen the MA's understanding of the impact their resources can have on local farmers through stronger engagement in extension service delivery.

Table 3

Objective 3				
Measurable Outcomes		Indicators	Targeted Outputs	Data Source
Increased interactions between MA and MDA to support extension activities	Increased meetings between MA representatives and MDA administrators	Number of meetings between MA representatives and MDA administrators	1 monthly meeting	MA and MDA interviews; MDA reports
	Increased frequency of contact between MA representatives and MDA administrators	Frequency of contact between MA representatives and MDA administrators	20% increase in contacts	MA and MDA interviews; MDA reports
Increased understanding between MA and MDA of shared priorities	Increased understanding between MA and MDA of shared priorities	Agreement between MA representatives and MDA administrators on SNEDIP priority areas	Full agreement on priority areas	SNEDIP planning documents
Increased capacity of farmers to engage with the MA on agricultural issues	Increased knowledge of techniques to engage with the MA	Knowledge levels of techniques to engage with the MA	20% increase in knowledge, as reported by farmers	Farmer interviews
	Increased skills in techniques to engage with the MA	Skill levels in techniques to engage with the MA	20% increase in skills, as reported by farmers	Farmer interviews
	Improved attitudes about engagement with the MA	Attitudes about engagement with the MA	20% improvement in attitudes, as reported by farmers	Farmer interviews

Objective 4: Generating Best Practices and Lessons Learned

Best practices and lessons learned in strengthening decentralized public extension services at the district (and municipal) level were documented, disseminated, and communicated widely to relevant stakeholders.

Through documenting and sharing lessons learned generated from the pilot, SNEDIP aimed to build an understanding of the potential impact of adequate and targeted support to public extension and determine best practices for supporting public extension within a decentralized system.

Table 4

Objective 4				
Measurable Outcomes		Indicators	Targeted Outputs	Data Source
Monitoring and evaluation of knowledge, skill, and attitudinal changes among farmers	Quantitative data collection	Completion of farmer baseline and endline questionnaires	20% of farmers complete farmer baseline and endline questionnaires	Farmer baseline-endline data
	Qualitative data collection	Completion of farmer interviews	10% of farmers participate in farmer interviews	Farmer interviews
Monitoring and evaluation of knowledge, skill, and attitudinal changes among AEAs	Quantitative data collection	Completion of AEA baseline and endline interviews	80% of AEAs complete AEA baseline and endline questionnaires	AEA baseline-endline data
	Qualitative data collection	Completion of AEA interviews	50% of AEAs participate in AEA interviews	AEA interviews
Strengthened understanding of best practices in supporting public extension in a decentralized context	Analysis of SNEDIP data	Completion of written reports and documents	2 policy briefs, 3 success stories, 1 conference paper, and 1 updated sector review paper	SNEDIP reports; MEAS research documents
Increased number of multi-stakeholder spaces to learn about good practices in pluralistic extension	Presentation of research findings	Present resulting research at academic conferences	2 conference presentations	SNEDIP/MEAS reports
		Facilitate a knowledge sharing event with extension stakeholders	200 participants attend a knowledge sharing event	SNEDIP/MEAS reports

Results and Impacts

Objective 1: Farmers and Farmer-Based Organizations

Farmers and agriculturalists along the value chain received improved extension services in order to improve resiliency, livelihoods, and productivity.



Table 5

Objective 1			
Targeted Outcomes		Targeted Outputs	Actual Outputs
1) Improved extension services received	A) Increased farmer contact with MOFA extension services	360 FBO visits	384 FBO visits
		986 farmers directly served	1067 farmers directly served
		2000 farmers indirectly served	1898 farmers indirectly served
		50% increase in contacts	22% increase [see details below]
	B) Improved quality of extension services received by farmers from MOFA	20% increase in quality of services	6% increase [see details below]
2) Increased FBO functioning	A) Stronger functioning of executive and group processes	20 (of 30) FBOs reach AAB stage 4 (of 4)	30 (of 30) or 100% of FBOs reached AAB stage 4 (of 4)
	B) Regularized FBO meetings	1 weekly meeting per FBO	1 weekly meeting for 87% of FBOs
	C) Evidence of group market-based planning moving in to next season	20 (of 30) FBOs develop a market-based business plan	30 (of 30) or 100% of FBOs developed market-based business plan
3) Increased farmer capacity in market-oriented agriculture	A) Increased knowledge of the 10 original AAB topic areas	20% increase in knowledge	24% increase [see details below]
	B) Increased skill in the 10 original AAB topic areas	20% increase in skill	10% increase [see details below]
	C) Improved attitudes about the 10 original AAB topic areas	20% improvement in attitudes	data incomplete [see details below]
	D) Increased intention to adopt newly-learned techniques in the 10 original AAB topic areas	20% increase in the intention to adopt newly-learned techniques	55% increase [see details below]
4) Improved post-harvest loss prevention	A) Increased knowledge of post-harvest loss prevention techniques	20% increase in knowledge	11% increase [see details below]
	B) Increased skills in post-harvest loss prevention techniques	20% increase in skill	data incomplete [see details below]

	C) Improved attitudes about post-harvest loss prevention techniques	20% improvement in attitudes	data incomplete [see details below]
	D) Increased intention to adopt newly-learned post-harvest loss prevention techniques	20% increase in the intention to adopt newly-learned techniques	32% increase [see details below]
5) Increased agricultural yields and incomes	A) Anticipated increases in agricultural yields	80% of farmers believe involvement in SNEDIP will increase agricultural yields	99% [see details below]
	B) Anticipated increases in agricultural incomes	80% of farmers believe involvement in SNEDIP will increase agricultural incomes	98% [see details below]

Outcome 1A:

Contact between public extension providers and farmers significantly increased as a direct result of the SNEDIP project. Throughout its timeframe, the 15 AEAs trained under SNEDIP conducted 384 visits to FBOs and directly served 1,067 farmers. These total exceeded anticipated targets of 360 and 986, as two AEAs elected to train an additional FBO group each (without receiving additional resources) based on demand for AAB training in their communities of operation. Indirect contacts were difficult to determine, but were estimated at 1,898 based on attendance at video sessions plus non-members of FBOs who attended FBO trainings. Additional indirect contacts, such as FBO members training not FBO-members, were not included in this total. Frequency of trainings also increased overall (see Figure 1). When broken down by contact method, those methods targeted by the SNEDIP project (face-to-face interactions, group trainings, telephone calls and text messages, and mobile extension visits) all showed increases in frequency (see Table 6).

Figure 1

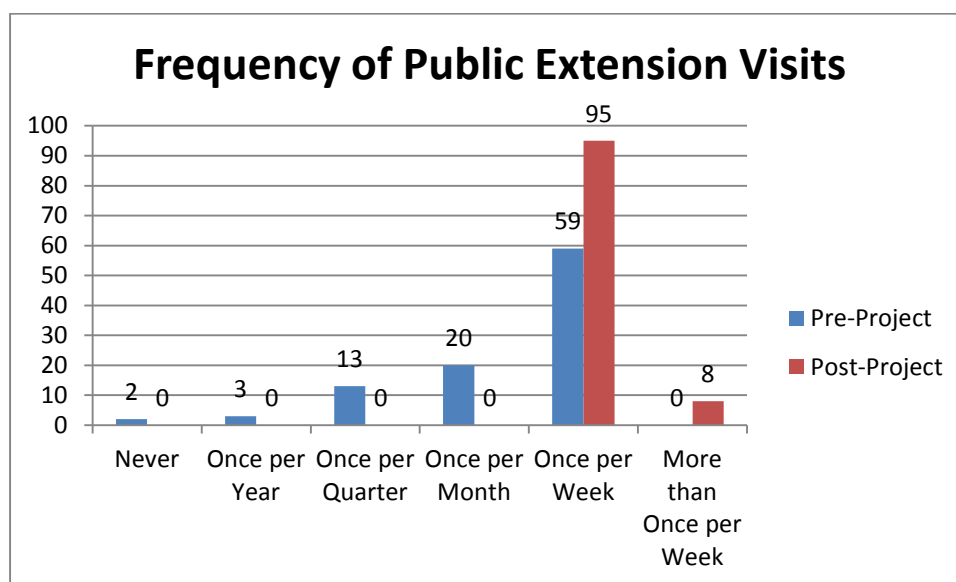


Table 6

Methods by which Farmers Contacted:	Pre-Project	Post-Project	Percent Change
Individual interactions with extension officers	63%	100%	+ 37%
Group trainings & workshops	92%	100%	+ 8%
Print materials	11%	11%	+ 0%
Telephone calls to farmers	8%	26%	+ 18%
Emails to farmers	0%	0%	+ 0%
Text messages to farmers	2%	6%	+ 4%
Farmer marketing platforms (e.g. Esoko)	3%	3%	+ 0%
Farm radio programs	56%	60%	+ 4%
Mobile extension unit visits	4%	100%	+ 96%

Outcome 1B:

Quality of extension services also showed considerable improvement as a result of SNEDIP. As rated on a scale of 1 to 5 (where 1 is Very Low and 5 is Very High), farmers' opinions of MOFA extension quality, which was already reported as High/Very at the beginning of the project, improved by 6%, while perceptions of donor- and NGO-led extension remained constant at High and private sector extension remained constant at Neither Low nor High (see Table 7). Farmers' perceptions of extension-farmer contact methods utilized by SNEDIP (face-to-face interactions, group trainings, and mobile extension visits) also increased during the course of the project, suggesting that farmer participants received better quality services through these methods than they originally expected (see Figure 8).

Table 7

Perceived Quality of Extension Services Received (by provider type):	Pre-Project	Post-Project	Percent Change
Ministry of Food and Agriculture	4.49	4.78	+ 6%
Donor- and NGO-Led Projects	3.92	3.90	- 1%
Private Sector Agricultural Companies	2.82	2.74	- 3%

Table 8

Perceived Usefulness of Farmer Contact Methods:	Pre-Project	Post-Project	Percent Change
Individual interactions with extension officers	2.70	3.93	+ 46%
Group trainings & workshops	2.97	3.69	+ 24%
Print materials	1.84	1.86	+ 1%
Telephone calls to farmers	2.06	2.11	+ 3%
Emails to farmers	1.42	1.41	- 1%
Text messages to farmers	1.62	1.67	+ 3%
Farmer marketing platforms (e.g. Esoko)	1.72	1.81	+ 5%
Farm radio programs	2.72	2.75	+ 1%
Mobile extension unit visits	2.29	3.42	+ 49%

Outcome 2A-2C:

While 100% of SNEDIP FBOs reached Stage 4 of the AAB program and completed a business marketing strategy, 13% of FBOs did not receive the full complement of trainings. Two AEAs failed to reach their FBOs due to adverse circumstances (e.g. AEA motorcycle breakdown, poor road passage, conflicting community events, weather conditions). However, overall attendance (out of 1,067 total farmers) in SNEDIP trainings remained very high (see Table 9).

