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# ZAMBIA PROFIT IMPACT ASSESSMENT: ENDLINE QUALITATIVE RESEARCH FINDINGS

## SUMMARY REPORT

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This publication was produced for review by the United States Agency for International Development. It was prepared by Jennefer Sebstad and Marina Krivoshlykova of DAI.



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## SUMMARY REPORT

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# FOREWORD

This document presents the summary of research findings from the endline qualitative research conducted as part of the U.S. Agency for International Development (USAID)/Zambia's Production, Finance and Technology (PROFIT) project follow-up impact assessment. The field research was conducted in April 2009 and included key informant interviews and focus group discussions with PROFIT clients in the three sectors covered by the impact assessment: retail agricultural inputs, livestock, and cotton. The primary purpose of this report is to inform and assist in interpreting the findings of the quantitative data analysis as part of the overall PROFIT follow-up impact assessment due to be finalized in August 2009.





# EXECUTIVE SUMMARY

The purpose of this qualitative research study, carried out as part of a larger impact assessment of Production, Finance and Technology (PROFIT) project, is to assist in interpreting findings from a longitudinal survey of smallholder farmers and to improve understanding of processes through which impacts occur. The qualitative research explored the incentives and risks for smallholders associated with upgrading and the interfirm cooperation and trust in three of the sectors assisted by PROFIT: retail input services, livestock, and cotton. The endline research focused on:

- The role of PROFIT's interventions in the retail services sector, specifically, the promotion of an agent model to support the growth and development of the retail agricultural inputs sector and expand smallholder farmers' access to agricultural inputs.
- The effectiveness of PROFIT interventions in fostering commercial service relationships between smallholder farmers and veterinary service providers.
- The effectiveness of PROFIT interventions in improving the operations in the cotton sector.

The qualitative analysis found the following:

**In the retail sector,** PROFIT promoted the development of the agent network model by working with input supply firms to select and train agents as input supplier representatives in rural communities that sell inputs and often provide spraying service for crops. The agent network model provides incentives for smallholder farmers to upgrade by improving access to quality inputs and the knowledge on how to use them properly. The model has helped farmers learn about new products, production processes, and technologies. In addition, there is an evolving sense of trust between value chain actors involved in the agent network. Actors are beginning to sense that cooperation will lead to benefits spread across the value chain. The following systemic changes are taking place because of PROFIT interventions:

- The supply of agricultural inputs and services to the smallholder market has increased and input suppliers have improved their knowledge and understanding of the smallholder market.
- New linkages have developed between input suppliers and service providers, as input supplier approach is shifting from product sales only toward a solutions-driven marketing strategy where they have begun to deliver services to smallholders instead of just products. Also, through their agent networks, suppliers are now providing services, such as herbicide spraying, and actively recruit and train local sprayers.
- The improved supply of inputs has helped farmers shift from subsistence to commercial agriculture.
- A change in the smallholder mindset is encouraging increased investment for growth, such as adopting new technologies and investing in upgrades.
- In some places, new commercial relationships are developing at the community level between agents, sprayers, tillage service providers, and farmers.
- As competition for the smallholder market grows, more input suppliers are considering using the agent model.

- The value chain governance structure has shifted to give more power to smallholders.
- Agents are starting their own sub-agent networks—this organic expansion and self-replication of agent networks illustrates their success.
- Increased cooperation within the input supply industry has contributed to the development of industry-wide standards for agricultural inputs.

**In the livestock sector,** the use of commercial veterinary services faced a number of interconnected challenges. The project succeeded in demonstrating the value of veterinary services to farmers as they witnessed how veterinary services can reduce cattle mortality. However, critical challenges remain around the lack of investment in cattle because farmers traditionally keep cattle as a source of social capital that binds families together, and do not invest in cattle for commercial reasons. Understanding the social context of the livestock value chain helps to explain PROFIT’s somewhat limited results in terms of livestock sales and income (this is to be confirmed with quantitative research).

Despite the challenges in instilling in farmers a more commercial approach to cattle-raising, the qualitative research found that some farmers do invest in upgrading once they see clear benefits of doing so, and now recognize and accept the value of commercial veterinary services. Farmers said that the use of new veterinary services facilitated by PROFIT contributed to improved animal health, reduced cattle mortality, increased numbers of cattle owned by individual farmers, improved farmer knowledge on animal health issues, and increased access to and demand for veterinary services. In addition, the following systemic changes were observed:

- The formation of commercially viable relationships around preventative veterinary services.
- Improved animal health and reduced mortality as a result of preventative veterinary services.
- A shift among a small portion of smallholders toward more commercial production.

**In the cotton sector,** a number of intervening factors affected PROFIT’s work and impact. The collapse of the international cotton market and its affect on the cotton sector in Zambia in 2006 led to a significant shift in project activities. Work in the baseline areas was suspended and shifted to new geographic areas. A further complication in achieving impact is the nature of the industry, where smallholder production is driven more by the availability of lead firm input credit than by purely commercial interests. For a long time, lead cotton firms focused on increasing the number of farmers, rather than on selecting and offering incentives to best performing farmers and helping further increase their productivity. In addition, upgrading and restructuring the internal management systems of cotton firm was necessary to improve sector operations and farmer productivity.

The discontinuation of project activities in the baseline areas in the South, the short implementation period, and lack of baseline data in the additional areas in the East makes it impossible to draw conclusions about impact. However, the qualitative research found that PROFIT-sponsored farmer training by the Conservation Farming Unit contributed to increased adoption of conservation farming practices. Moreover, lead firm training to farmers on improving harvesting techniques contributed to improved cotton quality. The qualitative research further observed two important shifts in the cotton sector related to PROFIT’s work:

- Lead cotton firms are moving away from locking in farmers with credit and toward locking them in with incentives and relationship-building efforts, such incentives for high performance, training, and discounts aimed at increasing farmer loyalty.
- Third-party input providers are becoming integrated into the cotton sector because of the development of spray service providers and the new linkages between cotton firms and input suppliers.



# INTRODUCTION AND METHODOLOGY

## PURPOSE OF THE RESEARCH

Qualitative research was conducted as part of the U.S. Agency for International Development (USAID)-funded Production, Finance and Technology (PROFIT) project follow-up impact assessment. The primary purpose of the research was to assist in interpreting the findings of the quantitative data analysis and to improve the understanding of what happened. Qualitative research conducted in April 2009 consisted of in-depth, semi-structured interviews with key informants and focus group discussions with PROFIT clients in the three sectors under study: retail agricultural inputs, livestock, and cotton.

The qualitative study examined the incentives and risks for smallholders associated with upgrading and interfirm cooperation in the value chain. The research considered how issues of trust, power asymmetries, and cultural context affect interfirm cooperation. The purpose of the endline qualitative research was to understand:

- The effectiveness of the agent model in promoting growth and development in the retail agricultural inputs sector and in expanding smallholder farmers' access to agricultural inputs.
- How the agent model has worked in promoting smallholder upgrading and market linkages.
- To understand how new actors and new relationships in the value chain (with the introduction of agents) affect value chain dynamics (trust, information flow), market linkages, and incentives and risks for smallholder upgrading.
- The effectiveness of PROFIT interventions in fostering commercial relationships between smallholder farmers and veterinary service providers.
- The effectiveness of PROFIT interventions in improving cotton sector operations.
- How gender affects trust and information flow in the value chain.

## METHODOLOGY

The research team collected qualitative data through in-depth interviews and focus group discussions with a sample of actors in the retail services, livestock, and cotton value chains. These sample actors included smallholder producers, input suppliers, agents, veterinarians, lead firm buyers, and brokers. The qualitative sample for each of the three sectors under study was developed in consultation with PROFIT staff (see Table 1). Due to shifts in project activities from the baseline to new areas during the course of the project, based on the guidance from PROFIT staff, the research team expanded the qualitative sample to include several new areas in addition to the areas covered during baseline research in order to provide for broader information on project implementation and lessons learned. Due to the crisis that hit the cotton sector in 2006 and the consequential redirection of PROFIT activities, a limited number of

interviews was conducted in the cotton sector. Detail on the geographic coverage of interviews for each of the sectors along with the list of interviews is included in the annex to this report.

**TABLE 1: PROFIT QUALITATIVE RESEARCH SAMPLE, APRIL 2009**

Participant	Retail	Livestock	Cotton	Total
<b>Farmers</b>	1 FG with 8 farmers (baseline area) 1 mini-FG with 4 women farmers (baseline area) 1 FG with 7 farmers (additional area) 1 mini-FG with 4 women farmers (additional)	1 FG with 7 cattle farmers—men and women (baseline area) 1 FG with 7 cattle farmers—men and women (additional area)	1 FG with 3 cotton farmers (baseline area)	23 interviews
<b>Agents or service providers</b>	4 interviews with input supplier agents (baseline area) 4 interviews with input supplier agents (additional area)	3 interviews with veterinary agents (baseline area) 2 interviews with veterinary agents (additional area)	5 interviews with spray or tillage service providers (baseline area)	18 interviews
<b>Input suppliers</b>	6 interviews with input suppliers	n/a	n/a	6 interviews
<b>Veterinarians</b>	n/a	2 interviews with veterinarians (baseline area) 1 interview with a veterinarian (additional area)	n/a	3 interviews
<b>Buyer or lead firm</b>	Zambian Agricultural Commodity Exchange (ZAMACE)	Beef buyers: n/a Dairy buyers: 2 interviews	2 interviews with Dunavant (head office and Eastern Province)	5 interviews
<b>Other organizations</b>	Croplife (input supplier organization)	n/a	n/a	1 interview

FG = focus group

## RESEARCH TEAM

The qualitative research team members included Marina Krivoslykova and Jennefer Sebstad of DAI, Michael Field of ACDI/VOCA, and Chozi Nkhata and Patrick Chilumba of RuralNet (a Zambian research firm that conducted the baseline qualitative research). The fieldwork was carried out in Zambia between April 13-28, 2009 by Marina Krivoslykova, Michael Field, and RuralNet's staff.

