AGRICULTURAL SERVICE PROVIDERS: FINDING SUSTAINABLE MODELS FOR STRENGTHENING LIVELIHOODS IN AN INTEGRATED PROJECT

A household member inspects her passion fruit trees in Kamwenge district. Photo by Patrick Mayambala.

This Technical Note provides an in-depth look at one of the Learning activities under the USAID Uganda Community Connector Project: examining the factors that increase or decrease the likelihood of success of the project's Agricultural Service Provider model for providing income-generating opportunities.

INTRODUCTION

The Community Connector (CC) project is a U.S. Agency for International Development (USAID) Feed the Future program that provides a multi-sectoral approach to poverty, food insecurity and undernutrition. CC works in 15 districts in the north and southwestern regions of Uganda to promote practices that prevent under-nutrition and strengthen the health status of targeted communities while encouraging gender-sensitive agricultural innovations to help farmers engage in income generating activities that reinforce nutritional outcomes.

As a flagship of the Collaborating, Learning and Adapting (CLA) approach, CC was designed with three distinct phases: pilot (phase I), scale up (phase II), and impact (phase III). Each phase has two project modules (PMs): a *learning* module and an *implementation* module. Project modules lay the foundation for an iterative program cycle—allowing CC to continuously assess the causal pathway to project outcomes and adjust programmatic and operational activities as necessary. This paper incorporates learning from Project Module 5 (the learning module for Phase III).

CC APPROACH TO AGRICULTURAL SERVICE PROVISION

In rural Uganda, agricultural service provision plays an important role not only in helping households to produce a sufficient supply of food, but also in building the capacity of small holders to engage in farming as a business; enabling them to generate income that bolsters food security at the household and community levels. Agricultural service providers under CC promote technologies and enterprises associated with the production of honey, poultry, passion fruit, onions, goats, and Irish potato seeds.

The project was originally designed to work closely with Uganda's National Agriculture Advisory Services (NAADS) program. CC began by tapping NAADS for subject matter specialists (SMS) to deliver agricultural extension services to farmer groups working in CC supported enterprises. However, during PM 2 the project noted numerous challenges in working with NAADS that severely limited the project's effectiveness.

In response, CC recruited community based organizations (CBOs) to provide services in the three districts that were most affected as they were most remote and most times lacked the SMS to provide the support. At the end of the pilot phase (Phase I), the Government of Uganda suspended the NAADS program and the project was forced to redesign its approach to agricultural service provision in all 15 districts.

One option was to hire private extension providers or Agricultural Service Providers (ASPs). The alternative option was the use of Community "Positive deviants" who had exhibited skills in preferred practices and technologies but this option had limitations of scaling up to targeted numbers and providing quality services.

CC opted to establish a network of ASPs. These ASPs are contracted by CC to provide farmer training and extension services to farmer groups in CC communities.

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The Community Connector Project is implemented on behalf of USAID/Uganda by FHI 360 as the prime and by seven subcontractors: Self Help Africa, Village Enterprise, BRAC Uganda, Communication for Development Foundation Uganda (CDFU), Grameen Foundation, Gulu University, and Mbarara University of Science and Technology.

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A husband and wife use their oxen to plough the farm in Oyam district. Photo by FHI 360.

The project developed several distinct ASP models. In some cases, ASPs are individuals with agricultural skills and knowledge. In other cases, community support organizations, entrepreneurs, or businesses serve as the ASP. In each of these models, the ASP is responsible for helping CC targeted groups to adopt agricultural practices, engage in farming as a business, generate income, and link into lucrative markets.

A participatory review conducted during PM 3 indicated that some individual ASPs were not effective in linking farmers to input and output markets. In response, CC reduced the number of ASPs, choosing to continue working with only the most effective service providers. Among the remaining ASPs, some have proven to be far more successful than others at engaging group members and linking them to income generating activities and markets. Since there is no standard ASP model, it is difficult to ascertain which specific factors are responsible for the differences in results. To better understand the characteristics of successful ASPs, CC conducted a learning exercise during PM 5.