Table 9

Agricultural Marketing/FBO Development Trainings Received:	Percent of Farmers Trained	Number of Farmers Trained
Group Formation and Registration	66%	699
Election of leadership within FBO	65%	689
Managing membership within FBO	83%	890

Financial management within FBO	87%	929
Access and usage of agricultural credit	87%	929
Business planning	91%	967
Identifying Market opportunities	91%	976
Crop decision making	91%	976
Creating linkages to markets	91%	976
Record-keeping	91%	967
Evaluation of success/areas to improve	71%	754

Post-Harvest Loss Management Trainings Received:	Percent of Farmers Trained	Number of Farmers Trained
General Post-Harvest Loss Management	91%	976

Outcomes 3A-3D and 4A-4D:

Increases in knowledge, skill, and intention to adopt new techniques resulted from farmers' involvement in the SNEDIP project. Overall knowledge increased by 23% (see Figure 2), skills improved by 10% (see Figure 3), and intention to adopt increased by 46% (see Table 12 and Figure 4).

Attitudes on training areas were determined post-project, not calculated as pre-post differences. Instead, the importance/benefit of different training categories were rated by farmers on a scale of 1 to 5 (where 1 is Very Low and 5 is Very High). See Table 13 for details.

Table 10

Agricultural Marketing/FBO Development Knowledge Increases:	Pre-Project	Post-Project	Percent Change
Group Formation and Registration	3.53	4.19	+ 19%
Election of leadership within FBO	3.68	4.31	+ 17%
Managing membership within FBO	3.57	4.33	+ 21%
Financial management within FBO	3.10	4.29	+ 39%
Access and usage of agricultural credit	3.25	4.17	+ 29%
Business planning	3.46	4.17	+ 20%
Identifying market opportunities	3.74	4.19	+ 12%
Crop decision making	3.59	4.30	+ 20%
Creating linkages to markets	3.03	4.26	+ 41%
Record-keeping	3.58	4.26	+ 19%

Evaluation of success/areas to improve	[no data]	4.25	[no data]
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Post-Harvest Loss Management Knowledge Increases:	Pre-Project	Post-Project	Percent Change
General Post-Harvest Loss Management	3.79	4.22	+ 11%

AVERAGE	+ 23%
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Figure 2

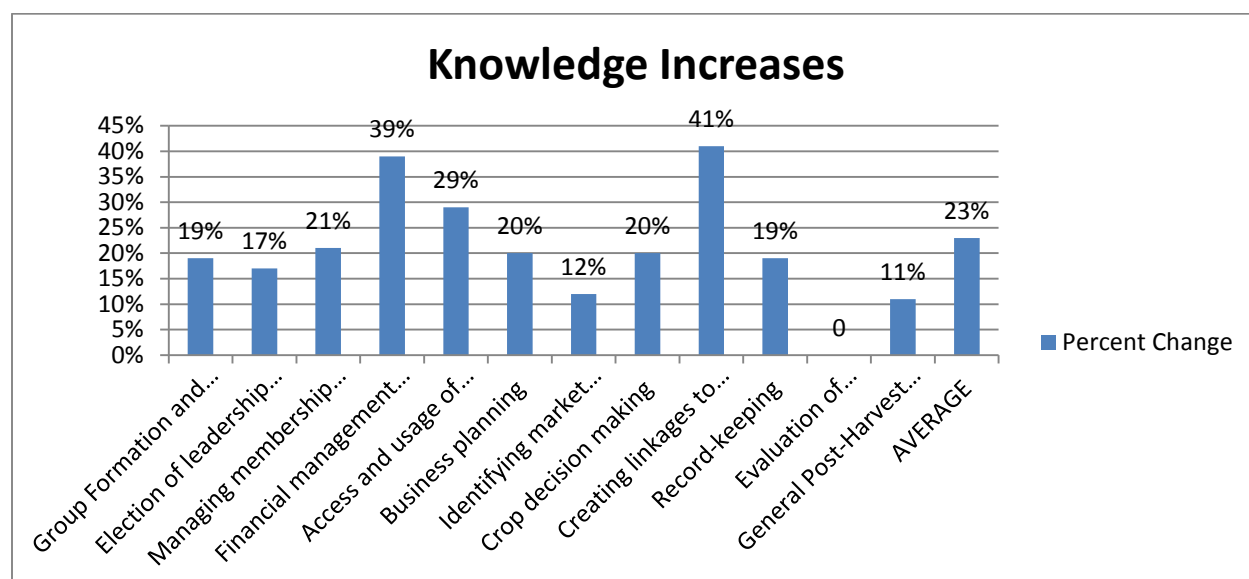


Table 11

Agricultural Marketing/FBO Development Skill Increases:	Pre-Project	Post-Project	Percent Change
Group Formation and Registration	3.92	4.32	+ 10%
Election of leadership within FBO	4.27	4.35	+ 2%
Managing membership within FBO	4.25	4.41	+ 4%
Financial management within FBO	4.20	4.33	+ 3%
Access and usage of agricultural credit	3.47	4.31	+ 24%
Business planning	3.88	4.34	+ 12%
Identifying market opportunities	3.80	4.33	+ 14%
Crop decision making	4.13	4.31	+ 4%

Creating linkages to markets	3.67	4.21	+ 15%
Record-keeping	3.68	4.24	+ 15%
Evaluation of success/areas to improve	3.87	4.23	+ 9%

Post-Harvest Loss Management Skill Increases:	Pre-Project	Post-Project	Percent Change
General Post-Harvest Loss Management	3.86	[no data]	[no data]

AVERAGE	+ 10%
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Figure 3

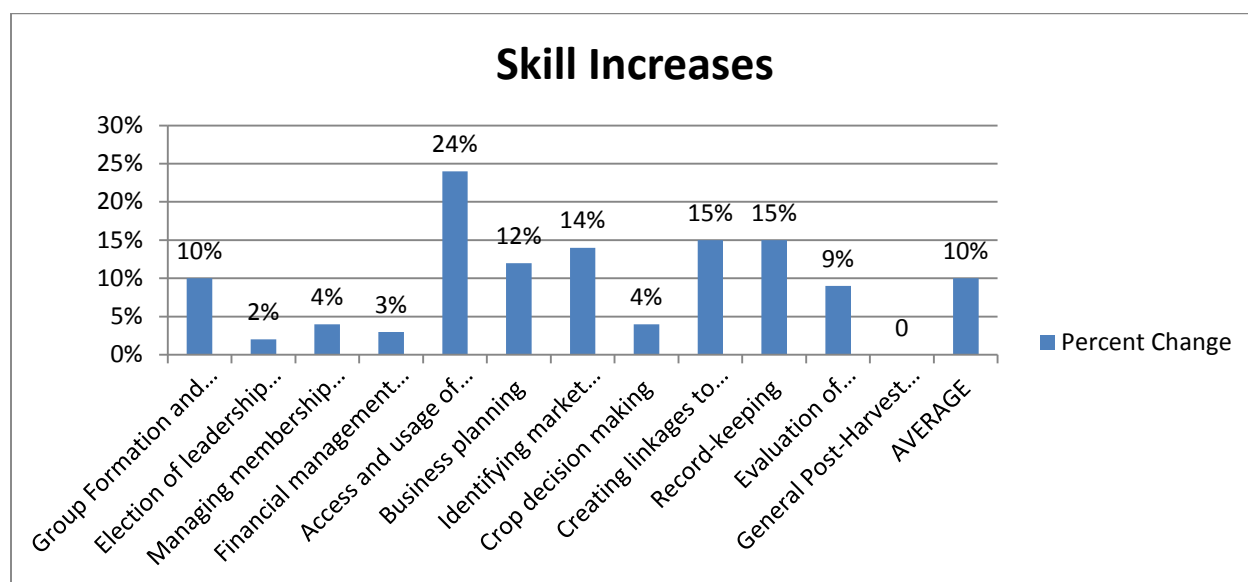


Table 12

Agricultural Marketing/FBO Development Skill Adoption:	Pre-Project	Post-Project	Percent Change
Group Formation and Registration	52%	100%	+ 48%
Election of leadership within FBO	51%	100%	+ 49%
Managing membership within FBO	39%	100%	+ 61%
Financial management within FBO	30%	100%	+ 70%
Access and usage of agricultural credit	22%	59%	+ 37%
Business planning	25%	76%	+ 51%
Identifying market opportunities	50%	94%	+ 44%

Crop decision making	45%	100%	+ 55%
Creating linkages to markets	31%	81%	+ 50%
Record-keeping	32%	100%	+ 68%
Evaluation of success/areas to improve	22%	89%	+ 67%

Post-Harvest Loss Management Skill Adoption:	Pre-Project	Post-Project	Percent Change
Storage techniques	20%	100%	80%
Storage structure construction	31%	80%	49%
Drying	81%	96%	15%
Chemical processing	37%	44%	18%
Triple bagging	19%	25%	6%
Heat treatments	1%	23%	22%

AVERAGE	+ 46%
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Figure 4

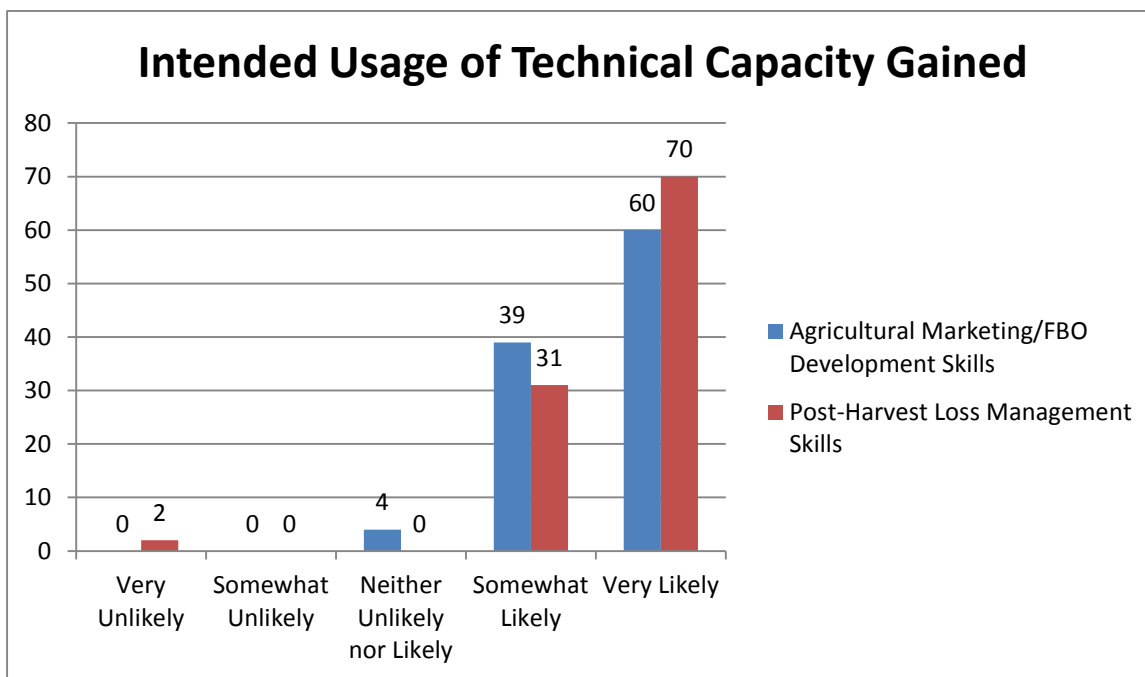


Table 13

Agricultural Marketing/FBO Development Skill Importance:	Level
Group Formation and Registration	4.01
Election of leadership within FBO	4.06
Managing membership within FBO	4.07
Financial management within FBO	4.23
Access and usage of agricultural credit	4.15
Business planning	4.33
Identifying market opportunities	4.28
Crop decision making	4.51
Creating linkages to markets	4.32
Record-keeping	4.28
Evaluation of success/areas to improve	4.26
AVERAGE	4.23

Post-Harvest Loss Management Skill Importance:	Level
General Post-Harvest Loss Management	4.58

Outcome 5A-5B:

Finally, farmers were extremely confident that participation in the SNEDIP program would have positive impacts on both agricultural production/yield and incomes from agriculture. Nearly all believe the training received would increase yield (99%) and incomes (98%). When rating the importance of the trainings, responses were consistently either Somewhat High or Very High (see Figures 5 and 6).