## RESEARCH FINDINGS

Detailed research findings for each of the three sectors studied are presented below.

# RETAIL SECTOR RESEARCH FINDINGS

## OVERVIEW OF PROFIT ACTIVITIES

To expand smallholder farmers' access to agricultural inputs and services, PROFIT project focused on three key objectives:

- Building effective commercial relationships between the input supply industry and smallholders;
- Fostering innovation through increased information and access to commercial services; and
- Improving the mutual benefit to input firms and smallholder clients from these relationships and innovations.

PROFIT followed a market-driven approach and looked for opportunities to identify commercial solutions to improving agricultural input and service provision to smallholder farmers. One vehicle PROFIT used to improve the distribution of inputs into rural communities and to facilitate upgrading was a community-based agent network model. That model introduced a new commercial actor in the value chain: agents who sell inputs (seeds and chemicals) to smallholders in rural communities on behalf of input suppliers. Many of the agents also provided spraying services to farmers for various crops and sometimes cattle using the chemicals supplied by the input firms.

The objective of the qualitative endline research was to assess the effectiveness of PROFIT interventions in the agricultural input supply sector and its success in achieving the above objectives. The research focused on changes that resulted from these interventions, and lessons learned about the agent network model as a solution to agricultural input supply constraints.

PROFIT used a demand-driven approach in its work with major commercial agriculture input supply firms and chose to work with firms that were ready to access the smallholder markets and willing to invest in the development of an agent network. As these firms internalized the agent network model and positioned themselves strategically to maximize their commercial interests, their regional priorities shifted from the areas that were originally chosen for the retail sector baseline study (Mkushi). For example, one chemicals input supplier, Cropserve, started their agent network in Mkushi, but expanded into more dynamic areas such as Mazabuka, Monze and Choma (Southern province), Mpongwe (Copperbelt), and Kabwe (Central Province). Their activities in Mkushi were limited. Landserve, another supplier of chemicals, started in Mkushi and at the endline their agents were more active in that area than the Cropserve agents. In addition, the leading suppliers of seed, Pannar and MRI, have dynamic agent networks operating in Choma (Southern Province), an area that was not part of the baseline study. To capture a more complete range of impacts and lessons learned, the qualitative research covered the Choma area in the Southern province where the agent model was especially active and dynamic, in addition for the Mkushi area in the Central Province that was originally selected as the baseline study area.

## **BUILDING COMMERCIAL RELATIONSHIPS BETWEEN THE INPUT SUPPLY INDUSTRY AND SMALLHOLDERS**

PROFIT took a systems-based approach that focuses on building commercial relationships between the input industry and smallholder farmers. At the start of the project, the provision of agricultural inputs in rural areas was limited by very long distances, geographically dispersed rural communities, and a poor road network resulting in high transaction costs mostly due to high fuel costs. Costs of purchasing inputs for farmers were high and availability of quality inputs and related technical services was limited. To address these challenges, PROFIT employed an agent network solution to distribute inputs into rural communities with the direct involvement of the community members. This model contained several features that matched the needs of the Zambian environment:

- A limited reliance on moving inventory until it is sold;
- A limited reliance on retail space, which is expensive to build/rent, stock, and secure; and
- A limited use of credit to reduce stress in an already stressful commercial environment.

### **HOW AGENT NETWORKS WORK**

#### **Basic features**

The agent network model works through agents at the community level who take orders from farmers for inputs (chemicals and seeds) on a prepayment basis. They consolidate these orders and place them with input supplier representatives in towns. In most cases, agents deliver the inputs directly to farmers. However, if the orders are big enough, the input suppliers sometimes deliver them directly to the communities. The agents are usually farmers themselves who come from a particular community and serve as an intermediary between farmers there and a particular input supplier. Many agents also serve as a spray service provider for farmers. They use their own sprayers and purchase the chemicals from the input supplier.

Community members are actively involved in selecting agents in most places. Typically, they select the more advanced farmers who are known and trusted by others in the community. In some cases, input suppliers select the agents themselves. In both cases, once selected, the agents receive training from input supply firms on the use of chemicals, spraying, and the input supplier products, and from PROFIT on the basics of running an agent business, including record keeping and customer service. Agents who are also spray service providers are trained in how to spray and receive uniforms and safety equipment from the input supplier.

Some of the basic features of the agent-network model are similar across input firms and geographic areas. For example, in all cases, the agents take orders from local farmers and then place the orders with input suppliers. The price of the inputs is the same as the retail price charged by the input supplier and some suppliers sign agreements with their agents to ensure that the prices charged to farmers do not exceed the retail price.

#### **Payment structure**

The model is flexible and has been adapted in a variety of ways. For example, the payment systems differ. Agents for Cropserve, a commercial chemical input supplier, purchase the product at a discount and get a markup of about 20 percent of the price of chemical products. Others, such as agents for Lanserve,



another chemical input supplier, get a 20 percent commission on all of their sales. Agents working with Pannar Seed, a seed input supplier, get a commission of 15 percent for seeds that they deliver themselves, or 10 percent for seeds that seed suppliers deliver directly to farmers (this only happens when there is a large enough order).

There also are differences in how the agents are organized and managed. For example, one seed company (MRI seed) manages its agents through “hubs” (also agents), who are responsible for communicating with several agents and collecting orders from them. Both the hub and the agents get a 10 percent commission for collecting the orders and placing them with the input supplier. In this case, the input supplier assumes responsibility for delivering the products directly (this model seems to be the least profitable for input supplier).

Between the baseline and endline study periods, financial services were not part of the agent network model. Neither input suppliers nor agents offered formal credit. The farmers pre-pay agents with cash and agents pay input suppliers with cash. Some agents defer pre-payments to farmers when they cannot pay right away, but they do not offer credit on a formal basis.

### **Expansion of sub-agent networks**

The agent network has evolved organically as some agency now use sub-agents to expand their coverage through a ‘cascade’ effect. Sub-agents collect orders and get pre-payments, and then either pick up the inputs from the agents or have the inputs delivered to them by the agents. The payment systems between agents and sub-agents vary—with sub-agents getting anywhere between 15 to 50 percent commission on sales that they make. Sometimes agents sell products to sub-agents at a discount. Individual agents who want to expand their business created this sub-agent network, without the involvement of input suppliers. The arrangements are made individually between agents and sub-agents.

### **Input supplier-agent relationship**

The role that the input suppliers play in the system varies. In some cases, input suppliers actively promote sales through “field days”, regular training to their agents, or the provision of technical assistance directly to farmers with the agent’s assistance. In other cases, the relationship between input suppliers and agents is more distant, focused solely on selling the product to agents when they place orders. Some input suppliers actively manage agents through regular meetings and training that takes place several times a year. In other cases, there is little management and ongoing re-training. The nature of these relationships depends on management structure (centralized versus decentralized) and regional priorities of the input supply firms.

Some suppliers use short message service (SMS) to share product information with their agents. While some agents become ‘certified’ input suppliers, other suppliers do not issue any formal certification to their agents even though all agents receive formal training by input firms. One firm mentioned that they tested the agents after the training and only allowed the best to become agents. Some input suppliers have written agreements/contracts in place with their agents and some do not. In several cases, the same farmer is an agent for both a seed supplier and a chemical supplier (often as a result of seed and chemical suppliers working together to increase their outreach to rural areas), but never for two competing companies.

An important feature of the agent network model is its flexibility in adapting to different local contexts, management structures, and combinations of products and services.

## PERSPECTIVES OF VALUE CHAIN ACTORS ON THE AGENT-NETWORK MODEL

Overall, farmers, agents, and input suppliers view the agent network model favorably. They all said they have benefited from it, but also discussed some of the challenges.

### Perspectives of farmers

Farmers interviewed in the qualitative study expressed a positive view of the agent network model. Both men and women farmers said they have better access to inputs through the agents and benefit from reduced transport costs associated with accessing inputs. They also benefit from advice on production techniques, planting, and the correct selection and use of inputs. In some cases, agents facilitate access to information on new products and services, new buyers, and prices. A few agents also help farmers sell their produce. The farmers trust the agents because they come from the same communities, are known, and treat them fairly. They appreciate the personal contact and attention they get from the agents.

*“Agents bring products to the village in bulk and there are no transport costs to the farmers. Agents are demand-driven—they bring what farmers want and give them money for. Agents also bring product knowledge—they teach us how to use the product. If you buy in the shop, they don’t teach you. Agents that sell chemicals live in the village and know the problems that we face. We know them. Agents also help in terms of sales of our crops; they bring information on prices. Agents are fair because we know them. If you are short on cash, they will give you a discount, or allow to pay a few days later.”* [Male and female maize and groundnut farmers, Focus Groups Discussion (FGD), Chikupili area, Mkushi]

While farmers see reduced transport costs to be a benefit, agents frequently mentioned transport costs to be a challenge. To address this challenge, some input suppliers provide a higher margin to agents who deliver the products themselves (rather than the input supplier taking responsibility for delivery).

### Perspectives of agents

The agents interviewed in the endline study were all in favor of the model. They are able to make extra income and obtain valuable knowledge and training from the input suppliers on the use of the products and the application of the chemicals. Some agents also received training on how to provide spraying services. They highly value this new knowledge because they also are farmers and can apply it in their own farming businesses. While, overall, agents expressed a high degree of satisfaction with the model, they also faced challenges. As mentioned above, one challenge is transporting the goods to the farmers. Another challenge is that the input supply business is seasonal, so it does not provide year-round income. Perhaps the biggest challenge for both farmers and agents is coordinating the timing of orders. Farmers need chemicals at different times and sometimes they have to wait until there are enough orders from other farmers before the order is bulked, submitted, and filled. Farmers who do not receive their inputs on a timely basis sometimes lose trust in the agents and the system.