THE LEARNING EXERCISE

The purpose of the learning exercise was to identify specific factors that are important to the success of ASPs. CC conducted a cross-sectional assessment where researchers collected qualitative data through in-depth interviews with all 33 ASPs and 67 group leaders using a semi-structured interview guide. They imported data from interviews into QSR NVivo to code the transcripts, generate coding frequencies, and create frequency tables based on region and gender. Researchers gathered quantitative data by examining ASP's records related to CC project activities. They recorded the types, quality, source, and use of data using descriptive statistics as well as more detailed text descriptions where possible.

WHAT BARRIERS DID WE FIND?

Participants (both ASPs and group leaders) were questioned about their experiences with CC activities and the barriers to effectiveness and sustainability of the current ASP approach. In these discussions, several interrelated themes emerged.

1. **Group members continue to face barriers in linking to input markets.** Despite program adaptations made in response to the PM 3 participatory review, numerous respondents indicated that they continue to face serious constraints to accessing farm inputs. The constraints most often cited were: a) financial barriers; b) lack of reliable input providers in the community or surrounding areas; c) quality of the inputs by rural providers who also purchase them from the main towns; (usually these are purchased in bulk and brought to rural areas, where they are repacked into smaller quantity and in the process suffer adulteration); and d) expectation of receiving inputs for free—either through CC, the government or a local NGO. ASPs connect group members to input markets by identifying providers and providing their information to groups. However, these providers are often located far away from members who do not have adequate means of transport. Since members often buy in small quantities, they are not a high priority to providers who might otherwise be willing to deliver to remote locations.

   To counter this problem, some ASPs provide the inputs directly to groups—either by selling the inputs to members or providing them for free for setting up learning sites. Some ASPs expressed concern about the sustainability of providing free inputs to run the learning sites. However, other respondents identified the provision of inputs by ASPs as a facilitator to linking groups to inputs—either in the sense of the ASP selling inputs, or going to the market to purchase inputs on behalf of group members.

2. **Group members face barriers in linking to output markets.** Some members cited a number of constraints to selling their products. Often they felt exploited by buyers. They claimed that market scales under-valued the weights of their products. They often earn less than they expected either because middlemen take too much of the profit or because prices fluctuate. Many members do not have adequate transport to take goods to the market. They rely on buyers to pick up products who sometimes do not show up. As a result, those groups that are located near local markets are far more successful in selling their goods that those in remote locations. Most group members are connected to markets directly by their ASPs and are highly dependent upon the ASPs' ability to make those much needed connections.

3. **The current ASP approach faces significant sustainability challenges**. Some ASPs reported barriers to the sustainability of their work—including low adoption rates, lack of support from local government leaders, enterprise specific barriers (such as crop varieties or goat breeds), and challenges in working with men. Some ASPs did have plans for the long-term sustainability of their work, such as training others who could continue to provide training and lead their enterprise or to continue providing services without project support. ASPs attributed a variety of reasons to their motivation for continuing their work after CC has ended. The majority felt that the community still needed their support and that the enterprises were not yet operating sustainably. They cited personal benefits such as self-improvement (i.e. gaining job experience or learning more about the enterprise), personal interest in the work being done, or seeing the community adopt the training. The majority of ASPs felt the groups needed more training to ensure their self-reliance. They requested that the program be phased out slowly rather than ending abruptly and suggested that CC should bring sub county officials on board to help with the transition.

   Overall, group members were optimistic that they would continue working with their group and their enterprise once CC ended. Most said they had gained knowledge through the ASP trainings that would enable them to continue. However, one-third of respondents suggested that they would need continued support from the ASP in order to continue with their enterprise. Many were concerned that they would not be able to afford the cost of inputs without the ASP's help. Group leaders requested CC support during the phase-out to ensure the groups does not dissolve when the CC project ends.

4. **Capacity gaps in business acumen.** There are glaring capacity gaps within many ASPs in business acumen. This is a serious shortcoming considering that the enterprises that have shown success appear to be those that have a strong business model underpinning their adoption. While this was the main idea behind promoting those enterprises that have good market penetration characteristics, both the market environments where the CC groups are located and the poor business mindsets have worked against this important ideology.

An excited mother retrieves finger millet from her granary in Dokolo district. Photo by Patrick Mayambala.

LESSONS LEARNED—WHAT WORKED WELL?

In looking at the various Community Connector ASP models and their strengths and weaknesses (see chart on the next page), we identified the following characteristics as key to the successful and sustainable provision of agricultural services.