Figure 5

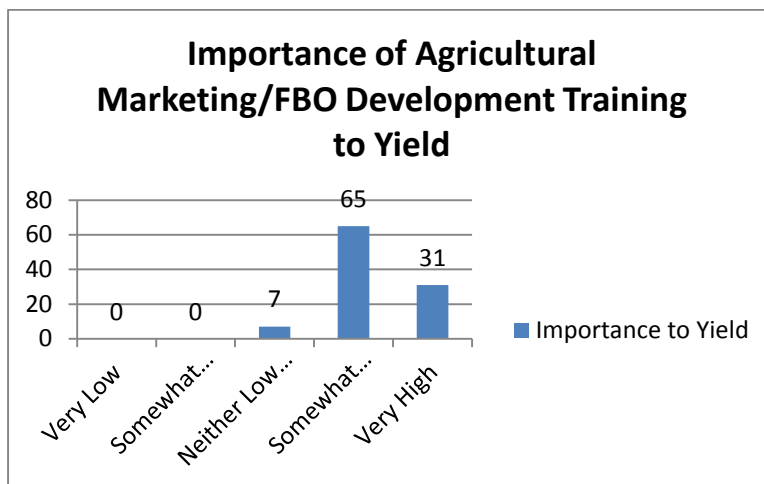
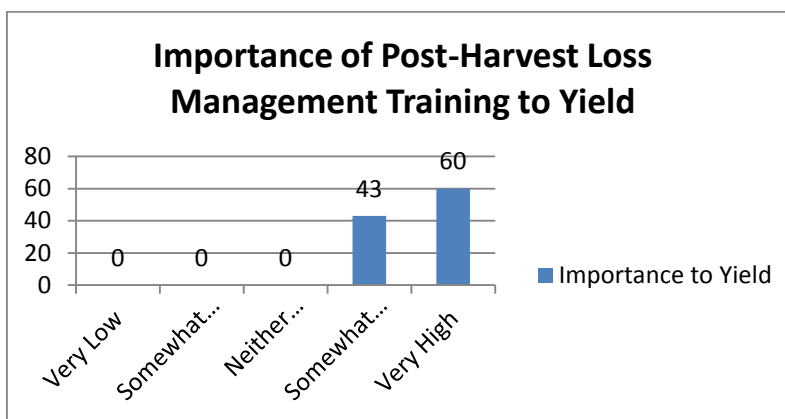


Figure 6



Objective 2: Targeted Support to Public Extension Services

The capacity of actors within the district (and municipal) public extension services system was strengthened in order to improve local agricultural extension service delivery.

Table 14

Objective 2			
	Measured Outcomes	Targeted Outputs	Actual Outputs
1) Improved extension services provided	A) Increased MOFA extension contact with farmers	360 FBO visits	384 FBO visits
		986 farmers directly served	1067 farmers directly served
	B) Increased use of ICTs to improve access to relevant agricultural information	20% increase in ICT-based contacts	34% increase [see details below]
	C) Improved quality of extension services delivered by MOFA	20% increase in quality of services	6% increase [see details below]
2) Increased AEA capacity to facilitate market-oriented agriculture among FBOs	A) Increased knowledge of the 10 original AAB topic areas	20% increase in knowledge	18% increase [see details below]
	B) Increased skill in the 10 original AAB topic areas	20% increase in skill	18% increase [see details below]
	C) Improved attitudes about the 10 original AAB topic areas	20% improvement in attitudes	18% increase [see details below]
	D) Increased implementation of trainings using newly-learned techniques in the 10 original AAB topic areas	80% of AEAs implement 10 (of 10) AAB trainings	87% implemented all AAB trainings [see details below]
3) Improved teaching capacity in post-harvest loss prevention	A) Increased knowledge of post-harvest loss prevention techniques	20% increase in knowledge	9% increase [see details below]
	B) Increased teaching skills in post-harvest loss prevention techniques	20% increase in skill	9% increase [see details below]
	C) Improved attitudes about post-harvest loss prevention techniques	20% improvement in attitudes	9% increase [see details below]
	D) Increased implementation of trainings using newly-learned post-harvest loss prevention techniques	80% of AEAs implement post-harvest loss management training	100% implemented training [see details below]
4) Improved capacity to utilize ICTs in extension	A) Increased knowledge of ICT usage in extension	20% increase in knowledge	31% increase [see details below]
	B) Increased skills in ICT usage in extension	20% increase in skills	31% increase [see details below]
	C) Improved attitudes about ICT usage in extension	20% improvement in attitudes	22% increase [see details below]
	D) Increased usage of newly-learned ICT techniques	20% increase in ICT use in extension	34% increase [see details below]
5) Improved knowledge sharing processes within the MDA extension staff team	A) Increased use of peer-to-peer knowledge sharing and peer support opportunities	100% of bi-weekly meetings involve peer-to-peer knowledge sharing	100% involved peer-to-peer knowledge sharing

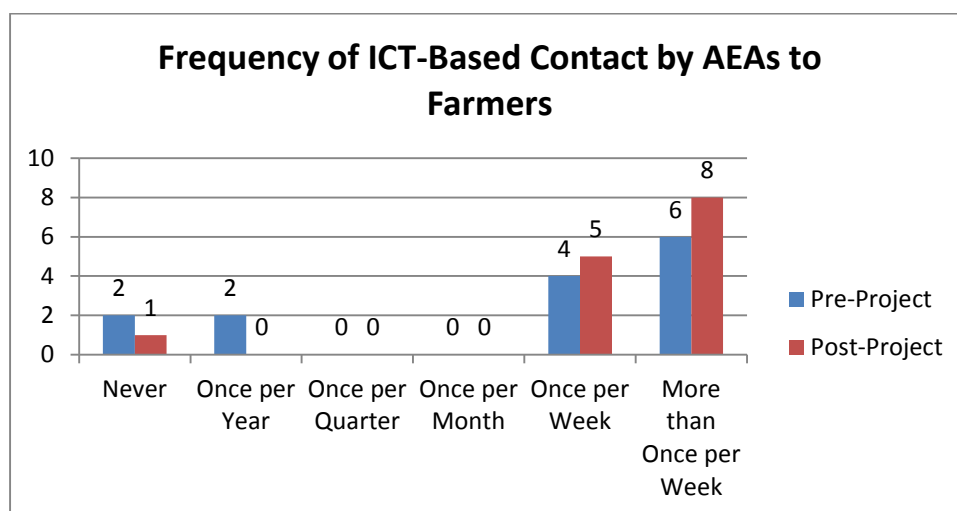
Outcome 1A-1C:

The numbers shown in Outcome 1A and 1C are described in detail under Objective 1 above. However, Outcome 1B also showed significant increases in the use of ICTs by SNEDIP AEAs to teach farmers (see Table 15). Prior to and throughout SNEDIP, the AEAs used mobile phones to interact with farmers. However, other ICT-based methods of contacting farmers increased considerably as capacities in their usage increased. The SNEDIP project also implemented the use of a mobile extension unit, which created another avenue for reaching farmers with extension messaging. Frequency of ICT-based farmer contacts also increased (see Figure 7).

Table 15

ICT Usage in Extension:	Pre-Project	Post-Project	Percent Change
Telephone calls to farmers	100%	100%	+ 0%
Emails to farmers	0%	64%	+ 64%
Text messages to farmers	47%	100%	+ 53%
Farmer marketing platforms (e.g. Esoko)	0%	0%	+ 0%
Farm radio programs	20%	21%	+ 1%
Mobile extension unit visits	13%	100%	+ 87%
AVERAGE			+ 34%

Figure 7



Outcomes 2A-2D, 3A-3D, and 4A-4D:

As a result of the SNEDIP project, participating AEAs were trained in (a) agricultural marketing (largely related to FBO development), (b) post-harvest loss management, and (c) ICT usage in extension. AEAs were asked if they had ever received trainings on these topics to show changes due to the project (see Table 16 and Figures 8 and 9). Significant changes resulted in two areas where AEAs lacked any prior training (+60% and +53% respectively). No change was seen in post-harvest loss management, as AEAs had already received some training in this area.

AEA trainings led to increases in knowledge, skills, attitudes, and utilization of new knowledge/skills developed to train farmers across the three broad topic areas of SNEDIP. Knowledge and skill were combined to form a single indicator “capacity”, which AEAs rated on a scale of 1 to 5 (where 1 is Very Low and 5 is Very High) across all topic areas. Overall capacities increased by 18%, although the capacity in the various topic areas ranged considerably (see Table 17). The majority of topic areas showed high capacity increases due to SNEDIP training provided to AEAs. Highest gains were seen in AEAs’ business planning and market linkage development areas, key to promoting farmers’ value chain participation, and in ICT usage in teaching farmers. Prior, pre-SNEDIP training in record-keeping led to minimal capacity gains in that area.

Attitude changes on training areas showed AEAs’ level of confidence teaching farmers the topics in which they were training through SNEDIP (see Table 18). These levels were again rated on a scale of 1 to 5 (where 1 is Very Low and 5 is Very High). Confidence in teaching these topic areas closely mirrored capacity increase seen above due to SNEDIP training provided to AEAs. Again, AEAs gained the most confidence in teaching business planning and market linkage development areas, and in using ICTs to teach farmers.

Finally, AEAs were expected to utilize the capacities developed through SNEDIP with FBOs during the project cycle by conducting corresponding trainings. As discussed in Objective 1 above, 13% of AEAs did not complete the full complement of agricultural marketing/FBO development training due to adverse circumstances. However, post-harvest management training was conducted by all AEAs and use of ICT-based extension increased by 34%, as seen in Outcome 1B.