*“Over time we discovered that farmers need chemicals at different times—it would be hard to off-set transportation costs if we were to purchase for each farmer individually, we need to wait for several orders before going to get inputs. There is a need for agents to open their own shops in the communities and store products, so that they can be sold to farmers when needed.”* [Agent for chemical input supplier, Chalata area, Mkushi]

### Perspectives of input suppliers

Input suppliers interviewed indicated that the agent model brings them closer to farmers. In particular, seed companies said that it allowed them to identify and diagnose problems early and get better information on farmer demand. According to one input supplier, this closer relationship helps them to understand the mentality of farmers and their needs. This information serves as a driver for them in innovating new products to meet farmer needs better, such as developing new seed varieties. They also see that the agent network has helped them to market the products and increase farmer awareness of their products.

*“The key market information comes from farmers themselves. They give us ideas. We learn about the challenges that farmers face through field days and try to address those. If we see a prominent problem, we look at ways to solve it—improve the seed, develop new varieties. Field days help us project demand. At the end of the day you get a sense of what farmer needs are and how many are planning to grow our seed this year. Field days are better than just promotion. They help us learn about the issues that farmers face.”*  
[Seed input supplier representative, Choma].

## CHALLENGES

Despite successful implementation of the agent network model and its positive role in improving the agricultural input supply in rural areas, several challenges remain:

- Meeting individual farmer needs for supplies at a particular time is complicated by the fact that agents need to order in bulk to offset the transport costs. Farmers complained that this sometimes prevents them from getting products when they need them. Input suppliers only deliver products directly to farmers for large orders. For smaller orders, the agents must wait for a significant number of orders to be placed before it is cost effective for them to make a trip to the input supplier.
- A related challenge is the lack of finance for the agents to be able to purchase larger stocks of products that could be readily available in the village. Expansion/growth of agents will require access to finance for transport and product stock.
- Agents also face challenges in transporting the products to their customers due to limited transport services. The roads are bad, the distances are long, and finding transport is sometime difficult. Most agents use bikes, depend on rides with trucks, public transport, or get a ride with a PROFIT representative when he/she is in the area.
- Input suppliers voiced some difficulties in managing agents and have faced some risks with lack of payments from the agents. However, this was mainly the challenge early on as the suppliers started working with newly selected agents to discover that some of them were dishonest and tried to avoid the payment. With time, input suppliers were able to identify the underperforming agents and end their relationship with them.
- A challenge for some input suppliers has been their limited capacity to accurately forecast and fulfill the growing demand from the increasing number of farmers they serve through agents. Agents sometimes come to the input suppliers with orders and find that the products are not available. While supply is improving, it has undermined the trust of some farmers and agents in the system.

- A related problem is the limited capacity of input firms to shift management practices and systems from a focus on per unit market (a few large clients) to a volume-based model (thousands of clients). Volume-based management is critical to meeting the needs of the smallholder market and it has been a struggle for input firms to make this shift. The shift requires standardized reporting and record keeping and investments in management systems to gather and assess operational trends; track orders and inventory; perform market analysis, research, and forecasting; and provide training for mid-level management staff.
- Input suppliers with centralized management structures, where decisions are made by the head office in Lusaka, have experienced less dynamic growth in agent networks because decision-making is slow and the allocation of resources to regional offices for agent management and community involvement is limited.
- Changing the farmer mindset toward adopting new technologies remains a challenge. Resistance to innovation in rural communities is strong as many farmers tend to rely on the old ways of production and ingrained perceptions until they see demonstration effects and the direct impact of new products and technologies on their crops.
- Government and donors that push out commercial firms foster a perception that inputs are public goods to be handed out for free and create disincentives for the development of commercial suppliers and networks.

## IMPACT ON SMALLHOLDER UPGRADING

The agent network model provides incentives for smallholder farmers to upgrade by improving access to quality inputs and the knowledge on how to use them properly. Farmers and agents participating in the qualitative study have adopted new seed varieties and are using herbicides and chemicals to treat crop diseases. The agents, drawing on the training they receive from the input suppliers, have provided farmers with accurate information on new products, technologies, and practices. For example, farmers have learned more about crop diseases and how to treat them with the proper application of specific chemicals and herbicides at the right time. They have improved knowledge on which seeds to plant when. They have also learned the value of planning ahead—in preparing their land, buying seeds earlier, projecting their yields, and anticipating their cash flow needs over the course of a year. They are aware of the high risks of using fake chemicals that destroy their crops, and of the importance of using certified products. They have increased awareness of the risks of using uncertified seeds, and increased their purchases of certified seeds. With this knowledge, combined with improved access to quality inputs, farmers have gained confidence to upgrade their crops. The upgrading, in turn, has resulted in higher quality and higher yields. Both men and women farmers reported these types of benefits.

*“Previously we grew maize the way our parents used to grow it—now we do it differently. We use new varieties and get higher yields. Before we didn’t know about different diseases for maize - now we know how to handle them, how to use chemicals on maize before planting and before harvesting.”* [Maize and groundnut farmers (male and female), FGD, Chikupili area, Mkushi]

*“Farmers learned that uncertified products are often bad. Before, they used to buy from anybody and would sometimes buy chemicals sold just in a plastic coca-cola bottle and*

*would destroy their crops by applying the wrong chemical. Now they only want to buy certified products.” [Agent for chemical input supplier, Chalata area, Mkushi]*

The agents have played a key role in transferring this knowledge to farmers. They also provide general business training, such as budgeting and record keeping. Overall, closer relationships between farmers and agents improve the information flow that supports the upgrading process. Agents have also taught farmers how to use SMS to obtain market information on prices and buyers. One seed input supply company was able to establish much closer direct relationships with farmers through the agent model. As a result, they are able to get up-to-date information on farmer needs, which helps them make better projections of demand. They also get information on farmer demand for seed varieties that are better suited to their needs, which has driven company innovation on developing new seed varieties. This, in turn, reinforces the process of upgrading.

## VALUE CHAIN RELATIONSHIPS

The qualitative research focused on the portion of the value chain linked to inputs (supporting markets and farmers) as opposed to the portions between farmers and end markets. Overall, the research found good relationships in this part of the retail value chain. There is an evolving sense of trust between value chain actors involved in the agent network, although this has taken time. The benefits received by all actors point to win-win relationships in the value chain—farmers now have access to inputs and the knowledge and skills to upgrade; agents gain through additional income, knowledge, and position in the community; and input suppliers have expanded their sales and market coverage. The research suggests that the flexibility of the model in adapting to different actors, contexts, and products, as described above, helps to maintain the balance of power, information flow, and benefits in the value chain. The trust that is emerging should help to sustain and expand the agent network and reinforce the benefits for farmers, agents, and input suppliers in the retail sector.

### Vertical relationships

**Relationship between farmers and agents:** The interviews found the relationship between farmers and agents to be very good. Some of the factors that have contributed to this positive relationship include:

- Community-based selection of agents who come from the farmers’ communities, helping to establish a trusting relationship from the beginning.
- Honesty with money.
- Delivering the right products on time (this also depends on the capacity of input suppliers to have the products available to agents when they need them).
- Delivering products that bring results.
- Providing training in the selection and use of products.
- Selling inputs that are affordable.
- Maintaining personal, one-on-one relationships between agents and farmers.

These factors help farmers and agents build and maintain trusting relationships and ensure that information flows in both directions.

**Relationship between agents and sub-agents:** So far, the relationship between agents and sub-agents seems to be good. However, the expansion of sub-agent networks is a recent occurrence and it is too early to tell how it will develop in the future. At this time, agents organize and manage their sub-agents themselves and both agents and sub-agents benefit from the arrangement. Input suppliers are not directly involved now, but welcome the development of sub-agent networks. Although some have questioned their capacity to manage sub-agents and expressed potential concerns about quality control and assurance in the future.

**Relationship between agents and input suppliers:** Despite difficulties in agent management early on and identifying underperforming agents, relationships between agents and input suppliers are working well. Agents are, in general, satisfied with the benefits they are getting from this arrangement and feel they are being treated fairly by the input suppliers. Agents appear to view the relationship with input suppliers a little more positively than the input suppliers view the relationship with agents. Several input suppliers interviewed attributed the positive relationships they have with their agents to community role in selecting the agents.

*“Initially, 5-10% of trained agents would disappoint us. [Some were dishonest and some just lacked the capacity and business acumen to go through with the agent business]. It has been a battle because this system is very new. People are not used to it. Farmers are used to free handouts. People have never been given an opportunity to develop themselves. Agent model is a very self-reliant approach to development. This concept needs to be understood fairly, not critically.”* [Seed input supplier representative, Monze].

**Relationship between input supplier central offices in Lusaka and regional representatives:** Success in building relationships between input suppliers, agents, and farmers depends on the management structure of input supply firms (centralized versus decentralized). Input suppliers that give enough management and decision-making responsibility to their regional offices saw the agent network being more dynamic, better-managed, and creating an overall closer relationship to the farmers. Input suppliers with a highly centralized management structure however, complained of the slow decision-making in Lusaka regarding their local agent network initiatives and a lack of resources for managing the agents and for transportation, preventing a close relationship with agents and farmers.

#### **Horizontal relationships**

**Relationships among farmers:** Strong horizontal cooperation among farmers is at the base of the agent/network model. It creates efficiencies in supplying inputs to farmers. While agents take orders from individuals, the group meetings they hold play an important role in the model. Farmers come together in meetings with agents; agents communicate with farmers through these meetings and through farmer groups. The meetings help agents understand farmers’ views, share information on products, and provide training. Cell phones, together with regular meetings, reinforce information sharing and communication among farmers.