1. **Facilitate the development of win-win relationships.** The most successful models are those that have well-tailored economic incentives in place. They are based on win-win relationships where both parties are equally invested and mutually benefit from the relationship. For example, the ASP in Lira is benefitting from selling his vaccine, the CPVs gained new skills and a new source of income, and poultry farmers gain by protecting and building their bird flocks. In the case of honey, farmers have gained the skills to cultivate, harvest, package, and sell honey that meets the quality requirements of the buyer — who is the ASP. In some cases, the ASP provided the beekeepers with "soft" loans to buy equipment or inputs. In turn, the ASP has a consistent supply of honey that meets his buyers' demands. In each of these cases, individuals are providing or receiving extension support in the form of embedded services. Building the capacity of input suppliers and output buyers to provide extension support as an embedded service provides a model that is both sustainable and effective. The most sustainable models will ensure that these relationships exist at all points in the value chain—from inputs through production to final markets.

2. **Minimize the role of the project and gradually withdraw or phase out funding streams.** While CC has been careful to minimize the project's role in the provision of technical services, the proper incentives need to be put in place to ensure that farmers will continue to benefit from extension services after the project has ended. To minimize CC's role even further, the project would need to facilitate alternative funding streams for ASPs, help strengthen existing funding streams, and gradually withdraw or phase out contracts that provide payment and other forms of compensation to ASPs. In the future, the project would identify new ASPs by assessing existing linkages within communities, and building upon these relationships to facilitate long-term repeated transactions that benefit both parties and are not reliant on project resources.

3. **Start with activities that are simple, have a high chance of success, and quickly demonstrate success.** Beekeeping is a fairly simple activity that doesn't require substantial investments in terms of time or money. CC groups were able to build hives with local materials and the ASP provided branded packaging materials that met their buyers' demands. As a result, group members were able to quickly build their apiary skills and gain confidence in their ability to produce and sell honey. Likewise, much of the success of the community poultry vaccinators can be attributed to the quick and obvious demonstration of positive results. Although only a few farmers saw the value in paying for vaccine services in the beginning, the efficacy of the vaccine was quickly observed when the vaccinated birds survived the next outbreak of Newcastle Disease. These early successes helped solidify the relationships between the beekeepers and their buyer/ASP, and between the vaccinators and their poultry farmers.

SUCCESSFUL/SUSTAINABLE MODELS OF AGRICULTURAL SERVICE PROVISION:

- Facilitate the development of win-win business relationships
- Minimize the role of the project and gradually withdraw or phase out external funding streams
- Start with simple activities that have a high chance for success
- Connect farmers to markets with low barriers to entry.

Husband and wife working together in the garden, Ibanda district. Photo by Patrick Mayambala.

4. **Connect to markets with low barriers to entry.** The most successful CC groups engaged in enterprises that have low barriers to entry—reducing their risk, and providing them with a greater potential for success. In the case of the potato seed growers, there was a clear unmet demand for clean potato seed and a strong existing association to provide needed support. The beekeepers were able to adapt the skills and technology provided to them by the ASP, and feel secure that the ASP would buy their honey at a fair price. Finally, the CPVs were able to easily build demand for poultry vaccine (by demonstrating its efficacy), obtain the medication, and provide the services on a set date. In all of these enterprises, group members were able to quickly recoup their investment and build their confidence to eventually participate in more lucrative market.

THE WAY FORWARD

In response to the PM 5 learning exercise, we have identified potential programmatic adaptations and next steps (see chart) specific to each enterprise. In coordination with USAID and our CC livelihood partners, FHI 360 will consider these potential modifications and decide which ones the project can and should undertake during the remaining period of the project. In evaluating which modifications to adapt, we will favor those that have the greatest potential to ensure the long-term sustainability of CC project activities and the continued provision of agricultural services. If necessary, we will collect additional, targeted information that will assist us in choosing the best path forward. All planned modifications will be reflected in scopes of work and work plans for the FY2016 project year. CC will make necessary modifications to its monitoring and evaluation to validate whether or not programmatic adaptations succeed in improving ASP performance and expanding farmer groups' access to input and output markets in a sustainable manner.