Table 16. AEAs that received training on specific topics

	Pre-Project		Post-Project		Percent Change
	Yes	No	Yes	No	
Agricultural Marketing	33%	67%	93%	7%	+ 60%
Post-Harvest Loss Management	100%	0%	100%	0%	+ 0%
ICT Usage in Extension	40%	60%	93%	7%	+ 53%

Figure 8

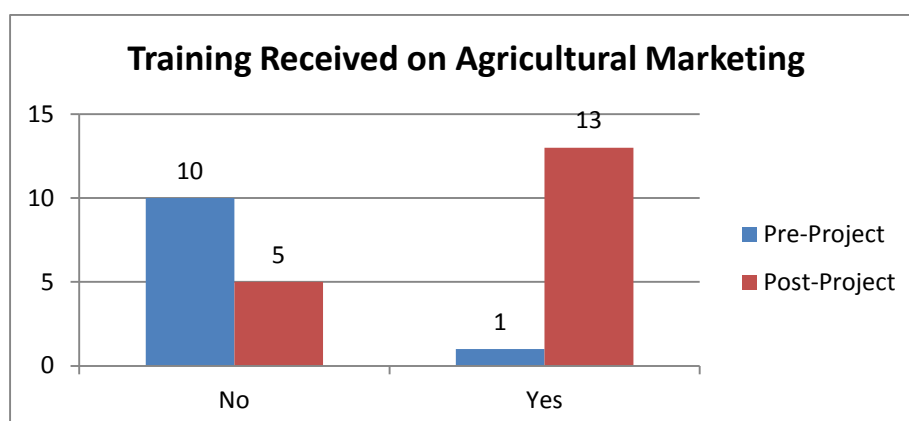


Figure 9

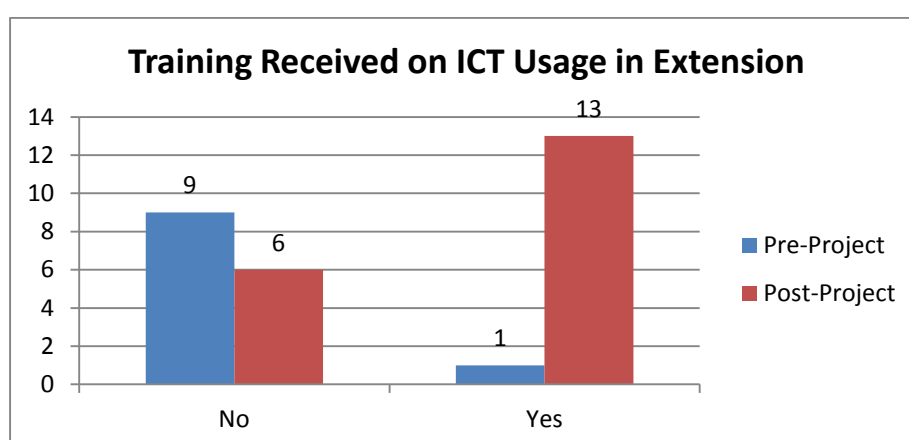


Table 17

Agricultural Marketing/FBO Development Capacity Increases:	Pre-Project	Post-Project	Percent Change
a) Group formation and registration	4.07	4.43	+ 9%
b) Election of leadership within farmers' groups	3.93	4.36	+ 11%
c) Managing membership within farmer's groups	3.93	4.29	+ 9%
d) Financial management within farmers' groups	3.60	4.36	+ 21%
e) Access to and usage of agricultural credit	3.20	4.07	+ 27%
f) Business planning within farmers' groups	3.07	4.21	+ 37%
g) Identifying market opportunities	3.27	4.29	+ 31%
h) Crop decision-making (when/what to plant)	4.00	4.43	+ 11%
i) Creating linkages to markets	3.60	4.14	+ 15%
j) Record-keeping	4.13	4.29	+ 4%

k) Evaluation of successes/areas for improvement	3.60	4.29	+ 19%
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Post-Harvest Loss Management Capacity Increases:	Pre-Project	Post-Project	Percent Change
Post-Harvest Loss Prevention Techniques	4.07	4.43	+ 9%

ICT Usage in Extension Capacity Increases:	Pre-Project	Post-Project	Percent Change
ICT Usage in Teaching Farmers	2.67	3.50	+ 31%

Table 18

Agricultural Marketing/FBO Development Attitude Increases:	Pre-Project	Post-Project	Percent Change
a) Group formation and registration	4.00	4.36	+ 9%
b) Election of leadership within farmers' groups	3.77	4.29	+ 14%
c) Managing membership within farmer's groups	3.83	4.21	+ 10%
d) Financial management within farmers' groups	3.50	4.29	+ 22%
e) Access to and usage of agricultural credit	3.42	3.86	+ 13%
f) Business planning within farmers' groups	3.00	4.36	+ 45%
g) Identifying market opportunities	3.25	4.07	+ 25%
h) Crop decision-making (when/what to plant)	3.83	4.36	+ 14%
i) Creating linkages to markets	3.33	3.93	+ 18%
j) Record-keeping	4.17	4.36	+ 5%
k) Evaluation of successes/areas for improvement	3.75	4.43	+ 18%

Post-Harvest Loss Management Attitude Increases:	Pre-Project	Post-Project	Percent Change
Post-Harvest Loss Prevention Techniques	4.07	4.43	+ 9%

ICT Usage in Extension Attitude Increases:	Pre-Project	Post-Project	Percent Change
ICT Usage in Teaching Farmers	2.80	3.43	+ 22%

Outcome 5A:

As discussed, SNEDIP prioritized knowledge-sharing among AEAs as a training strategy. SNEDIP planning documents show that all trainings (100%) involved deliberate peer-to-peer knowledge-sharing, which met the pre-project target.

Objective 3: Strengthening Decentralization Process

Linkages and lines of communication between the Savelugu-Nanton MA and Savelugu-Nanton MDA were strengthened to better support decentralized agricultural extension processes.

Table 19

Objective 3			
	Measured Outcomes	Targeted Outputs	Actual Outputs
1) Increased interactions between MA and MDA to support extension activities	A) Increased meetings between MA representatives and MDA administrators	1 monthly meeting	2 monthly meetings
	B) Increased frequency of contact between MA representatives and MDA administrators	20% increase in contacts	100% increase [see details below]
2) Increased understanding between MA and MDA of shared priorities	A) Increased understanding between MA and MDA of shared priorities	Full agreement on priority areas	Full agreement on priority areas
3) Increased capacity of farmers to engage with the MA on agricultural issues	A) Increased knowledge of techniques to engage with the MA	20% increase in knowledge	data incomplete [see details below]
	B) Increased skills in techniques to engage with the MA	20% increase in skills	data incomplete [see details below]
	C) Improved attitudes about engagement with the MA	20% improvement in attitudes	data incomplete [see details below]

Outcomes 1A-1B:

The SNEDIP project was successful in increasing interaction between the MA and the MDA, specifically related to extension activities. The MDA Director held bi-weekly meetings with the MA Director to provide updates on SNEDIP and other extension activities, doubling the previous quantity and frequency of meetings between the two bodies. In addition, the Municipal Coordinating Director was actively engaged in the SNEDIP process, which contributed to an improved understanding of the Municipal Assembly's role in supporting extension and recognition that extension contributed to the achievement of four objectives within the Savelugu-Nanton 2014-2017 Medium Term Plan of Action.

Outcome 2A:

SNEDIP also succeeded in garnering increased understanding of extension-related priorities between the MDA and MA. This was determined through the creation of a Memorandum of Understanding signed between MA, MDA, and EWB/MEAS on SNEDIP training priorities and shared roles. Increased

understanding was verified through bi-weekly meetings and the cumulative stakeholder meeting where both parties demonstrated strong alignment on priorities and vision for extension in Savelugu-Nanton.

Outcome 3A-3C:

Due to challenges, pre-project data was not collected on the AAB farmer-citizen engagement training. This made it impossible to determine quantifiable changes in knowledge, skills, and attitudes. However, qualitative evidence gathered from interviews and observational data suggest farmer-citizen engagement has been learned and applied. For example, FBO members attending the cumulative stakeholder workshop lobbied the MA for additional extension support to cover AEAs' logistical/transportation expenses. Other instances are anticipated but as yet undocumented.

Objective 4: Generating Best Practices and Lessons Learned

Best practices and lessons learned in strengthening decentralized public extension services at the district (and municipal) level were documented, disseminated, and communicated widely to relevant stakeholders.

Table 20

Objective 4			
Measurable Outcomes		Targeted Outputs	Actual Outputs
1) Monitoring and evaluation of knowledge, skill, and attitudinal changes among farmers	A) Quantitative data collection	20% of farmers complete farmer baseline and endline questionnaires	10% completed endline surveys [see details below]
	B) Qualitative data collection	10% of farmers participate in farmer interviews	2% participated in farmer interviews [see details below]
2) Monitoring and evaluation of knowledge, skill, and attitudinal changes among AEAs	A) Quantitative data collection	80% of AEAs complete AEA baseline and endline questionnaires	87% completed endline surveys [see details below]
	B) Qualitative data collection	50% of AEAs participate in AEA interviews	87% participated in AEA interviews [see details below]
3) Strengthened understanding of best practices in supporting public extension in a decentralized context	A) Analysis of SNEDIP data	2 program briefs, 3 success stories, 1 project report, and 1 updated sector review paper	2 program briefs, 3 success stories, 1 project report, and 1 updated sector review paper [see details below]
4) Increased number of multi-stakeholder spaces to learn about good practices in pluralistic extension	A) Presentation of research findings	2 conference presentations	2 conference presentations made [see details below]
		100 participants attend a knowledge sharing event	157 participants attending event [see details below]

Outcome 1A-1B:

Data collection targets for SNEDIP came up short of intended targets. Completion of farmer endline surveys was approximately 10% (102 of 1067 farmers) and qualitative interviews were conducted with 2% (20 of 1067) of participating farmers.

Outcome 2A-2B:

Data collection rates for AEAs were considerably higher. Approximately 87% of AEAs (13 of 15) completed both endline surveys and participated in post-project interviews.

Outcome 3A:

Document production targets for SNEDIP were met, which included the production of two program briefs, three success stories (see Appendix IV), one project report (this document), and an updated sector review paper.

Outcome 4A:

To date, two conference presentations have been made, at the 2015 MEAS Symposium and at the Savelugu-Nanton Agricultural Coordinating Forum. Further conference presentations are anticipated as research and project documents are completed. Furthermore, the SNEDIP project held its cumulative stakeholder event, which served as a knowledge-sharing forum, in June 2015. The event included 157 participants, exceeding the pre-project target.

Conclusion

By June 2015, the SNEDIP pilot project achieved impact on four levels. At the farmer level, the 30 participating farmer-based organizations, representing over 1,000 farmers, received increased quantity and quality of extension services through a comprehensive 12-stage process that enhanced their ability to practice market-oriented agriculture and improved post-harvest loss prevention techniques to strengthen their livelihoods, resiliency, and productivity. SNEDIP also strengthened group processes within participating FBOs which enabled each group to act effectively on extension messages delivered through the project and to be better engaged in articulated services needs and demands over the long term. As a result, SNEDIP succeeded in improving the functioning of farmer-based organizations and positively impacted farmers' agricultural production and livelihoods through improved extension.

At the level of extension services, the SNEDIP project led to more effective Agricultural Extension Agents. All 15 of the AEAs within Savelugu-Nanton municipality improved their knowledge and tools to work with farmers in the areas of market-oriented agriculture and post-harvest loss management, and developed increased capacity to use ICTs for agricultural extension and development. Their ability to offer participatory and demand-driven extension also increased.