**Relationships among agents:** Agents are new actors in the value chain. In general, there appears to be good cooperation among agents. They meet during training sessions held by input suppliers and share information with other agents. At this point, there is not a lot of competition for the same markets/market areas so relations are good.



**Relationships among input suppliers:** Most input suppliers indicated that their relationships with other suppliers are good, but there is no direct cooperation. In several cases, however, suppliers of seed and suppliers of chemicals coordinated their efforts by working with the same communities and often through the same agents, which has proved to be very effective in promoting farmer upgrading.

Some suppliers expressed concerns about competitor suppliers starting their own agent networks based on the success of the model, without making the necessary investments in developing relationships with the farmers, providing technical assistance, or managing their agents. Another supplier voiced the need for closer cooperation between input suppliers in order to transmit a joint message to farmers on important production practices.

*‘We should try not to confuse farmers too much. We need to focus on one issue, such as “buy inputs on time”, for example. We need to agree with other input suppliers on the key messages.’* [Input supplier representative, Monze]

## **SYSTEMIC CHANGES**

### **THE SUPPLY OF AGRICULTURAL INPUTS AND SERVICES TO THE SMALLHOLDER MARKET HAS INCREASED**

Between the baseline and endline study periods, the agricultural inputs industry has increased its efforts to target the smallholder market. There has been a change in the mindset of input suppliers that has resulted in an increase in services to the smallholder market. A shift in the industry took place from almost a 100 percent commercial market orientation to a growing share of smallholder clients.

### **NEW LINKAGES HAVE DEVELOPED BETWEEN INPUT SUPPLIERS AND SERVICE PROVIDERS**

A shift in input supplier approach is taking place from products sales only toward a more solutions-driven marketing strategy where information, knowledge, and solutions are becoming an integral part of the product distribution strategy. Firms realized that labor and equipment shortages in rural communities provided an opportunity to deliver services to smallholders instead of just products, resulting in the sale of even more of their products. Through their agent networks, input suppliers are now providing products and services, such as herbicides spraying services, and actively recruit and train local sprayers.

### **THE SUPPLY OF INPUTS HAS HELPED FARMERS SHIFT FROM SUBSISTENCE TO COMMERCIAL AGRICULTURE**

Increased access to commercial agricultural services has encouraged the shift in smallholder practices from subsistence to emerging commercial agriculture. The increased supply of commercial products and services through the agent model has supported this shift.

### **NEW COMMERCIAL RELATIONSHIPS ARE DEVELOPING AT THE COMMUNITY LEVEL**

Through the introduction of the agent network, new win-win commercial relationships have been developed at the community level where new and mutually reinforcing economic activities are taking place involving agents, sprayers, tillage service providers, and farmers.

### **WHERE SEED COMPANIES AND AGRICULTURAL CHEMICAL COMPANIES WORK TOGETHER, THERE IS MORE IMPACT ON SMALLHOLDER AGRICULTURE (UPGRADING)**

The agent model is dynamic and where seed companies and input supply firms are working together, there are indications of a higher adoption of new technologies, greater use of herbicides, access to better seed, and use of SMS. In areas where only the seed companies are active, there is better seed knowledge and usage, but herbicides are not applied if the input suppliers (chemical companies) are not active at the same time. (This includes some remote areas in Choma where the Pannar seed supply company was very active, but Cropserve, the chemical supplier, has not developed equally strong ties with the community). In some cases where seed companies and input companies worked together, impact has been higher.

### **UP TO NOW, THERE IS LIMITED COMPETITION AMONG AGENTS**

There is not much competition between agents right now, as each covers their own areas. Other input sellers not affiliated with input suppliers are at a disadvantage because they do not bring the technical knowledge to farmers. To date, there is little overlap in coverage between input supplier agents in different areas.

### **AS COMPETITION FOR THE SMALLHOLDER MARKET GROWS, MORE INPUT SUPPLIERS ARE LOOKING AT USING THE AGENT MODEL**

Success of the agent network model and increased competitive pressure in the industry have led to more input suppliers interested in “copying” the agent network model for their own growth. Several input firms have approached PROFIT with requests for assistance in helping develop the networks. Some input suppliers are concerned that new suppliers will come in and take advantage of the agent model without making the investment that they have made in training farmers and providing technical assistance.

### **INPUT SUPPLIERS HAVE INCREASED THEIR KNOWLEDGE AND UNDERSTANDING OF THE SMALLHOLDER MARKET**

One of the successes of the agent network model, to date, has been helping the agricultural input supply companies to understand better the issues that farmers are facing today.

*“I always knew that there is demand, but never understood how misunderstood the maize growing was. In the agriculture sector, there is a huge misunderstanding of farming. I now understand how farmers think. FSP can supply fertilizer for 10 year and farmers will still get it wrong. You need to give them instruction, a manual. Seed bags don’t come with an instruction manual. That way they increase profitability and move from dependency to self-reliance. [Seed input supplier representative, Monze]*

### **VALUE CHAIN GOVERNANCE STRUCTURE HAS SHIFTED TOWARD HIGHER SMALLHOLDER EMPOWERMENT**

A shift in value chain governance took place as input firms developed new distribution structures that directly linked them to smallholder communities. As a result, the input firms established a directed governance structure (although some of the firms still manage their networks very loosely) and because the smallholder was the client of the distribution network a shift in the dynamics took place that was empowering to smallholders. Benefits have increased to smallholders in terms of increased convenience, improved access to information, and reduced transaction costs.



*“What was missing before was information. Now that information is flowing it helps the community grow and I see results”.* [Seed input supplier representative, Choma]

#### **A CHANGE IN SMALLHOLDER MINDSET IS TAKING PLACE TOWARD INCREASED INVESTMENT FOR GROWTH**

The demonstration effects from the use of new products and technologies supplied by input firms through agents helped change the farmer mindset toward adopting new technologies and increasing investment in upgrading.

#### **ORGANIC EXPANSION AND SELF-REPLICATION OF AGENT NETWORKS IS TAKING PLACE**

The success the agent network model is reflected in its self-replication: agents are starting their own sub-agent networks. Through a cascade effect, the sub-agents are able to cover a larger geographic area and reach into more remote areas. The input supply companies have not explicitly promoted the growth of sub-agents, but welcome its organic growth.

#### **AS A RESULT OF INCREASED COOPERATION WITHIN THE INPUT SUPPLY INDUSTRY, INDUSTRY-WIDE STANDARDS FOR AGRICULTURAL INPUTS HAVE BEEN DEVELOPED**

With PROFIT support, the industry adopted a set of industry-wide standards for safe use of chemicals, and is undertaking certification and re-training for their spray service providers to ensure quality and standards compliance.

### **GENDER ISSUES**

The research focused on gender roles and attitudes and how they play out in the agent-network model. The results show that both men and women farmers are engaged in farming and in decisions around the purchase and use of inputs and upgrading. Both genders interact with agents in purchasing inputs and receiving advice, and both have a favorable view of the agent network model. Men and women alike said they had good relationships with the agents and trusted them with the money they give them in advance for their input purchases. While there are only a few women agents, most farmers—women and men—said that the gender of the agent was not a major factor in their relationship with them.

Both the input suppliers and head office representatives interviewed offered that women often are better agents than men because they are hard working and honest. However, this preference was not evident on the ground; there are still very few women agents and much can be done to promote their participation and actively reach out to women farmers. In delving deeper, the research found that while progress is evident, women continue to face constraints in terms of mobility, access to information, control over income, and, in some cases, gender-biased attitudes. These findings are discussed in more detail below.

#### **GENDER DIVISION OF LABOR IN FARMING**

Respondents generally concurred that the gender division of labor in farming is breaking down, with women and men playing similar roles across activities. This positions women as active consumers of agricultural inputs, information, and technologies, users of agent services, and, potentially, beneficiaries of commercial farming.

*“These days all the work is the same for men and women. There are no such jobs that are for men or women only”* [Focus Group Participants, April 2009]

Women still face some constraints in doing heavier work. For example, several mentioned that there were no women spaying service providers because the tanks are too heavy for them to handle.

#### **GENDER AND ACCESS TO INFORMATION**

While access to information, in general, is improving through cell phones as well as the agent network, there are indications that women are still at a disadvantage in terms of access to information. This may relate in part to their limited access to cell phones. The statement below suggesting they do not usually attend meetings is an issue that could be addressed in the model, as it is an important venue not only for accessing information, but also for selecting agents.

*“Women get information later than men because they do not usually attend meetings, otherwise information sources are the same* [Male farmer FGD participant, Choma]

#### **GENDER AND TECHNOLOGY ADOPTION**

Male agents interviewed described women, generally, as better than men in implementing new technologies. While this would need to be confirmed through a more systematic study, it suggests that more active efforts to involve women in the agent model (as agents and sub-agents promoting new technologies, in promotional meetings, and as a target market) could have a high payoff.

*“Dealing with women farmers—women want men to agree first and tend to hesitate in making decisions. But they are better implementers than men. If a woman learns a new technique or chemical, she will follow by the book. But men want to go back to what he used to do.”* [Agent, April 2009]

#### **INTRAHOUSEHOLD DECISION MAKING**

Study participants describe a pattern of joint decision making at the household level around farming production and sales. While both men and women participate in the decision making process (suggesting a bargaining model of decision making), several people said that final decisions typically are made by men. This is especially the case in the Tonga, which is a more traditional area where polygamy is common.