TABLE 1: NEXT STEPS FOR IMPROVING ASP MODELS

CHARACTERISTICS OF ASP MODEL	STRENGTHS/WEAKNESSES OF MODEL	NEXT STEPS
Passionfruit		
• 8 ASPs were contracted through an LPO modality by CC to provide services in 8 sub counties. • ASPs are mainly subject matter specialists (individuals) knowledgeable in passion fruit cultivation and experienced in community extension work • ASPs are paid by CC to provide these services • ASP trains in grafting for seed production ASP makes linkages to appropriate input dealers	• Linkages to output and input markets have been poor • Market limitations often cited include small scattered volumes and high assemblage costs by traders • There are product quality issues related to market preferences • Market demand is fairly high especially in off season • Longer shelf life of the product makes it ideal for longer marketing periods • Farmers have problems meeting quality standards	• Strengthen existing relationships and facilitate the development of long-term win-win relationships rather than focusing on one-time sales opportunities • Explore market linkages with low barriers—such as those that take advantages of local markets • Explore linkages with buyers that don't require high quality standards—such as juice manufacturers • Identify success stories/cases and use successful farmers as champions within communities • Help groups form associations and work with existing associations to facilitate groups purchase of inputs and groups sale of outputs
Potato Seed		
• ASPs are subject matter specialists (individuals) knowledgeable in seed potato production • ASPs are paid by CC to promote community-based potato seed production in targeted communities • Community Potato Trainers (CPTs) work with CC seed grower groups to produce, certify, and sell clean seeds in partnership with the Uganda National Seed Potato Producers Association (UNSPPA) • CC groups sell seed to UNSPPA (who, in turn sell to the national government under contract), or to local markets • Group members are able to sell seed potato at significantly higher prices that potatoes for consumption	• Appears to be a viable, self-sustaining service delivery model • Group members are strongly linked to output and input markets through UNSPPA • Group members have successfully increased their yields, but do not have proper storage facilities (most potato farmers only buy seed as rainy season begins) • Groups have weak governance structures and are not registered with UNSPPA as seed producers • Farmers are highly dependent upon UNSPPA for access to input and output markets • UNSPPA receive income from CC to provide services and it is unclear if they would continue providing services after their contract with CC ends	• Explore the possibility of facilitating embedded services directly from suppliers or buyers • Explore ways to directly link groups to input and output markets so they are less dependent upon UNSPPA or expand linkages to local markets • Build capacity of groups in proper storage and explore ways to access adequate storage facilities • Strengthen group governance • Facilitate registration of groups as UNSPPA seed producers • Explore ways to phase out project revenue streams to ASPs and replace them with alternative sources of income by strengthening existing relationships (e.g. the ASP could receive a commission from UNSPPA)

TABLE 1: NEXT STEPS FOR IMPROVING ASP MODELS *(CONTINUED)*

CHARACTERISTICS OF ASP MODEL	STRENGTHS/WEAKNESSES OF MODEL	NEXT STEPS
Onion		
• ASP is a CBO • ASP provides farmers with initial supply of seedlings and trains them to multiply them for future crops • In one case, the ASP originally agreed to purchase onions from farmers, but this has not happened	• Farmers have learned how to multiply seeds—somewhat reducing their dependence on input suppliers • ASPs do not appear to have strong linkages to either input or output markets • ASPs depend on revenue streams from CC and not incentivized by commercial opportunities	• Strengthen existing relationships and facilitate the development of long-term win-win relationships rather than focusing on one-time sales opportunities • Explore market linkages with low barriers—such as those that take advantages of local markets • Explore ways to develop commercial linkages that will incentivize ASPs to improve service provision to groups and continue providing services without CC support • Identify success stories/cases and use successful farmers as champions within communities • Benchmark market and production potential • Help groups form associations and work with existing associations to facilitate groups purchase of inputs and groups sale of outputs
Goats		
• Existing model strengthened capacity of community breeders as para vets who could offer vet services to the community • ASPs are paid by CC to establish 36 goat breeding sites to improve local goat breeds • The male goat provided by CC is expected to generate revenue through a fee for service for the group for veterinary services. • The ASP provides training on feeding and goat management • The business model revolves around fee for service of the he-goat and local breed stock improvement	• Business model hasn't worked well • A number of improved breed off-springs have been borne but the economic benefits take long to be realized • Sustainability of the activity is limited with limited fee for service options	• Strengthen group coherence • Explore ways to phase out project revenue streams to ASPs and replace them with alternative sources of income • Strengthen existing relationships and facilitate the development of long-term win-win relationships rather than focusing on one-time opportunities • Explore market linkages for embedded services like vet drugs suppliers and meat processors • Identify success stories/cases and use successful farmers as champions within communities