Attendance, participation, and motivation were also high due to involvement in SNEDIP. AEAs considered attending SNEDIP training meetings a priority activity, and demonstrated strong engagement through active dialogue and willingness to share updates from the field and provide project feedback. "SNEDIP training has helped us to improve as an extension team, and that will definitely allow us to

provide better services to farmers”, shared one AEA. Providing fuel and motorcycle maintenance allowances increased AEA’s motivation and enabled all participating AEAs to regularly visit and train their FBOs. “Participating in SNEDIP has re-energized me about my job providing extension to farmers. Having the resources to get to the field and good training materials to share with my farmers has made me feel very useful and has helped me to see how much potential there is in farmer groups if they are well supported,” explained one AEA.

At the district extension system level, the SNEDIP project led to a stronger agricultural extension system in Savelugu-Nanton. In total, 1,067 farmers received increased quantity and quality of extension services, and the Savelugu-Nanton MDA showed increased institutional capacity to deliver better extension services throughout the municipality over the longer term. SNEDIP also led to better collaboration between representatives of the Municipal Assembly and the Municipal Department of Agriculture that can increase the emphasis placed on extension and ultimately the impact made by extension programming.

Finally, at the national, regional, and global levels there is an increased understanding of how to support public extension within a decentralized context through the sharing of best practices and lessons learned, utilizing the SNEDIP case as an example. Results of the project can be crucial for strengthening public extension and advancing agricultural development within Ghana’s decentralized governance structure but also in other similar contexts worldwide.

More significantly, SNEDIP demonstrated an innovative model for district-level extension strengthening that promotes effective services, builds human and institutional capacities, promotes long-term collaboration, generates local support for extension in a decentralized context, and is a cost-effective approach which can readily be scaled. SNEDIP has demonstrated that, through capacity building efforts and strategic operational support, development actors (such as NGOs) can leverage the impact of existing district-level public extension resources to provide farmers better access to quality extension.

Recommendations

The experiences of SNEDIP have generated a several high-level recommendations resulting from successes and oversights which occurred during planning and implementation that may provide guidance for scaling the model in other districts and regions:

A) Formalize Partnership Arrangements Effectively and Early On

It was important that due process was followed to establish the terms of partnership under SNEDIP. In preparation for SNEDIP, MEAS and EWB proactively approached the Director of the Municipal Department of Agriculture and the Municipal Assembly to begin exploring partnership opportunities and to understand the current status of agricultural extension. These preliminary relationship-building efforts helped all three actors move effectively into a partnership once the project had formally been established.

Under decentralization and with increased autonomy at the district level, it is critical for external actors who want to engage with these public institutions to learn and support these decentralization processes in order to strengthen them but also to establish the proper foundation for an engagement like SNEDIP.

The MA appreciated that SNEDIP brought forward and asked for input in the development of formal Memorandum of Understanding and Terms of Reference documents which clearly communicated the responsibilities of each stakeholder and could be used to hold each partner accountable. During SNEDIP, the MA and MDA expressed that many development partners do not formally establish an understanding of their activities with farmer groups which are under municipal jurisdiction or create official MOUs with local institutions. However, SNEDIP showed that proactively pursuing and formalizing partnerships can enforce greater trust and coordination when working with public sector actors.

B) Emphasize Participatory Program Development

Participatory program development and implementation were central to SNEDIP. The project undertook a committed effort to allow for local needs to determine the program’s priority training activities by consulting with stakeholders, accessing and reviewing municipal work plans and documents relevant to extension, and facilitating input meetings. Extension agents in particular responded positively to having a meaningful opportunity to set the program’s agenda and training focus. However, future iterations of this model might better engage farmers to participate in the training prioritization process directly, as during SNEDIP AEAs were relied upon to represent the interest of their farmers.

Participatory processes should occur not only during the planning phase of the project but also throughout its implementation. SNEDIP endeavored to create a variety of spaces for project participants to continuously shape the project’s activities by emphasizing facilitation and feedback opportunities. This information was actively integrated into AEA and FBO training curricula, which allowed SNEDIP to better serve each FBO with information to their unique needs. Similar engagements must include space to generate and incorporate input from participants and other stakeholders.

C) Allow for Program Responsiveness As New Information Emerges

A dual challenge facing extension programs is that they should be imbedded in sound, evidence-based logic models while allowing for adaptation based on real-time information about where needs exist in the agricultural system. An assumption which was made in SNEDIP’s initial logic model was that, if the Municipal Assembly was better sensitized to the value of extension services in local economic development, more resources would be allocated to increasing the effectiveness of public extension. However, investigation found decision makers were aware of the importance of extension but were constrained by pressures to allocate very limited operational resources to more “visible” activities and programs. Consequently, SNEDIP shifted its focus to demonstrating a cost-effective model for operationalizing public extension units through strategic partnership.

Similarly, midway through the project’s farmer training sessions it became evident that illiteracy posed a greater challenge to the adoption of key training messages, such as the importance of keeping accurate records to increase profitability, than the AAB training materials were able to address. The AEAs named providing better strategies for helping illiterate groups track their farming activities as the “unofficial fourth training priority” of the project. These circumstances demonstrate the importance of creating mechanisms whereby a training program can sufficiently respond to unforeseen needs, whether directly or through additional partnership, rather than leaving them unmet.

D) Use Appropriate, Participatory-Developed, Well-Tested Training Materials

The effectiveness of SNEDIP’s training sessions hinged on the design, content, and delivery of appropriate training materials. Consulting AEAs actively throughout the training development process, as was done during the creation of AAB, was critical to maximizing the utility of training materials and creating effective extension messages that conveyed training information in locally meaningful ways. FBOs responded well to AAB’s use of pictures, local stories, and Ghanaian proverbs to make clearer more complex topics like business analysis and post-harvest management, and the eventual use of AAB played a critical role in successful knowledge and skill development and the adoption of new techniques by both AEAs and farmers. The process for curriculum design used in SNEDIP can easily be adapted to maintain this local-level relevance when used in other regions.

E) Create Intentional Spaces for Peer-to-Peer Learning and Support

One of the most significant constraints to effective public extension services in Ghana is a lack of consistent in-service training. This was also one of the primary frustrations voiced by Savelugu-Nanton’s extension team. A cost-effective, and often overlooked, in-service training opportunity exists when AEAs are given the chance to leverage the relevant knowledge of their peers to improve their own practices. By emphasizing the value of peer-to-peer support systems, SNEDIP sought to encourage knowledge-sharing of and group problem-solving within both the AEA team and participating FBOs to increase each group’s self-reliance and perceived value. AEAs also encouraged their FBO member farmers to share their knowledge during meetings as well as emphasized messages about how FBOs could work together to overcome resource constraints and challenges. Peer-to-peer learning has proven to be an effective and low-cost method for reinforcing and building individual capacity and for farmers themselves to overcome challenges, and is encouraged in any future iterations of the SNEDIP model.

F) Understand and Utilize Incentives for Farmer Behavior Change

Incentive structures play an important role in which extension interventions will lead to message uptake and subsequent behavior change. As such, SNEDIP pursued several informal and cost-effective incentive strategies. Distribution of formal Certificates of Completion to FBOs provided incentives for groups to progress in their work together and often served as evidence that the group was credit-worthy by financial institutions. SNEDIP also produced a local-language (Dagbani) testimonial video from groups who had received AAB training in 2012 and were seeing longer-term success from their efforts to stimulate peer-to-peer encouragement. This video was shown to communities using a mobile ICT van. SNEDIP also formally photographed and displayed a profile of each participating FBO at the MDA office during the project’s cumulative stakeholder’s event, which instilled a sense of pride and encouraged groups to continue together. Finally, the presence of the Municipal Director of Agriculture at occasional FBO trainings strongly influenced the perception of SNEDIP’s importance and incentivized farmers’ adoption of extension training messaging. In order to increase adoption and behavior change, future initiatives should actively seek to understand and utilize similar local incentives for agricultural innovation adoption.

G) Time Training to Align with Seasonal Activities

Extension trainings are most effective and relevant when they align with the agricultural growing cycle. Consideration for timing within Savelugu-Nanton’s agricultural calendar helped SNEDIP to reach FBOs effectively with relevant extension messages. SNEDIP trainings were largely conducted during the agricultural “off-season” when farmers were more available to meet with extension agents. As a result, AEAs felt farmers were more responsive to SNEDIP extension messages as they were beginning to think about this new season but were not yet busy conducting field activities.

Similarly, extension messages much be relevant to current farming activities to increase the likeliness of adoption. Post-harvest loss management was defined as a training priority for SNEDIP during a month when farmers were actively harvesting their crops but at the time of training harvesting had already concluded. As such, it is important for any project seeking to provide capacity building to farmers to understand the local farming calendar and prioritize training activities accordingly.

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Appendix I

Characteristics of SNEDIP Participants

Characteristics of Savelugu-Nanton MDA Involvement in SNEDIP		
Agricultural Extension Agents	15 (15 men, 0 women)	There are no female AEAs at Savelugu-Nanton's MDA
Deputy District Officers (responsible for AEA operations supervision)	4 (3 men, 1 woman)	Representing 100% of Savelugu-Nanton MDA DDOs
MDA Operational Zones	6 (Savelugu, Nanton, Pong Tamale, Diare, Tampion, Moglaa)	Representing 100% of Savelugu-Nanton's Operational Zones
Communities	30	Each participating FBO is in a different community within the MDA's operational zones

Characteristics of Farmer-Based Organizations/Communities Involvement in SNEDIP		
Farmer-Based Organizations	30	Each AEA works with 2 FBOs
Farmers Receiving Training Through FBOs	986 farmers (540 men, 446 women)	Majority of groups are mixed-gender, with only a few mono-gender
Farmers Indirectly Affected by FBO Trainings	2,000	Data will be available following final evaluation
Farmers with Basic English Literacy	66	Range of 0-8 per group; Average of 2 members per group
Farmers Able to Speak English	68	
FBOs' Focal Area(s)	Processing: 22 FBOs (73%) Processing: 11 FBOs (37%) Marketing: 3 FBOs (10%)	
FBOs' Primary Commodities	Maize, rice, soybeans, shea nut	