*“Before planting season, we sit down and decide how much to plant of which crop, based on the information we get from the farmers group. The final decision is made by men, but the agent has taught us how to make decisions to increase our income.”* [Female farmer FGD, Mkushi]

#### **WOMEN'S CONTROL OVER INCOME**

Lack of control over agricultural income may be a disincentive for women farmers to upgrade. The findings on women's control over income is mixed. Women and men both said that women often keep money for the household because it is safer.

*“In some families husband keeps the money and wastes it—by the time planting starts they find that there is no money left for inputs.”* [Female FGD, Mkushi]

However, there are other cases where men receive the money, and then it is split. Women keep the portion of the money that is used for household use, and men keep the portion of the money for their personal use. One man commented that men sometimes keep the larger amounts of money to prevent women taking the money to their parents' homes.

One reason money may be safer with women is that women have specific money management strategies. One woman described her use of a savings account to help manage money; other women described their financial strategies involving budgeting and advance planning.

*"We know how much we invested and what the profit is, and use these funds to buy things we need for the family. We know how to budget and how much fertilizer to buy and how much is left for the family needs". [Female FGD, Mkushi]*

By contrast, one man commented, *"Men keep the money because women cannot plan properly."* However, many agents did indicate that more women are trustworthy in payments than men.

The differences between women in Tonga and women in other areas reflect the influence of socio-cultural context. In Tonga, women and men do the same work in growing maize and groundnuts and both participate in decisions about harvesting and sales. However, while women voice their opinions about use of the income, men generally keep the money and, ultimately, decide on how it is used. In this context, men are the main decision makers at the household level.

#### **GENDER AND THE AGENT MODEL**

While there are many women farmers, there are only a few women agents, and few or no women input suppliers or representatives in the large input supply companies. Nonetheless, actors all along the value chain had a very positive view of women agents, which suggests good potential to expand their involvement.

The research revealed some interesting dynamics and attitudes around gender in the retail input value chain that might help to explain women's limited participation, to date, as actors other than farmers. At the same time, it suggests a number of ways women that can be brought into the agent network as more active participants, and how this is can further promote the growth and development of the retail sector, product and process upgrading in farming activities, and more benefits to women.

#### **Most farmers' have a positive view of both men and women agents**

The research found that men and women farmers both are engaged in farming and in decisions around the purchase and use of inputs. They both interact with agents—in terms of purchasing inputs and receiving advice. Both men and women have a favorable view of the agent network model. Men and women alike said they had good relationships with the agents and trusted them with the money they give them in advance for their input purchases. While there are very few women agents, the farmers consistently say that gender of the agent is not a factor in their relationship with them.

#### **Men farmers seem to have more issues with women agents than women farmers have with men agents**

The views of a few farmers suggest a bias against female agents by men.

*“Female agents are slow in doing things. Agents should be able to move fast. Women agents are slow. It is better to deal with the husband.” [Maize and groundnut farmer FGD, Chikupili area, Mkushi]*

#### **Agents expressed wide-ranging views and attitudes about the differences between men and women farmers**

While the views and attitudes of agents (both men and women) are not always negative regarding gender, they do see differences between men and women farmers. For example, men agents said they do not have as much trouble getting women to prepay for products as men because they are more trusting. One male agent commented that men farmers usually doubt things and new practices/technologies until they see things work and improve. Another said that men buy more quickly while women ask more questions.

The woman agent interviewed agreed that it is easier to collect payments from women because they are more honest than men. She takes a hard line with men

*“It is easier to get payment from women, than men. If men don’t pay, I take them to the police”. [Woman agent, Mkushi]*

One male agent did voice a preference for dealing with husbands rather than women farmers:

*“Women farmers fail to open up to male farmers and hence there is suspicion that there is something that you are looking for from them. It is better to deal with their husbands”. [Male agent, Chikupili area, Mkushi]*

#### **Women agents attract women farmers**

A woman agent who was interviewed said that women agents do not usually experience problems dealing with men and are acceptable to both men and women farmers. However, they do attract women clients, because “as women we understand each other’s problems.” She feels that women agents empower women farmers by example. Women farmers who were interviewed described how they came together as a farmer group both to buy fertilizer from the government and to pay the agent [the woman agent above] to buy chemicals. As a group, they also sell through this woman agent.

*“We put our crops together and give them to [the woman agent] to sell on our behalf. Before this we used to be just a women’s group, but now we include a few men. [The woman agent] sells and buys, and her prices are fair in both cases”. [Female farmer, FGD, Mkushi]*

*“...she is there to help us improve our farming. If there are issues with chemicals, she helps. There are many agents around, but we know [woman agent], so we go to her all the time. We also get help from [woman agent], get new information that we might not know. [She] encourages us, she is closer to us, so she can come to the field and see the diseases herself. [Woman agent] is fair”. [Female farmer, FGD, Mkushi]*

#### **Input suppliers’ [all men] cite many advantages of working with woman agents**

The number of women agents is still limited—one input supplier said 2 out of 24 agents were women and 5 sub-agents were women; another said that out of 139 hubs, 4-5 are women. However, input suppliers cited many advantages of working with and through women agents: they are good trainers, constructive and good at explaining things to farmers, more trustworthy with money, and acceptable to the community

and very accepted by farmers. They are perceived as responsible and faster learner than men. They also are seen as more honest and hardworking than some men.

The main constraints they see is that women are not as mobile because they cannot bike long distances to reach farmers. They also see that women are not as “fast moving” as men in their ability to come to meetings. While the general view was that women are acceptable to men and women farmers alike, one input supplier was concerned that some men farmers may not want to transact with women.

In sum, the findings on gender suggest that women *are* engaged in upgrading decisions. However, it is not clear if the flow of benefits is distributed evenly between men and women because we did not dig deeply into the marketing side. Men still seem to dominate in many decisions and control of income. This research must be confirmed through the quantitative research. Everyone seems to acknowledge the important role of women in farming, effectively adopting new technologies, and managing household income. However, there are still very few women agents, and a great deal of unrealized potential for involving women more activity in the model—as agents, subagents, and an explicitly targeted market segment for agricultural inputs and information.

Some ideas for how to expand women’s participation as agents are to:

- Encourage women to participate more actively in community farmer meetings, especially in meetings where agents are nominated by community members;
- Work more with and through women’s groups;
- Give tips in the training for how agents can be ‘gender aware’ in their work;
- Actively promote products and information services to women;
- Offer information sessions at women-friendly venues (places *and* times);
- Have a training session with input suppliers on the potential for expanding into the women’s market (recognizing the needs of women farmers);
- Promote the participation of women as sub-agents;
- Provide more gender disaggregated data on agents to headquarters; and
- Build on the positive views of women agents and farmers.

## LESSONS LEARNED

Success factors in building agent network model in the retail sector offer the following broad lessons for other project implementers:

- Understanding farmers as consumers can be effective at fostering behavior change, as opposed to only focusing on their output as producers.
- Smallholders have proven to be a viable market. The cash upfront payment even in poor areas was not as big an issue as initially anticipated. After seeing field demonstrations and the benefits of adopting new products and technologies, farmers were willing to invest in upgrading.

- A commercial input industry is a key driver of innovation both on the farmer and input supplier side and critical for longer-term upgrading. Learning about the smallholder market and farmer needs through closer contacts with farmer communities helps drive product innovation on the input supplier side, such as developing new seed varieties or packaging of chemical products in smaller quantities to meet farmer needs. When they see clear benefits, farmers invest in upgrading.
- The input industry is a key component of agricultural value chains and should not be treated as a public good. Treating inputs as a public good through handouts or government-controlled subsidy programs lowers the probability of upgrading by limited access, increasing the longer-term cost, and reducing innovation by crowding out private sector investment in the input industry.
- A volume-based business model is critical to building a distribution structure for the smallholder market. The shift to targeting smallholders is not just a process of promoting products to smallholders. It requires changing the business model to a volume-based business model that has systems to manage large numbers of customer relationships. Critical elements of such a management system include managing agents, better order tracking processes, staff training, staff performance compensation systems, and better inventory management systems.
- Building the internal management capacity of input suppliers is critical to the effectiveness and expansion of agent networks. Critical factors are input supplier capacity to manage their agents and view them as a core part of their business and not as outsiders (evaluate their performance, get rid of underperforming agents, monitor quality); input supplier capacity to forecast smallholder demand and manage inventory; and input supplier engagement at the community level through promotional activities and training to maintain quality control of agents, learn about farmer needs, and build agent credibility within the communities.
- Trust and relationship building takes time but can be strengthened through community involvement in selecting agents and active input supplier engagement with their agents and their communities—trust and satisfaction on the farmer and agent side are strongest where suppliers are more involved in promotion and training.
- Competitive pressure among input suppliers can help foster upgrading as demonstrated by growing interest on the input supplier side in adopting the agent network model.

# LIVESTOCK SECTOR RESEARCH FINDINGS

## OVERVIEW OF PROFIT ACTIVITIES

In the livestock sector, PROFIT interventions focused on increasing the availability of veterinary services to farmers by fostering commercial relationships between smallholder farmers and veterinary service providers. The project started by linking private veterinarians to cattle farmers and identifying ways to reduce the high transaction costs—such as fuel costs, travel time, and poor road network—vets incur reaching large numbers of geographically dispersed farmers. Because of the limited number of private veterinarians operating in rural areas (most were based in towns and worked with cats and dogs), PROFIT eventually expanded its program to include the public veterinarians who were interested in starting private practices.

PROFIT experimented with several approaches to test the smallholder market for commercial veterinary services and to demonstrate their value to farmers. Working with both private and public vets, the project supported the development and marketing of Herd Health Plan (HHP)—a one-year prevention program provided by the vets based on an upfront yearly payment per animal. PROFIT used a community-based agent model to expand the outreach of this program to rural areas. In this model, the vet, with the community, identifies a community representative—a Community Livestock Worker (CLW)—to serve as a link between the vet and farmers and to help organize farmers as a group into the HHP to help reduce the cost of the program. Once smallholders demonstrated a demand for vet services through the HHP, PROFIT also encouraged veterinarians to offer one-off services to farmers not covered by the HHP. In addition, PROFIT encouraged the provision of basic livestock products and cattle straying services to farmers through retail input suppliers, using retail agent networks in areas where the HHP was not operating.