TABLE 1: NEXT STEPS FOR IMPROVING ASP MODELS *(CONTINUED)*

CHARACTERISTICS OF ASP MODEL	STRENGTHS/WEAKNESSES OF MODEL	NEXT STEPS
Poultry Vaccine ASP Model 1 (Lira)		
• ASP is veterinarian and entrepreneur who also has vaccine supply business • ASP trains 3 CPVs per parish to provide vaccines for Newcastle Disease and Fowl Pox • ASP does not encourage CPVs to train additional CPVs • ASP also trains CPVs in basic poultry management—enabling CPVs to provide a wider range of services to poultry farmers • ASP supplies CPVs with vaccine that requires cold storage at cheaper price that the thermo-stable version • ASP receives some income from the sale of vaccine, but also receives income and transport reimbursements from CC	• ASP has a commercial incentive to continue providing services without project support • CPVs have commercial and social incentive to continue providing services without project support • Activity has larger impact that extends beyond CPVs and groups members to benefit entire community and in some cases adjacent communities (CPVs are asked to provide services outside of their own community through word of mouth) • ASP is qualified to provide other services such as training in poultry management • CPVs are interested in expanding to other commercial activities (such as a hatchery) • ASP has limited linkages to output markets • Non thermo-stable vaccine presents risk to CPVs	• Explore ways to phase out project revenue streams to ASP and replace with alternative sources of sustainable income by strengthening existing relationships • Explore ways to introduce thermos-stable vaccine without affecting CPV revenues • Focus on strengthening output market linkages—both local and beyond • Help groups form associations and work with existing associations to facilitate groups purchase of inputs and groups sale of outputs • Facilitate expansion to other commercial activities such as hatcheries • Explore co-funding opportunities to assist groups in purchasing hatchery equipment • Encourage groups to leverage village savings and loan associations to purchase hatchery equipment as an association
Poultry Vaccine ASP Model 2 (Masindi)		
• ASP is former NAADS subject matter specialist • ASP trains 3 CPVs per parish and encourages CPVs to train others to be CPVs • ASP provides CPVs with thermo-stable vaccine for Newcastle disease at higher price (which is recovered in a higher price for vaccine services • ASP does not receive revenue from supplying vaccine to CPVs • ASP also engages in multiplication of fruit trees and provides seedlings free to group members • ASP's main source of income is CC project	• CPVs have commercial and social incentive to continue providing services without project support • Activity has larger impact that extends beyond CPVs and groups members to benefit entire community and in some cases adjacent communities (CPVs are asked to provide services outside of their own community through word of mouth) • Use of thermos-stable vaccine greatly reduces risk to CPV • ASP has limited linkages to output markets • ASP does not have a commercial incentive to continue providing services without project support • There is a risk of training too many CPVs thus reducing each vaccinator's income potential	• Explore ways to phase out project revenue streams to ASP and replace with alternative sources of sustainable income (i.e., can she charge for fruit tree seedlings or take a commission for supplying vaccine or other services?) • Focus on strengthening output market linkages—both local and beyond • Help groups form associations and work with existing associations to facilitate groups purchase of inputs and groups sale of outputs • Encourage expansion to other commercial activities by leveraging village savings and loan association

TABLE 1: NEXT STEPS FOR IMPROVING ASP MODELS *(CONTINUED)*

CHARACTERISTICS OF ASP MODEL	STRENGTHS/WEAKNESSES OF MODEL	NEXT STEPS
Honey		
• ASPs are business already working in the honey sector (buyers) • CC pays ASPs to provide embedded services to offset some investment costs and in turn buy the products from CC groups • CC pays ASP to provide technical support for hive development (using locally sourced materials), harvesting, and packaging of honey and honey by-products (beeswax) • CC provided some financial support for the purchase of processing equipment such as honey extractors • In some cases, ASP provided embedded financial services—in the form of "soft" loans to buy equipment or inputs. • Other ASPs provided the farmer with jars, labels, and other branded packaging materials.	• This is a sustainable business model with strong linkages to input and output markets • Beneficial embedded service arrangements build long-term win-win relationships that increase trust and support all parties in getting higher profits and more income • Since the buyer is also the input provider and the ASP, the potential exists for farmers to be exploited	• Sustainable business model exists, need to strengthen and diversify • Build capacity of local artisans to build beehives as an income generating activity • Facilitate /strengthen long-term relationships with buyers who are willing to provide embedded services • Encourage expansion of commercial activities using honey by-products • Encourage other ASPs or buyers to provide "soft" loans for equipment or inputs • Build capacity of farmers in areas such as farm management, negotiation, organizational skills, basic numeracy and literacy, and analytical skills to reduce risk of exploitation • Strengthen horizontal relationships to increase farmers self-confidence and enable them to deal with buyers as a group • Expand access to market information to reduce risk of exploitation