Appendix II. Example of Agriculture As a Business Facilitator’s Card

<p style="text-align: center;">Local Citizen Engagement Story</p> <p>Women and Orphans Movement (WOM) successful Advocacy Campaign in the Nabdram District</p> <p>The Women and Orphans Movement (WOM) is active in mobilizing women and empowering them to participate in agriculture and commercial activities in the Nabdram District, Upper East Region. WOM was able to procure tractor equipment and processing equipment to promote women’s agricultural productivity. Despite this, members of WOM still faced daunting challenges of accessing start-up capital for their economic activities and were having a lot of difficulty accessing decent markets to ply their trade.</p> <p>To overcome their challenges, members in Sakote and Daporefindong communities carried out many fruitless advocacy visits to the Assembly. They tried several times to demand for loans to start up their agro-businesses and called on the District Assembly to build market stalls at the Sakote to improve their marketing opportunities. WOM made these demand through the District Gender Desk Officer and women opinion leaders, but they weren’t seeing results. In other words, the Assembly failed to heed to their demands.</p> <p>Despite the numerous failed advocacy visits to the Assembly, the WOM pressed ahead. They decided to organize a clean-up campaign at the premises of the Nabdram District Assembly in Nangode. This campaign was organized without informing the Assembly, but soon turned out to be a successful unconventional advocacy campaign. The DCE and staff of the Nabdram District Assembly noticed that a group of women were unexpectedly cleaning the grounds. They were surprised by this and decided to come out to meet the women. It was at this point that the women caught the attention of the DCE. They told him about why they had come to the Assembly and clearly explained their needs to him. He was impressed by their commitment to their cause and willingness to continuously engage with the Assembly on this matter. He decided to provide them with funds for refreshment and subsequently met their demand and constructed market stalls in the Sakote market. As a result, the women group institutionalized the market clean-up campaign in the area and have a good rapport with the Assembly.</p> <p><i>Lesson: Even though it might take some time and a few different approaches, having clear demands and being willing to build a good relationship with the local Assembly can be very fruitful.</i></p>	<p style="text-align: center;">Farmer-Citizen Engagement</p> <p>Desired Output of Meeting: The group learns about the role of their local (District or Municipal) Assembly in decisions about agric in their area and their role in the process.</p> <p>Desired Outcome of Meeting: The group applies this knowledge to create a strategy to engage with the Assembly so that their demands become known.</p> <p>Step One: Ask the group to reflect on the last meeting and discuss what the group learned.</p> <p style="text-align: center;">AEA Tip: Encourage 5 different members to mention at least one point.</p> <p>Step Two: Ask the group, “What is the meaning of the pictures? Who has power in these pictures?”</p> <p><i>Answer: The pictures are of different meetings where groups and individuals are trying to influence someone who holds decision-making power. Power is about the ability to influence others to achieve a desirable objective. Citizens have “power within”, which when properly harnessed translates to “power with”, which draws on individual strengths to produce a huge power base called “collective power”.</i></p> <p>Step Three: Read the story on the back of this card. Ask the group, “Who are the important actors in this story? How did they influence decision makers to act?”</p> <p>Step Four: Say to the group, “Imagine you have the opportunity to speak directly to the Municipal Chief Executive or his representative on an agricultural issue that affects your group’s productivity. You want to have a unified message that is very strong that he will understand clearly and act on. What is the single most important problem your group faces that you will present to him?”</p> <p><i>AEA Tip: Facilitate a discussion for the group to identify the priority issue/challenges they want the MCE to know about. Help them to understand that they will be more effective in advocating for what they want if they choose one or two very clear messages instead of trying to address everything all at once.</i></p> <p>Step Five: Ask your group “Why is it important that farmer groups should seek opportunities to discuss issues with local government (Assemblies)?”</p> <p><i>Answer: Public officers have a lot of competing demands and scarce resources to implement programs. As such, it is important that we as farmers continue to interact with the MA to know what programs are in place and understand how we can access them. We also have an</i></p>
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Phase 1 Pre-harvest Techniques	Phase 2 Good Harvest Practices	Phase 3 Pack house Activities	Phase 4 Place of Storage	Phase 5 Packing and storage	Phase 6 Record Keeping
11. Post-Harvest Loss Management					
<p>Desired Output of Meeting: The group assesses the quality of practices, techniques and storage options available to ensure effective planning of the season and post-harvest management arrangement.</p> <p>Desired Outcome of Meeting: The group recognizes that good post-harvest management practices start at the beginning of the season and plan to execute activities throughout the season which will allow for the storage of quality crops with less loss, food security and better prices.</p>					
<p>Step One: Ask the group to reflect on the last meeting and discuss what the group learned.</p> <p style="text-align: center;">AEA Tip: Encourage 5 different members to mention at least one relevant point.</p>					
<p>Step Two: Ask the group, “What is the meaning of the pictures?”</p> <p><i>Answer: Images in red indicate need for improvement in crop decisions. Images in green indicate acceptable crop quality at harvest.</i></p>					
<p>Step Three: Read the story on the back of this card. Ask the group, “What are the benefits of planning how to store crops before planting starts?”</p> <p><i>Answer: High quality crops which are stored well attracts prices which are profitable. Poor quality crops stored using the best storage facility will not maintain or improve during shelf-life. Maintaining or improvement of crop quality starts from seed selection, well prepared land, good planting time and planting distance, proper harvesting time, processing, storage place selection and packing to ensure food security and good price.</i></p>					
<p>Step Four: Ask the group members to list different techniques which can be used before and during the storage to improve crop quality related to the crop they have chosen for their group project (example – if they are growing maize, focus on maize). Ask them to rate each technique’s effectiveness. Which options have proven effective in their experience? Which techniques have resulted in losses?</p> <p style="text-align: center;">AEA Tip: The purpose of this question is to encourage the group to analyse different options available to them and determine the strengths and weaknesses of techniques before and during use (ex. cost, effectiveness, ease of access, etc.)</p>					
<p>Step Five: Ask the group, “During this season, how will you maintain the quality of your crop from planting to storage?”</p> <p>Encourage the group to talk about how they will handle the crop before, during and after harvest, including which storage option they will use.</p>					

Step Six: Schedule the next Extension Visit to see the group's progress in implementing their plan. Celebrate a successful meeting!

11. Post-Harvest Loss Management

The Effect of Seed Selection in Post-Harvest Loss Management

A farmer group in the Tolon district grow soya beans and at harvest about 20% of the produce was lost due to shattering. This continued for a number of years. The farmers decided they wanted to try to reduce this loss so some decided to harvest earlier because they thought this would reduce shattering. Others in the group also decided not to dry the beans to the recommended safe moisture content because the quantity of beans kept diminishing as they were drying based on the fact that the beans contained more moisture than dry matter. As a result, these beans which were harvested early and not dried properly darkened in storage like the third image below. Economically, farmers lost because their products did not gain the needed market nor the required market price as they had hoped for.



The above scenario continued for some time until they learnt from a farmer school that there was a variety of soya bean with lower shattering ability and the farmers decided to change to the recommended variety. Below is the result of the new variety with shattering effects of less than 5%.



Lessons from the story: The variety planted influences the techniques required while the crops are on the field, affects the crop's physical characteristics such as how much bulk they lose when dried, determines the crop's shelf and storage life and affects nutrition and value.

Appendix III. Farmer Baseline Instrument

Agricultural Status

1) How would you describe your current agricultural production levels relative to other farmers in your community?

Far Below Average Below Average Average Above Average Far Above Average

2) How would you describe your current income from agriculture relative to other farmers in your community? (circle one)

Far Below Average Below Average Average Above Average Far Above Average

3) Are you a member of a farmer-based organization (FBO)? (circle one)

Yes No

If yes, how long have you been a member of the FBO? (circle one)

Less than 1 Month Between 1 Month & 6 Months Between 7 Months & 1 Year Between 1 Year & 3 Years Longer than 3 Years

4) What is your role in the FBO? (circle one)

Chairperson Vice-Chairperson Secretary Treasurer Organizer Member

5) How important is participation in a FBO to your agricultural production levels? (circle one)

Very Low Somewhat Low Neither Low nor High Somewhat High Very High

6) How important is participation in a FBO to your income from agriculture? (circle one)

Very Low Somewhat Low Neither Low nor High Somewhat High Very High

Exposure to Extension Providers and Information Sources

1) How frequently do you receive extension services from the following organizations? (check one box for each)

	Never	Once per Year	Once per Quarter	Once per Month	Once per Week	More than Once per Week
Ministry of Food and Agriculture						
Non-Governmental Organizations						
Private agricultural companies						

2) What NGO agricultural projects are currently active in your community?

3) What private sector agricultural projects are currently active in your community?

4) How would you describe the overall quality of extension services from the following organizations? (check one box for each)

	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
Ministry of Food and Agriculture					
Non-Governmental Organizations					
Private agricultural companies					

5) In what ways do you receive agricultural extension information? (circle all that apply)

Individual interactions with extension officers

Group trainings & workshops

Print materials

Telephone calls

Emails

Text messages

Farmer marketing platforms (e.g.

Farm radio programs

Mobile extension unit visits

Other

Esoko)

If other, briefly list the ways you receive agricultural extension information:

6) How useful are the following ways of spreading agricultural extension information? (check one box for each)

	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
Individual interactions with extension officers					
Group trainings & workshops					
Print materials					
Telephone calls					
Emails					
Text messages					
Farmer marketing platforms (e.g. Esoko)					
Farm radio programs					
Mobile extension unit visits					
Other					

Knowledge, Skills, Attitudes, and Behaviors

Agricultural Marketing and Extension:

1) Have you ever received training on agricultural marketing? (circle one)

Yes No

If yes, briefly list the trainings you have received:

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2) How would you describe your overall awareness of agricultural marketing techniques? (circle one)

Very Low Somewhat Low Neither Low nor High Somewhat High Very High

3) How would you describe your knowledge on the following topics? (check one box for each)

<u>Farmers' Group Governance:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
l) Group formation and registration					
m) Election of leadership within farmers' groups					
n) Managing membership within farmer's groups					
o) Financial management within farmers' groups					
p) Access to and usage of agricultural credit					

<u>Group Marketing Strategies and Planning:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
q) Business planning within farmers' groups					
r) Identifying market opportunities					
s) Crop decision-making (when/what to plant)					
t) Creating linkages to markets					

<u>Monitoring and Evaluation:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
u) Record-keeping					

v) Evaluation of successes/areas for improvement					
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4) How would you describe your ability to do the following things? (check one box)

<u>Farmers' Group Governance:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
a) Group formation and registration					
b) Election of leadership within farmers' groups					
c) Managing membership within farmer's groups					
d) Financial management within farmers' groups					
e) Access to and usage of agricultural credit					

<u>Group Marketing Strategies and Planning:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
f) Business planning within farmers' groups					
g) Identifying market opportunities					
h) Crop decision-making (when/what to plant)					
i) Creating linkages to markets					

<u>Monitoring and Evaluation:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
j) Record-keeping					
k) Evaluation of successes/areas for improvement					

5) What agricultural marketing techniques have you personally used? (circle all that apply)

Group formation and Election of leadership Managing membership Financial management Access to and usage of Business planning

registration	within farmers' groups	within farmer's groups	within farmers' groups	agricultural credit	within farmers' groups
Identifying market opportunities	Crop decision-making (when/what to plant)	Creating linkages to markets	Record-keeping	Evaluation of successes/areas for improvement	Other

If other, briefly list the techniques you have used:

6) How important/beneficial are the following skills to your agricultural production levels? (check one box)

<u>Farmers' Group Governance:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
a) Group formation and registration					
b) Election of leadership within farmers' groups					
c) Managing membership within farmer's groups					
d) Financial management within farmers' groups					
e) Access to and usage of agricultural credit					

<u>Group Marketing Strategies and Planning:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
f) Business planning within farmers' groups					
g) Identifying market opportunities					
h) Crop decision-making (when/what to plant)					

i) Creating linkages to markets					
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<u>Monitoring and Evaluation:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
j) Record-keeping					
k) Evaluation of successes/areas for improvement					

7) How important/beneficial are the following skills to your income from agriculture? (check one box)