PROFIT also tried two other approaches to support the growth of the vet services industry. One was an internship program for young vets to conduct their residency with private vets serving rural farmers. This provides an opportunity for the newcomers to gain experience in offering private services to rural farmers. The second activity was the establishment of VET lab—a local laboratory testing facility to identify diseases. PROFIT collaborated with poultry and beef industry players and several vets to share the start-up costs of equipment for a private commercial vet lab.

In addition to the high transaction costs of providing vet services to farmers, a key challenge for reducing cattle mortality is changing the farmer mindset from viewing vet services as a free public good provided by the government to understanding the value of commercial veterinary services.<sup>1</sup> Cattle ownership in Zambia traditionally is not seen as a commercial activity, but as a source of social capital with a complex ownership structure locking families together. Because farmers do not make investments in cattle for economic gain, they tend to take a reactive approach to disease after it occurs rather than a proactive approach to preventing disease before it breaks out. The findings from the study suggest that a change in

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<sup>1</sup> The government provided free vet services in the 1980s but stopped in 1990. An outbreak of disease followed this shift in policy.



the mindset of farmers toward a more commercial approach to livestock rearing is necessary for them to use and value veterinary services. This must be considered in assessing any shifts in the sector or PROFIT's impacts.

**Qualitative Research Methodology:** The baseline area (Mazabuka) was a pioneer in the livestock sector at the start of the project. However, the private vet in the area was only interested in working with one community. He was not interested in expanding the smallholder program because of other demands on his time from commercial clients and his private clinic. In keeping with the demand-driven nature of the project, PROFIT did not pressure the private vet to expand the smallholder program but, instead, introduced the concept to the public vets. A public vet in the area joined the program and started offering HHP and one-off services to smallholder farmers. PROFIT continued its work in the baseline area but, as a result of the above circumstances, activities were less dynamic than in other areas. To ensure more full coverage and learning, PROFIT recommended that the qualitative research expand beyond Mazabuka to include an additional area (Chongwe). In this area, the private vet was more active and interested in offering services to farmers, which resulted in more dynamic livestock sector activities.

## DEVELOPING COMMERCIAL VET SERVICES FOR THE SMALLHOLDER MARKET

### HERD HEALTH PLAN

PROFIT introduced the HHP to allow private and public vets to work with smallholder communities through in-community agents offering pre-paid annual prevention services for cattle. These services included basic vaccinations, de-wormings, and spraying/dipping services. The HHP cost structure covered vets' travel costs, fuel, food, and professional fees. The large number of farmers in the program allowed for lower transaction costs for both the vet and farmers.

The qualitative study looked at three vet programs (two in Mazabuka, run by public and private vets, and one in Chongwe, run by a private vet). The basic features of the program were the same in each case: farmers paid upfront for a year of services, with payments ranging from 15,000 to 45,000 Kwacha per year, depending on the vet.<sup>2</sup> Each program included inventory and identification of all animals participating in the plan; regularly scheduled visits by the vet for the provision of basic vaccinations, de-wormings, and spraying/dipping services; and often a discount on one-off services and drug purchases for plan participants. The private vet in Mazabuka was the only exception because he chose not to provide spraying/dipping services as part of the scheme.<sup>3</sup>

Vet agents (CLWs) serve as the critical link between the vet and the community. In two out of three cases, the CLW was selected by the community and trained directly by the vet to assist in providing services to farmers on his behalf, such as diagnosing diseases and spraying. Usually the vet administers the vaccinations directly (because of quality control and cold chain requirements). The agents organize farmers into the HHP, market the services (HHP and one-off services), collect payments, diagnose diseases, and call the vet if an animal gets sick. Sometimes, CLWs conduct spraying on behalf of the vet,

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<sup>2</sup> US\$1 equaled approximately 5,000 Kwacha in April 2009.

<sup>3</sup> The vet considered spraying an inadequate substitute for dipping in terms of quality of disease prevention. At the same time, the vet did not have the resources needed for administering the dipping and monitoring the quality of dipping and dip tank maintenance.



give de-worming tablets to animals, and sell basic drugs. In Mazabuka, the private vet worked primarily with his assistant—a formal employee who administered all of the services. An in-community agent was present, but his role was limited to collecting money and helping to organize the community. (During the interview, the private vet indicated lack of trust in agents and the need for quality control as the main reasons he was not willing to work with agents.)

In the community livestock agent model, farmers purchase the HHP as part of a group, which helps to reduce the vet's transaction costs and significantly lower the HHP price per animal per year. Unlike the retail sector agent model, where most agents get a formal commission, the vet agents are unpaid (although some were compensated for communication and transportation costs). In one exception, an agent in Chongwe indicated being paid 1,000 Kwacha per animal brought into the HHP scheme. Based on the interviews, the main reason for the lack of a commission is the HHP cost structure. Farmers are not yet able to afford a higher payment that would cover the agent's commission. The vets set the price at a minimal level that is affordable to farmers and allows the vets to recover their costs. The public vet in Mazabuka has indicated the need to pay a commission to the agent and his willingness to do so, once the program picks up.

## ONE-OFF VETERINARY SERVICES

In addition to the comprehensive preventive services provided through the HHP, PROFIT encouraged vets to provide one-off services on a cash basis and to sell drugs to farmers. As in the case of the HHP, the agent serves as a link with the community for marketing the services and calling the vet if an animal gets sick. Overall, PROFIT staff observed growth in one-off services as many farmers started seeing the value of veterinary services but were not able to pay upfront for a year of HHP services. In the areas covered by the qualitative study, the balance between the HHP and one-off services varied between the vets interviewed.

**The private vet in Mazabuka** offered both HHP and one-off services, but concentrated on the HHP because of the limited time available for marketing one-off services, given the demands of running the commercial side of the business.

*We provide both one-off services and HHP. The advantage of HHP is that it allows us to reach a number of farmers at the same time, rather than visiting them one by one, which is costly. The HHP share of the services to smallholders is bigger than one-off services to smallholders. [Vet assistant to private vet, Mazabuka]*

However, the vet has reported having experienced growth in the number of individual farmer visits to the clinic, which could indicate growing demand for one-off services.

**The public vet in Mazabuka**, provided both HHP and one-off services, but has indicated that the HHP as the key area of growth for his business:

*It is rare to notice the growth in one-off services; it is HHP that is growing.*

**The private vet in Chongwe**, on the other hand, is not willing to provide one-off services for smallholders because of high risks to animal health associated with inconsistent protection and perceived risk of being held liable by the farmers should disease occur.

## SPRAYING SERVICES PROVIDED THROUGH AGRICULTURAL INPUT NETWORKS

PROFIT worked with agricultural input suppliers in some areas to offer spraying services for cattle through agent networks in areas where the HHP was not available. In Mazabuka (baseline area), there currently are no input firms that provide vet services. In Chongwe, one input supplier reported selling some vet products and services. However, this was still a minor area of the business.

## NEW ACTORS AND NEW VALUE CHAIN RELATIONSHIPS

In an effort to develop commercial service relationships between smallholder farmers and vet service providers, PROFIT supported several approaches, as described above. This provided a way to test the market potential for various service offerings to farmers. PROFIT started with the premise that no single approach is the complete solution for farmers' needs; different methods worked differently depending on the context and the vet involved.

Overall, the qualitative research found that new relationships have been formed around the provision of commercial vet services for farmers as a result of PROFIT's work. In addition, new value chain actors—agents or CLWs—emerged. In the communities visited, close links were observed among farmers, vets, and their agents. Introduction of the HHP scheme demonstrated the value of preventive veterinary services to farmers in communities where, previously, veterinary services were limited and the willingness to pay for preventive services was low.

## PERSPECTIVES OF FARMERS

Farmers interviewed value the work of the vets and their agents. The new service schemes helped to reduce the cost of accessing veterinary services by bringing the vet closer to the community. Farmers indicated their satisfaction with the HHP because the preventive approach has significantly reduced the cost of treating animals (transportation and medicine costs) once they are sick. It also has improved communication by bringing the vets into the communities and allowing for direct relationships with farmers.

*In the past vaccinations were not done and a farmer would struggle with a sick animal. The vet would need to come from a far place and he was not reliable, as he would sometimes come and other times not. [Livestock farmers, FGD, Chikankata area, Mazabuka]*

*In the past farmers bought their own vaccines and would invite a vet to come and vaccinate their animals. This type of arrangement was expensive and farmers opted to work as a group in the HHP as this worked out cheaper and less stressful than looking for the vet to come and vaccinate the animals. [Livestock farmers, FGD, Chongwe]*

## PERSPECTIVES OF AGENTS/COMMUNITY LIVESTOCK WORKERS

Farmers who were selected by the community to become vet agents (CLWs) are satisfied with their relationships with both farmers and vets. They appreciate the knowledge and training they receive from the vet, which they can use in their own cattle-raising businesses. Although they do not get any monetary compensation from the vet for the services performed, all of the agents indicated that access to knowledge was the key motivation in their continuing this work.

## PERSPECTIVES OF VETERINARIANS

Veterinarians interviewed said the program helped them reduce the transaction costs of reaching smallholder communities. It also allowed them to learn about farmers' needs and exposed them to the potential market for smallholder services. However, vets had different views on the growth potential, sustainability, and relative importance of the smallholder portion of their business.