CASE STUDY 1

CC Service Provision in the Poultry Sector

In rural Uganda, poultry farming is an important component of food security and livelihoods. The raising of chickens not only provides a secure food source to poor and vulnerable households, but also bolsters household resilience by providing physical capital that can quickly be converted into financial resources when needed. Uganda's poor communities commonly practice free range poultry farming, making it difficult to control disease outbreaks within a given community. Newcastle disease (NCD) is one of the most common poultry diseases in Uganda and its spread often leads to the fatality of entire bird flocks— essentially wiping out the savings of entire households. While there are vaccines to prevent NCD, the smallest available vial provides 500 doses, making it unsuitable to smallholders in the CC focal areas— whose average flock is less than 20 birds. Controlling NCD would make a significant and positive contribution to the incomes, food security, and resilience of many households in CC districts. In response to this issue, CC engaged a total of 3 ASPs to implement a Community Poultry Vaccinator (CPV) program in 6 districts and targeting 13 sub counties. Using this model, the CPVs have provided 4 rounds of vaccinations to date. As a result, Newcastle outbreaks have dramatically declined in CC targeted communities. During a recent field visit, two distinct CPV implementation approaches were observed. Below we look at the strengths and weaknesses of each model.

In Pakanyi sub-county; Masindi district, the ASP is a former NAADS employee. She has general knowledge of agricultural practices and is paid directly by the CC project to provide extension services on a range of topics— including fruit tree multiplication and poultry vaccination. The ASP trained 3 CPVs in each of the 5 parishes she oversees. In turn, each CPV trained an additional 3 people to become CPVs. The ASP had no immediate plans to train additional CPVs, but she did not limit the number of people trained by current vaccinators. The ASP obtains a thermo-stable vaccine from a commercial supplier. The vaccine lasts eight weeks at room temperature and does not require cold storage. Once opened, the CPV must use the vaccine within 3 days. Each vial costs UGX 30,000 and generates UGX 100,000 in revenue for the CPV. The ASP does not take a commission on the vaccine, but passes the cost on to the CPV. CPVs charge a fee of UGX 200 per chicken vaccinated and in general, farmers have been willing to pay for the service.

A community poultry vaccinator vaccinates chicken at a home in Ayer, Kole District. Photo by Patrick Mayambala

In Lira district, the ASP is a doctor of veterinary medicine and is also a commercial supplier of poultry vaccine. As a veterinarian, he is able to provide highly technical services to poultry farmers and CPVs that go well beyond vaccination. He limits the number of trained CPVs to 3 per parish—as he does not believe there is a high enough demand to justify additional CPVs. These CPVs not only provide vaccines for Newcastle disease, but also vaccinate for Fowl Pox— another disease that is prevalent in Ugandan flocks. The ASP provides CPVs with a vial of Newcastle vaccine for UGX 8,000. The cost of the vaccine is lower because it is not the thermos-stable version and requires cold storage. The ASP provides each CPV with a thermal carrier and ice to preserve the vial during transport. The lower cost of

the vial enables CPVs to provide vaccine services for UGX 100 per chicken. However, the CPVs must vaccinate all 500 birds within 2 hours of opening the vial to prevent the vaccine from spoiling. This presents a significant financial risk to the CPV who invested in the vaccine.

In each of these cases, the CPVs enjoy significant benefits from providing vaccination services and were motivated to continue the activity with or without project support. Not only did their household income increase, but they also enjoyed an elevated social status, with community members often referring to them as the "chicken doctor". One CPV told us, "I used to sell beans in order to get money to buy soap. Now my family is able to eat the beans since I have money to purchase soap." In other cases, CPVs used income from their vaccine services to purchase a goat or pay school fees. While this program clearly bolstered the food security and income of each CPVs' household, the larger impact was on the community at large. A significant reduction in NCD benefited most households in the community, enabling them not only to maintain, but to build the physical capital within their bird flocks.