<u>Farmers' Group Governance:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
a) Group formation and registration					
b) Election of leadership within farmers' groups					
c) Managing membership within farmer's groups					
d) Financial management within farmers' groups					
e) Access to and usage of agricultural credit					

<u>Group Marketing Strategies and Planning:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
f) Business planning within farmers' groups					
g) Identifying market opportunities					
h) Crop decision-making (when/what to plant)					
i) Creating linkages to markets					

<u>Monitoring and Evaluation:</u>	Very Low	Somewhat Low	Neither High nor	Somewhat High	Very High

			Low		
j) Record-keeping					
k) Evaluation of successes/areas for improvement					

8) How likely are you to use the following skills after you learn them? (check one box)

<u>Farmers' Group Governance:</u>	Very Unlikely	Somewhat Unlikely	Neither Likely nor Unlikely	Somewhat Likely	Very Likely
a) Group formation and registration					
b) Election of leadership within farmers' groups					
c) Managing membership within farmer's groups					
d) Financial management within farmers' groups					
e) Access to and usage of agricultural credit					

<u>Group Marketing Strategies and Planning:</u>	Very Unlikely	Somewhat Unlikely	Neither Likely nor Unlikely	Somewhat Likely	Very Likely
f) Business planning within farmers' groups					
g) Identifying market opportunities					
h) Crop decision-making (when/what to plant)					
i) Creating linkages to markets					

<u>Monitoring and Evaluation:</u>	Very Unlikely	Somewhat Unlikely	Neither Likely nor Unlikely	Somewhat Likely	Very Likely
j) Record-keeping					
k) Evaluation of successes/areas for improvement					

Post-Harvest Loss and Extension:

1) Have you ever received training on preventing post-harvest losses? (circle one)

Yes No

If yes, briefly list the trainings you have received:

2) How would you describe your awareness of techniques to prevent post-harvest loss? (circle one)

Very Low Somewhat Low Neither Low nor High Somewhat High Very High

3) How would you describe your ability to use techniques to prevent post-harvest loss? (circle one)

Very Low Somewhat Low Neither Low nor High Somewhat High Very High

4) What post-harvest techniques have you personally used? (circle all that apply)

Storage techniques Storage structure construction Drying Chemical processing Triple bagging Heat treatments Other

If other, briefly list the techniques you have used:

5) How important/beneficial are post-harvest techniques to your agricultural production levels?
(check one box)

Very Low Somewhat Low Neither Low nor High Somewhat High Very High

6) How important/beneficial are post-harvest techniques to your income from agriculture? (check one box)

Very Low Somewhat Low Neither Low nor High Somewhat High Very High

7) How likely are you to use post-harvest techniques after you learn them? (circle one)

Very Unlikely Somewhat Unlikely Neither Likely nor Unlikely Somewhat Likely Very Likely

Personal Information

Name: _____

Community: _____

AEA: _____

Appendix IV. AEA Baseline Instrument

Agricultural Marketing and Extension

1) Have you ever received training on agricultural marketing? (circle one)

Yes No

If yes, briefly list the trainings you have received:

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2) How would you describe your overall awareness of agricultural marketing techniques used in extension? (circle one)

Very Low Somewhat Low Neither Low nor High Somewhat High Very High

3) How would you describe your capacity to teach the following topics to farmers? (check one box for each)

<u>Farmers' Group Governance:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
a) Group formation and registration					
b) Election of leadership within farmers' groups					
c) Managing membership within farmer's groups					
d) Financial management within farmers' groups					
e) Access to and usage of agricultural credit					

<u>Group Marketing Strategies and Planning:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High

f) Business planning within farmers' groups					
g) Identifying market opportunities					
h) Crop decision-making (when/what to plant)					
i) Creating linkages to markets					

<u>Monitoring and Evaluation:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
j) Record-keeping					
k) Evaluation of successes/areas for improvement					

4) How would you describe your confidence in teaching the following topics to farmers? (check one box)

<u>Farmers' Group Governance:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
a) Group formation and registration					
b) Election of leadership within farmers' groups					
c) Managing membership within farmer's groups					
d) Financial management within farmers' groups					
e) Access to and usage of agricultural credit					

<u>Group Marketing Strategies and Planning:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
f) Business planning within farmers' groups					
g) Identifying market opportunities					
h) Crop decision-making (when/what to plant)					
i) Creating linkages to markets					

<u>Monitoring and Evaluation:</u>	Very Low	Somewhat Low	Neither High nor Low	Somewhat High	Very High
j) Record-keeping					
k) Evaluation of successes/areas for improvement					

5) What agricultural marketing techniques have you personally taught in your extension work? (circle all that apply)

- | | | | | | |
|----------------------------------|---|--|---|---|--|
| Group formation and registration | Election of leadership within farmers' groups | Managing membership within farmer's groups | Financial management within farmers' groups | Access to and usage of agricultural credit | Business planning within farmers' groups |
| Identifying market opportunities | Crop decision-making (when/what to plant) | Creating linkages to markets | Record-keeping | Evaluation of successes/areas for improvement | Other |

If other, briefly list the techniques you have taught:

6) How often did you personally teach about agricultural marketing with farmers in the last year? (circle one)

- | | | | | | |
|-------|---------------|------------------|----------------|---------------|-------------------------|
| Never | Once per Year | Once per Quarter | Once per Month | Once per Week | More than Once per Week |
|-------|---------------|------------------|----------------|---------------|-------------------------|

Post-Harvest Loss and Extension

7) Have you ever received training on preventing post-harvest losses? (circle one)

Yes No

If yes, briefly list the trainings you have received:

8) How would you describe your awareness of post-harvest techniques used in extension? (circle one)

Very Low Somewhat Low Neither Low nor High Somewhat High Very High

9) How would you describe your capacity to teach post-harvest techniques to farmers? (circle one)

Very Low Somewhat Low Neither Low nor High Somewhat High Very High

10) How would you describe your confidence in teaching post-harvest techniques to farmers? (circle one)

Very Low Somewhat Low Neither Low nor High Somewhat High Very High

11) What post-harvest techniques have you personally taught in your extension work? (circle all that apply)

Storage techniques Storage structure construction Drying Chemical processing Triple bagging Heat treatments Other

If other, briefly list the techniques you have taught:

12) How often did you personally teach about post-harvest techniques with farmers in the last year?
(circle one)

Never Once per Year Once per Quarter Once per Month Once per Week More than Once per Week

ICTs and Extension

1) Have you ever received training on using ICTs to educate farmers? (circle one)

Yes No

If yes, briefly list the trainings you have received:

2) How would you describe your awareness of ICTs used in extension? (circle one)

Very Low Somewhat Low Neither Low nor High Somewhat High Very High

3) How would you describe your capacity to use ICTs to teach farmers? (circle one)

Very Low Somewhat Low Neither Low nor High Somewhat High Very High

4) How would you describe your confidence in using ICTs to teach farmers? (circle one)

Very Low Somewhat Low Neither Low nor High Somewhat High Very High

5) What ICTs have you personally used in your extension work? (circle all that apply)

Telephone calls to farmers	Emails to farmers	Text messages to farmers	Farmer marketing platforms (e.g. Esoko)	Farm radio programs	Mobile extension unit visits	Other
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If other, briefly list the techniques you have taught:

6) How often did you personally use ICTs with farmers in the last year? (circle one)

Never	Once per Year	Once per Quarter	Once per Month	Once per Week	More than Once per Week
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Personal Information

Name: _____

Title: _____

Role with Extension: _____

Appendix V. Planning Sheet Template

AAB Training Planning Sheet

This sheet is a tool to help you plan your FBOs AAB training before and after meeting with each of your groups. Complete one form per FBO each week and submit it to your supervisor.

AEA name: _____

Group name: _____

Card number: _____

Scheduled training date this week: _____

Before going to the field:

1. What are the outputs that I am trying to achieve at this meeting?

Think about:

- Knowledge you want to pass on or bring out of the group
- Skills that you want to develop or give the group a chance to practise
- Attitudes that you want the group to leave with

2. What methods will help this particular group to reach the outputs I have decided on above?

Some possibilities are:

- What questions can I ask?
- What advice can I give?
- What ICT tools could I use to strengthen my message?
- What participatory activities could I include? (ex. asking the group to draw pictures, share stories)

3. What items (if any) from previous meetings do I need to follow up with the group?

After going to the field:

1. Were the outputs I prepared for achieved? For each, why or why not?

2. What methods worked best for achieving these outputs?

3. Was this card useful to the group? Why or why not?

4. How appropriate was the pace of the card for this particular group? (check the circle)

- **Too fast** – I should follow up with them next time to reinforce the concepts
- **Just right** – the group learned something new and now understands the concepts
- **Too slow** – the group was already strong in this area and knew most of the material

5. During today's meeting, I followed up with the group on...

6. When will I follow up with this group next? _____

7. What do I need to follow up with them on?

8. Things I did really well in today's meeting were...

9. For next meeting I can improve...

Supervisor's Signature:	Date signed:
_____	_____

Appendix VI. Success Stories

Felix Oteng Dwaah

DISTRICT-LEVEL INSTITUTIONAL INNOVATION BUILDS THE CAPACITY OF GHANAIAN PUBLIC AGRICULTURAL EXTENSION AGENTS TO STRENGTHEN FARMER GROUPS

The Savelugu Nanton Extension Delivery Improvement Project, a MEAS pilot initiative in Northern Ghana, demonstrates how partnership and well targeted strategic support to ‘front line’ public extension agents can enable public extension to provide more and better services to farmers.

June 2015 – Felix Oteng Dwaah has been a public extension agent for 6 years. He is responsible for providing agricultural extension services to approximately 3000 farmers in his operational zone of Pong Tamale. Although Felix is committed to helping the farmers in his area to



overcome their challenges, his job comes with plenty of challenges of its own. Resource constraints, common throughout Ghana’s public sector, make it difficult for Felix to consistently access things like up-to-date trainings and fuel for a field vehicle which are critical to provide farmers with the information they need to improve their agricultural activities and livelihoods.

There are approximately 249 publically-funded extension agents like Felix in Ghana’s Northern Region alone.¹ While extension services are widely agreed upon to play an important ‘front line’ role in improving agricultural productivity, food security and farmer livelihoods, inconsistent and inadequate resources within the public sector have hindered Ghana’s ability to maximize the impact of the investments it has made in extension. Under decentralization, decisions about how district-level departments of agriculture are resourced have shifted from being made by the central Ministry of Food and Agriculture to local government authorities. In some cases, such as in Savelugu Nanton, this has further constrained resource flows to public extension as local government bodies struggle to distribute limited operating budgets between various sectors including health and education. As a result, it is very difficult for public extension agents to provide consistent, high quality services to the farmers they are mandated to serve.

In recognition challenges facing Ghana’s public extension system, MEAS initiated the Savelugu Nanton Extension Delivery Improvement Project (SNEDIP). Over the course of 9 months, SNEDIP piloted a district-level model for leveraging the government’s existing investments in extension agents, like Felix, to better impact farmers. Through a combination of participatory processes, comprehensive training and modest but well-targeted operational resources, SNEDIP demonstrated that strategic support to public extension can result in improved quality and quantity of extension services for farmers. Felix and

¹ Ministry of Food and Agriculture, Northern Region Staff Strength 2015.

his 14 fellow extension agents in Savelugu Nanton received trainings in areas they identified as important to improve their services to farmers: enabling better group marketing, helping farmer groups to reduce post-harvest losses and using information and communication more effectively to convey extension messages. They then operationalized this training over a set of 12 pre-season training sessions they facilitated with 30 FBOs in the municipality on these topics. In total, 1067 farmers in Savelugu Nanton have directly received training from their responsible extension officer.