**The private vet in Mazabuka** currently estimated the smallholder part of his business (HHP and one-off service) at 15 percent and sees this share growing in the future. The vet expressed concerns, however, about scalability and commercial sustainability of HHP services. The vet is currently experiencing problems collecting payments for the HHP and is planning to reduce the price from 15,000 to 10,000 Kwacha per animal. At this stage, his main objective is not profit but including more farmers in the scheme because it is a good thing to do for the community.

*In order for this program to be financially viable for the vets, it would be overpriced for the farmers. So it would be hard to expand the program and have it be financially beneficial as well.*

*HHP is a lot of work for a private vet, we need to negotiate with farmers, it takes a lot of time. We did it mostly to help the community, not to make money. Private practice is taking most of our time, but HHP helped us establish good relations with the community. We also offer free consultations to farmers at the clinic and offer a 5 percent discount on drugs.*

*The main impact on my business that I saw from HHP is the increase in drug sales at the clinic and more farmers coming to clinic for advice. [Private vet, Mazabuka]*

**The public vet in Mazabuka**, working in a different community than the private vet, was able to collect higher HHP payments—45,000 Kwacha per animal—and reports growing demand for the HHP and plans for scaling up the program/expanding to new areas, despite some difficulties in collecting upfront annual payments.

*I will be able to manage this business even without PROFIT. New farmers come directly to me, seek me out, and ask to start HHP in their communities. Demand for the scheme has been growing significantly. The program is very sustainable, PROFIT just needed to initiate it. [Public vet, Mazabuka]*

It should be noted however, that public vets often use state assets to conduct their private businesses, even though PROFIT discouraged this practice, and therefore have a lower cost threshold. The public vet also reported that private smallholder services occupied 25 percent of his time, which raises questions about the amount of time he would be able to devote to expanding his private business.

**The private vet in Chongwe** charged 37,500 Kwacha per animal and has reported significant problems with collecting payments. At the time of the interview, the vet had put the program on hold until the back payments from farmers were received. As mentioned earlier, this vet was not interested in providing one-off services to farmers.

## VERTICAL RELATIONSHIPS

### Relationship between farmers and agents

The research indicated that farmers have a high level of trust in agents (CLWs) and that this trust is strengthened by the fact that agents come from the same community and were selected by the community.

*Most of the time we deal with the vet's assistant. We trust the agent and we frequently report livestock problems to him and he deals fairly with us. The agent sometimes pays on behalf of the farmers when they have failed to pay for the scheme. We sometimes pay the agent back in the form of chickens and pigs. [Livestock farmers, FGD, Chikankata areas, Mazabuka]*

Most farmers said they received advice and training from agents on identifying the symptoms of disease and on the importance of preventive vaccinations and spraying/dipping.

*We discuss with farmers the benefits of the service and the importance of keeping animals healthy. We also discuss the ideas of keeping animals for commercial purposes and the cost/benefit of selling an animal to keep the others healthy and productive. [Agent for the private vet, Chongwe]*

Trust between agents and farmers also is being built through good performance and responsiveness to farmers' needs.

*I know everyone who participates in the scheme. If I perform well, farmers have confidence in me. [CLW, public vet assistant, Magoye area, Mazabuka]*

### Relationship between farmers and vets

Direct relationships have been established between farmers and vets when the vet visits the community and provides some of the services directly. At the time of the interview, all farmers felt the relationship with the vets was good and they felt treated fairly. The vets interviewed, indicated the importance of keeping the schedules and commitments and regular visits to farmers for building trust at the initial stages of the program.

*Some level of mistrust is always there. At the beginning I missed a visit, farmers got upset, thought that I cheated them. [Public vet, Mazabuka]*

In Chongwe, the HHP initially was started by a public vet who failed to gain the trust of the community. Farmers were unhappy with his services because of his lack of involvement with the community and inconsistent visits. The private vet who took over the HHP has been able to gain farmer trust through higher-quality services and his involvement with the community.

*The new HHP with [the private vet] has changed the farmers as they have acquired knowledge in dipping services and how and when certain vaccines work. The vet has been providing training to us, especially on animal health and how to increase our herd size, and providing knowledge on disease prevention. [Livestock farmers, FGD, Chongwe]*

### Relationship between agents and vets

Agents say their relationship with the vets is good and fair. Most stay in daily or weekly contact via cell phone to report any animal health issues in the community. The vet visits the community when needed. One agent voiced concerns about the lack of his own transportation required to reach the vet when needed and, although he was often compensated for transportation costs, he felt that the vet should provide transportation (a bike).

Vets have identified the critical success factors of a good agent. An agent must be proactive, needs to have the trust of the community to be able to collect money, needs to be honest in delivering the money to the vet, and should know how to spray cattle. A good agent usually is more advanced than other farmers in his farming/cattle-raising business and, therefore, has the respect of the community and is able to provide training to farmers.

Although most agents reported satisfaction with their relationship with the vets, the level of trust on the side of vets toward agents was not as strong as expected. The private vet in Mazabuka indicated a lack of trust in agents and explained his unwillingness to work with agents by the need to preserve the quality of his brand.

*We are not working with agents, since some are dishonest and we need to have quality control, for example, how many animals are given the vaccines, is the cold chain preserved, etc. If something goes wrong, the farmers blame us.* [Private vet, Mazabuka]

The private vet in Chongwe indicated mixed success in working with two of his agents. Although he worked with the community to select the agents, he could never build a relationship that made the agent feel part of his team, which would result in stable farmer/agent/vet relationships. To ensure quality control, he trained his agents, but also limited most service provision to qualified vets (primarily the vet and an intern vet). The vet indicated that he did not trust his agents 100 percent because he felt he could not get the agents to feel they were part of his business.

## HORIZONTAL RELATIONSHIPS

### Relationships among farmers

Horizontal cooperation among farmers was important for the growth of commercial veterinary services for smallholders, particularly for implementation of the HHP. Farmers reported meeting as a group and with agents to share information on animal health issues and disease prevention. Other farmers who were skeptical at first became interested in the HHP when they witnessed how the group plan worked to reduce cattle mortality.

*You need a strong leader to persuade the rest of the farmers.* [Private vet, Mazabuka]

*It is good to deal with farmer groups because they buy in bulk. Farmer mindset is changing [from thinking that vet products are supposed to be free] and farmers listen to their group leaders.* [Input supplier agent selling vet products, Chikankata area, Mazabuka]

### Relationships among agents

Due to the limited scale of the program at this time, most vets only worked with one agent, although in Chongwe the vet works with two agents. Because of geographic distances, agents do not interact much

with other animal health service agents. At this point, the commercialization of vet services through the use of agents is not really taking off.

### Relationships among vets

The limited number of vets in general and of private vets in particular is a challenge that PROFIT faced from the beginning. Interviews with the two vets in Mazabuka indicated a positive relationship between the private and public vets, although there were no signs of regular cooperation

All vets offering the HHP initially participated in PROFIT-organized meetings (three to four times a year) where they could share their experiences. However, there is no indication of vet cooperation beyond what PROFIT facilitated. The private vet in Mazabuka reported being too busy and not able to get away from his business to attend these meetings.

## CHALLENGES

The uptake of commercial veterinary services faced a number of inter-related challenges. Although the project succeeded in demonstrating the value of veterinary services to farmers as they witnessed the positive impact of veterinary services on reduced cattle mortality, the critical challenges remain around prepayment constraints and the overall lack of investment incentives in cattle due to the fact that farmers traditionally do not invest in cattle for commercial reasons and view it rather as a source of social capital used to link families. Overcoming these culturally ingrained perceptions was the key challenge.

*Part of the difficulty and the reluctance to commercialize cattle is that each cattle may have multiple or very unclear ownership past “family,” so decisions on sales and investment into specific cattle can be difficult. [Agent for private vet, Chongwe]*

Although farmer interest in veterinary services is growing, organizing payments in advance for a year of services remains a challenge. The large upfront payment required by the HHP structure limits its uptake. Payment problems result not from lack of trust, but rather from shortage of funds and poor planning for expenses among farmers. The problem is made worse by farmers’ unwillingness, for social reasons, to sell one animal to protect the rest. While farmers will sell an animal to buy crop inputs, it has proven particularly difficult to facilitate their taking a similar commercial decision to invest in vet services for cattle.

*The HHP services require lump payments that farmers have trouble organizing. The value seems clear to farmers and they appreciate [the private vet’s] work in the community. There is also not a major problem with price, but the lump sum payments cause problems. At the same time, incremental payment structures have also caused problems. The major hurdle for HHP services is the farmers’ inability/unwillingness to sell an animal to pay for others even though the cost/benefit is extremely high economically, but not socially. [Agent for private vet, Chongwe]*

The private vet in Chongwe was struggling with erratic payments from farmers that caused instability for the vet’s services and the HHP. At the time of the field research, he made a decision to put the HHP on hold until back payments were made and farmers could pay upfront in full. The private vet in Mazabuka experienced similar challenges.



*We can't allow farmers to pay late and can't provide credit, as they will never pay that way. But there are also farmers on the program who pay regularly.* [Vet assistant, private vet, Mazabuka]

The key challenge remains, however, that payment constraints are a part of a larger social issue that will take time to change.

*If the payment issues can be worked out, the business will grow slowly as the service is beneficial to the farmers. The business would not grow too fast due to the social issues of cattle ownership.* [Agent for private vet, Chongwe]

## **IMPACT ON LIVESTOCK FARMER UPGRADING**

Despite the challenges in collecting upfront payments and changing the farmer mindset toward a more commercial approach to cattle-raising, PROFIT experience has demonstrated that some farmers will choose to invest in upgrading once they see clear benefits of doing so. The following impacts on farmer upgrading can be observed as a result of access to new veterinary services due to PROFIT's facilitation.

### **IMPROVED ANIMAL HEALTH**

All farmers interviewed reported reduced cattle mortality as a result of HHP preventive vet services.