In the beginning, farmers in both communities were reluctant to pay for vaccination services—but some did. After a few birds were vaccinated, an outbreak of NCD hit each community. Many farmers quickly observed that the vaccinated birds did not die and demand immediately increased for CPV services. Since this time, most farmers within the targeted communities place a high value on CPV services and very few are reluctant to pay. This clear demonstration of the vaccine's effectiveness will continue to incentivize farmers to pay for vaccination services even after CC has ended.

While there are strong incentives in each community—both for the CPV to continue providing services and for the farmers to continue paying for them—there are clear weaknesses in each model that undermine the sustainability of the CPV program. In each case, CC is paying the ASP to provide advisory services and train the CPVs. In Pakanyi, CC represents the main source of income for the ASP and there are no other obvious streams of income from her advisory work. When asked how she would continue her work after CC ended, she expressed a strong commitment to making it happen. However, without a source of income it seems unlikely that the work could continue. In the case of Lira, there was a clear incentive for the ASP to continue providing services after CC ended. However, his continued reliance on CC compensation for salary and transport expenses not only undermines his incentive to continue providing services without CC, but also diminishes any incentive to build his veterinary supply business.

According to several CPVs, the average size of a household flock dramatically rose due to the vaccine program. When the program began, most households had only 3-4 chickens. The number of chickens in a household now ranges between 20 and 60, and many households that never had birds are now buying them. In Lira, one group of CPVs were interested in star ting a hatchery and were clearly thinking of business opportunities beyond vaccination services. With the help of the vaccine program, farmers in these communities are clearly producing more chickens and engaging in activities that have the potential to spark a more vibrant rural economy in which farmers can improve their livelihoods by means other than subsistence farming.

However, despite having the means to raise greater numbers of chickens, most farmers in these communities are not linked into output markets that would allow them to consistently sell their chickens at fair prices and participate in entrepreneurial activities that produce a steady stream of income for their household. While the CPV model being implemented in Lira clearly has a greater chance for long term sustainability, neither model is strongly linked to consumer markets— thus the ability for either model to contribute to the development of a dynamic rural economy is somewhat limited. While ASPs are responsible for linking farmers into markets, neither ASP in the two cases above seemed qualified or incentivized to do so. Direct streams of funding from CC continue to serve as the strongest incentive in each of these cases. Once this funding stream ends, it is unclear if other incentives will be strong enough to sustain the program's activities.

CASE STUDY 2

CC Service Provision in the Potato Sector

The Irish potato plays an important part in Uganda's food security—both in terms of its role as a staple crop and an income earner for rural families. The potato value chain is straightforward and well established from input supply to the final markets—most of which are in Kampala. The lack of high quality, clean potato seed for multiplication through a certified scheme is widely recognized as a major constraint to potato production in Uganda. There is no streamlined supply chain for seed and farmers typically use the same low quality seed—resulting in greatly reduced yields.

In southwestern Uganda, CC has engaged an ASP named Uganda National Seed Potato Producers Association (UNSPPA); an umbrella farmer owned association that is specialized in potato seed production to promote community-based potato seed production in targeted communities. UNSPPA engages selected CC farmer groups to produce, certify and sell quality declared seed potato to UNSPPA that in turn sells to contract markets; at times from government and other private buyers. Group members were able to sell seed potato at significantly higher prices—in some cases double the price for a bag of seed potatoes vs. potatoes for consumption. By growing seed potatoes, these farmers built a dynamic input market that has expanded their household income and food security.

This example represents a viable, self-sustaining service delivery model that has the potential to greatly expand rural purchasing power in CC targeted communities through the ongoing provision of improved potato seed. To enhance the potential for sustainability and greater long-term impact, CC has started registering seed producer groups with UNSPPA and strengthening each groups' governance structures. Finally, CC has also started building the groups' capacity to properly store seeds and expand their linkages in local markets to further strengthen the service model.

Irish Potato learning site establishment in Rugyeyo, Kanungu district. Photo by Dan Nabaasa.