Through SNEDIP, Felix worked with two farmer-based organizations. The first was a rice cultivation group of 49 farmers. The group had been dormant for over four years, but after receiving consistent training visits from Felix, they have begun holding regular meetings with weekly member dues contributions and keeping good records of their activities. This season, the group's membership has grown and they have planted 1 acre of rice and 1 acre of soya beans. The second group is an active group that does soya bean production. Through the training provided by Felix, they have strengthened the unity of the group by focusing membership on those actively participating and paying dues. The group has planted 1 acre of groundnut and 1 acre of soya beans this season and is hoping for a profitable season.

“The project has improved the interactions between extension agents and the FBOs through regular interactions, helping bring out what is possible in them.” Felix Oteng Dwaah

Ibrahim Sumani

PUBLIC EXTENSION AGENTS IN GHANA IGNITE BUSINESS MINDSET IN LOCAL FARMER GROUPS

MEAS pilot enables public extension agents in Ghana’s Savelugu Nanton municipality to provide comprehensive pre-season training to farmers on how to work together effectively to increase profitability by treating their agricultural activities as a business.

June 2015 – When you talk to Ibrahim Sumani about farmer based organizations (FBOs), he is quick to point out that not all farmer groups are created equal. As a seasoned public sector extension agent in Ghana’s Savelugu Nanton municipality, Sumani has witnessed the formation of many FBOs over the years. Often, these groups have been brought together by NGOs or government extension agents who have mandates to work with farmer groups to provide trainings and resources such as seeds, fertilizer and credit. While appearing beneficial at the onset, it is not uncommon for these FBOs to stop meaningful activities soon after the external intervention is over.



“When a group comes together simply because they think they are going to receive access to inputs, the group is almost certainly bound to die out”, says Sumani. “A good group occurs when people come together around a common goal, develop a structure, and are genuinely committed to working together regularly.” Unfortunately, Sumani believes, too often farmer groups in the area form because individuals want to personally access inputs promised to the group and then, when issues such as defaults on repayment arise at the end of the season, the group disbands as quickly as it formed. Since the trainings provided during these types of projects typically focus on technical agronomic advice but neglect the functional team work skills required for a group to work together efficiently over the long term, Sumani feels like true sustainability of these efforts is rare.

“As public extension agents, we have important roles to play in helping FBOs to really build the capacity to work well together as a unit to conduct profitable agriculture. This capacity is something that is really lacking among many of the farmer groups here in Savelugu Nanton in spite of all of the focus there is from various groups like NGOs on working with FBOs”.



With this information in mind, MEAS' Savelugu Nanton Extension Delivery Improvement Project (SNEDIP) responded to Savelugu Nanton extension agents' requests to strengthen their skills in training FBOs more effectively. The municipality's 15 extension agent received support through SNEDIP to carry out 3 months of pre-season training for 30 FBOs in the area. This training, a 12 step process called Agricultural As a Business (AAB), focused on increasing the groups' profitability by applying business concepts to their agricultural activities while also strengthening the way each group functions as an organization.

Through SNEDIP, Sumani was able to work with an FBO of 17 member farmers called Zisung Nitee Nabli. While the group has existed for several years, it was clear to Sumani that they had never received basic training on how to conduct profitable activities effectively together. "Last season the group acquired several varieties of maize seed which were all mixed up and then planted together. This led to the maize plants maturing inconsistently and spoiling so the yield from the group's work was very poor." The group hadn't given much thought to how this decision to plant an uncertified mix of seeds might affect their profit. This year, because of the training and support he received from SNEDIP, Sumani worked with the group to help them analyze their expenses, yield and time of sale last season in order to make a better plan for the coming season. "Using the information from AAB, I explained to the group about concepts like profit margins and helped them to understand that using a business mindset to analyze their activities is very important so that they do not waste their time doing unprofitable things".

This season the Zisung Nitee Nabli Farmers Group has purchased certified quality maize seed and plans to plant two acres together. Sumani is happy with how the group is focused on self-help and is actively working together on their own. Everyone is hopeful that their harvest will be a bountiful one.

Ziebinyra Farmer Cooperative

INSTITUTIONAL CAPACITY BUILDING OF PUBLIC EXTENSION IMPACTS FARMERS IN NORTHERN GHANA

MEAS pilot initiative in Northern Ghana demonstrates impacts of targeted support to institutional capacity of public extension on farmer-based organizations.

June 2015 – Yakubu Abdul-Rahamanni farms about six acres of soya beans. In order to take advantages of bulk marketing, access to land and other services, he is also part of a Farmer-Based Organization (FBO) called *Ziebinyra*. The FBO, which currently has 37 farmers (both male and female) has worked together for 7 years on soya bean production. However, similar to many FBOs across Northern Ghana, the group has struggled to maintain the unity required to work together effectively to take advantage of collective marketing opportunities.



From October 2014 to June 2015, the Savelugu Nanton Extension Delivery Improvement Project (SNEDIP) focused on building the capacity of public agricultural extension agents operating in the Savelugu Nanton municipality so that they could strengthen local FBOs like *Ziebinyra*. Yakubu, along with the rest of the group members, received a series of twelve step by step trainings from their local extension agent which focused on improving the group's abilities to conduct their farming activities more profitably as a business. Their extension agent, Felix Oteng Dwaah, facilitated weekly group meetings over the course of three months prior to planting season which targeting building key skills, such as market analysis and record keeping, so that their soya bean production activities can be more profitable this year.

The training that Felix provided the *Ziebinyra* group focused on encouraging the group to pool their few resources together and use self-help strategies rather than only coming together only when free inputs are being offered by NGOs. As a result, the *Ziebinyra* group decided to strengthen their collective efforts, which had been stagnating, by narrowing their membership to only those who were truly committed to actively contributing to the group's activities. As a result, 37 committed members emerged from this process. The group members are not regularly, actively making contributions to group agricultural activities through labour and dues. They have opened a new bank account to save for longer-term goals. This season, they are growing one acre of groundnuts and one acre of soya beans. They proudly state that the strength of their group is their unity.

The SNEDIP pilot initiative demonstrates an innovative approach to enabling public agricultural extension activities so that farmers receive more impactful extension services. The pilot initiative built the knowledge and capacity of agricultural extension agents in market-oriented extension, post-harvest loss management, and ICT use in extension delivery. Extension agents then offered regular support to FBOs to improve their access to quality extension services and develop farmers' capacity in market-driven agriculture.

In total, 15 extension agents supported 30 FBOs, consisting of 1067 farmers. The majority of the participating FBOs have demonstrated consistent meeting attendance and dues contribution in cash or kind, with some groups working towards opening bank accounts or making purchases for the group. Approximately 60 new members (5% growth in total farmer participants) have applied to join four of the participating FBOs as a result of witnessing the regular extension services the target groups have been provided. In addition, two new FBOs have been established in order to request training support from their extension agent. Participating farmers have begun to conduct this season's activities using their improved 'agriculture as a business' skill and newly instilled self-help mindset.

"Our group improved a lot of skills, like planning and how we are all one, both men and women farmers." Yakubu Abdul-Rahamani, farmer of Ziebinyra FBO

Yakubu and his colleagues feel strongly that the trainings they have received from their public extension agent have prepared them for a successful season this year and they have begun planting with the promise of better things to come.

Appendix VII. Program Costs

The SNEDIP model provides an example of how development partners can successfully collaborate with public extension at the district level to improve extension's impact on farmers and FBOs. The cost-effectiveness of this program model lies in its ability to promote partnership and leverage the comparative resources of both the local public sector and donor partners strategically within a well-developed program. The following sections list and value key contributions made by each SNEDIP partner throughout the project:

Savelugu-Nanton Municipal Department of Agriculture (Public Extension Partner)

1. Staff time

The Savelugu-Nanton MDA significantly contributed to SNEDIP's outcomes through its allocation of staff time to the project. All 15 municipal AEAs spent an average of 20% to 40% of their weekly work time (on average one to two days a week) between the months of January and May 2015 supporting SNEDIP's field work, during which time the municipality paid their salaries. In addition, five MDA extension supervisors supported and monitored AEAs' activities and the MDA Director contributed a significant number of work hours to providing information and support to SNEDIP. Municipal Assembly staff also contributed staff time in support of the project.

2. In-kind contribution of office and training space

With the exception of one set of computer use ICT trainings which occurred at a computer lab in Tamale, All but one of SNEDIP's AEA trainings were conducted using municipal conference room space. Savelugu-Nanton provided the use of this space without additional cost, although the SNEDIP project contributed resources to upgrading the functionality of the space to enable a conducive learning environment. In addition, the MDA provided office space for SNEDIP's Field Coordinator without cost.

Modernizing Extension and Advisory Services by way of Engineers Without Borders Canada (Development Partner)

The MEAS project supported SNEDIP through funding made available to Engineers Without Borders Canada to implement the project (see Table 1a).

1. Trainers and Training Costs

Development partners contributed the resources for the in-service training provided within the SNEDIP pilot. This included the cost of contracting subject matter specialists, developing training materials (where required), and the cost of conducting trainings (e.g. materials, printing, refreshments). Rental of training facilities were largely unneeded due to contributions by the MDA, although the cumulative stakeholder meeting did incur venue costs.

2. Operational Support to AEAs

SNEDIP prioritized logistical support for AEAs' transportation in acknowledgement of the financial constraints of the MA and MDA. These operational costs included fuel and motorcycle maintenance

allowances. Future iterations of the SNEDIP approach might consider how best to engage with local government to cover these costs.

3. Knowledge Management

The SNEDIP project captured lessons learned and best practices on strengthening public extension services for increased farmer impact. Sub-contractors were used for data collection, although the development partners were responsible for the costs associated with sharing these lessons learned and best practices through stakeholder meetings.

4. Project Management

The development partners also incurred the costs of overall project management, including project management costs of planning, logistics, implementation, data analysis, and communications. This included one full-time staff (the SNEDIP Field Coordinator) and the part-time support of five other staff of EWB and MEAS paid with organizational funding. Other specific tasks were sub-contracted as needed.

Table 1a. Operational Costs Incurred by SNEDIP Project

Item	Unit	Total Cost
Field Coordinator Salary	9 months	\$18,000
Office Space (furnished)	9 months	\$4,500
Materials and Equipment	lump sum	\$2,000
Communications	lump sum	\$1,800
Transport for In-Country Travel	9 months	\$9,000
Extension Officer Trainings	lump sum	\$20,000
Logistical Support to Officers	lump sum	\$20,000
Trainings and Workshops (venues, logistics, etc.)	lump sum	\$5,000
Sub-Contracting for Specific Tasks (e.g. data collection)	9 days	\$4,050
TOTAL:		\$84,350