*Animal diseases have reduced and the animal health is better than in the previous years.* [Livestock farmers, FGD, Chikankata area, Mazabuka]

Reduced mortality also led to an increase in the number of cattle owned by individual farmers.

*Under the vet [program], cattle are no longer dying and they are having calves. This means that the number of cattle per farmer has drastically increased—the herd has grown in size. The use of new vet services and technologies has led to this increase in the number of cattle per farmer.* [Livestock farmers, FGD, Chongwe]

The general health conditions of animals have improved.

*Body weight and body conditions of animals increased from 1.5 to 3 (4 is considered perfect and is usually seen on commercial farms). Animals are looking better and healthier.* [Vet assistant to private vet, Mazabuka]

### **IMPROVED LEVEL OF KNOWLEDGE ON ANIMAL HEALTH ISSUES**

As a result of increased availability and marketing of veterinary services by the vets and through vet agent involvement, there is increased awareness among farmers of the value of veterinary and, especially, preventive services and increased knowledge of animal diseases and how to identify their symptoms. CLWs train farmers on looking for symptoms of disease and the importance of dipping/spraying and vaccinations.

*Level of knowledge about diseases and prevention has increased significantly.* [Vet assistant to private vet, Mazabuka]

*Now farmers know more about keeping animals—they keep dates for dipping and de-worming, write them down, and keep records. [Agent for public vet, Magoye area, Mazabuka]*

### **INCREASED ACCESS TO AND INCREASED DEMAND FOR VETERINARY SERVICES**

Demand for spraying and vaccinations has increased as farmers see a positive impact on the health of animals.

*Farmers are doing vaccinations now; before no one was doing vaccinations. A long time ago it was done by government, then by no one. Now farmers have better access to different types of vaccinations. [CLW, Mazabuka]*

*Spraying of animals was not done before. Demand for spraying is increasing—farmers see that if they don't spray, they see the disease.<sup>4</sup> [CLW, Mazabuka]*

### **INCREASED USE OF CELL PHONES**

Although not a direct result of the program, there is some indication of higher usage of cell phones related to better access to vet services. Farmers have reported increased use of cell phones because they now use cell phones to communicate with the vet or agent whenever there is a problem with the animals in their community.

## **IMPACT ON SMALLHOLDER MARKET LINKAGES**

Although improved animal health and reduced cattle mortality helped create a base of livestock for sale, a number of constraints prevent commercialization of the livestock sector. PROFIT's design and approach of improving access to veterinary services was linked to improving other relationships throughout the value chain, particularly links to output markets. However, little change occurred because of several critical constraints:

- Traditionally, cattle sale is not seen as a commercial activity and cattle is only sold in emergencies when money is needed.

*We don't sell animals unless we have a problem, then we sell to individuals within the communities or to whoever has money. Nothing has changed in the sales of livestock in the past years. [Livestock farmers, FGD, Chikankata area, Mazabuka]*

- Because cattle are maintained for non-commercial reasons, commercial relationships with output markets for beef were hard to establish and the necessary incentives for reaching output markets were missing. Dairy farmers in Magoye area (part of the baseline areas in Mazabuka) reported being able to sell milk at higher prices due to reduced disease. However, these changes could be attributed to factors other than increased veterinary services. The output market relationships in dairy cattle are different from beef and were easier to establish. As part of dairy sector activities (not covered by this impact assessment), PROFIT started working with lead firms that invested in their supply chain and were able to develop relationships with smallholders.

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<sup>4</sup> Spraying helps prevent tick-borne diseases; 80 percent of all sickness and death of cattle is attributed to parasites.



- The enabling environment in the livestock sector is not conducive to fostering effective commercial relationships with smallholders. Currently, there is a ban on transporting live animals from Southern province (where the baseline areas are located) because of the outbreak of foot and mouth disease. Only frozen carcasses can be transported out of the province. As a result, Zambeef is dominating the market in the south because other processors lack the capacity to freeze carcasses and ship them to Lusaka. The Zambeef monopoly limits the number of commercial buyers willing to buy in the area.

## SYSTEMIC IMPACTS

Despite the above challenges, the qualitative research found evidence of the following systemic changes in the livestock sector.

### CHANGE IN MINDSET TOWARD ACCEPTANCE AND VALUE RECOGNITION OF COMMERCIAL VETERINARY SERVICES

If in the past veterinary services were considered a free public good provided by the government, farmers are now willing to pay for veterinary services as they see the demonstration effects of the positive impact on animal health. Particularly important is the increased recognition of the value of preventive veterinary services.

*Before farmers had a perception that vet services should be provided for free. PROFIT helped change this mindset. Now people are starting to realize the value of HHP.*

*Farmers value this service so much that if they are not in the scheme they feel left out.*

*Now they understand the concept of prevention. [Public vet, Mazabuka]*

PROFIT succeeded in changing the mindset of farmers from being reactive (waiting for disease to happen) to being proactive (purchasing preventive services to prevent disease from occurring).

### FORMATION OF COMMERCIALLY VIABLE RELATIONSHIPS AROUND PREVENTIVE VET SERVICES

Related to the above change in mindset, the HHP has promoted the formation of commercially viable relationships around the preventive vet services in some communities. There are limitations to scalability of the HHP because there are not enough vets who operate in rural areas and the payment problems discussed above continue to present a challenge to sustainability of this model. However, this mechanism has demonstrated to farmers the value of preventive vet services. It has demonstrated to veterinarians the potential demand from farmers and the market potential of working with smallholder farmers, either through the HHP or through one-off services. In some communities, PROFIT has contributed to a behavior change in the context of new commercial relationships formed around veterinary service provision. Success of the HHP differed between areas and its sustainability varied between the vets and communities, which makes the lessons learned below important.

### DEMONSTRATED IMPROVEMENT IN ANIMAL HEALTH AND REDUCTIONS IN MORTALITY DUE TO PREVENTIVE VET SERVICES

A clear link was demonstrated between increased farmer access to commercial preventive vet service and reduced cattle mortality, as discussed above.

### **SOME SHIFTS IN A SMALL PORTION OF SMALLHOLDERS TOWARD MORE COMMERCIAL PRODUCTION**

PROFIT staff reported that outside of the study area, improved animal health led to several instances of new sales of cattle to commercial buyers. Buyers who earlier would not buy because of disease were now going to the communities to purchase cattle using a scale. (Weight of animals increased due to improved health and farmers were able to make sales.) While the frequency of this was very minimal and not observed in the areas of the qualitative study, these sales suggest the potential for improved access to vet services to foster the commercialization of livestock. However, this process will also require shifts in the broader enabling environment and attention to the sociocultural context within communities.

## **GENDER ISSUES**

Livestock has traditionally been a male-dominated sector and cattle raising has always been a male activity. Gender dynamics might differ from region to region, depending on the ownership of cattle (because cattle is a tool for locking in family networks, the ownership depends on whether the assets are passed down through the female side). However, although women are seen as primary owners in some areas, they usually do not hold the decision-making power with regard to cattle. All decisions on sale of cattle or purchases of veterinary services are typically made by men, and it is usually men who take cattle for services.

*Ownership of cattle is mixed and women do own cattle, but men typically negotiate HHP services and take the cattle to get services. [Agent for private vet, Chongwe]*

The following observations on gender dynamics were made during qualitative research in Mazabuka (part of more traditional Tonga areas) and Chongwe (a mixed tribe area).

### **GENDER DIVISION OF LABOR IN CATTLE RAISING**

Although women may own cattle, looking after cattle is traditionally a male activity. Women do feed cattle, but cattle herding is done by men and boys.

### **GENDER AND ACCESS TO INFORMATION**

Male and female farmers interviewed report that access to information between men and women is the same because information is shared during meetings attended by both men and women.

### **GENDER AND TECHNOLOGY ADOPTION**

Despite men being at the forefront of cattle-raising activities, some interview respondents said women play an active role in the adoption of veterinary services and, in some cases, are even more adaptive to change than men.

*Women are very active in HHP—some are heads of household and are very committed to the scheme. [Public vet, Mazabuka]*

### **INTRA-HOUSEHOLD DECISION MAKING**

Men are still making most of the decisions in cattle rearing, especially where and how much to sell. A few men do discuss these issues with their wives.

## **WOMEN'S CONTROL OVER INCOME**

Men usually keep most of the income, although women do keep part of the money earned. Men make decisions on how to use the money and which vet services to purchase. In some families, decisions on how money is spent are made jointly as a family, but this mostly happens in female-headed households.

## **GENDER AND VET SERVICES**

Male and female veterinarians reported working well with all farmers regardless of their gender. Although there are female vets, the vet agents are mostly men because it is difficult for women to take on such a public role with regard to cattle, which is traditionally a male business.

During a FGD in Chongwe, a female farmer identified the lack of a female vet in the area as a constraint. The farmer claimed that, as women, they needed a female vet in order to be encouraged to become better farmers, since they believe a female vet would be more attentive to female concerns. She indicated that most male farmers prefer male vets.

## **LESSONS LEARNED**

The following lessons were learned from program implementation:

- Focusing on behavior change and not individual transactions has proven effective at understanding why growth is or is not happening and can help broaden a project's understanding of how change can be catalyzed. Seeing smallholders as a market and focusing on selling to them requires understanding of where they might or might not buy, and it gives the smallholders the decision-making power, thereby lowering their defenses.
- Understanding the smallholder perspective and incentives is critical, as demonstrated by the limitations that social capital issues put on commercial relationships in cattle.
- No one model usually offers a complete solution to complex problems; PROFIT learned that vet services needed to be delivered in multiple ways through multiple mechanisms. This makes the ability to adapt to changing market environments important. Understanding and maintaining a system-wide perspective is critical for the project implementer to see where momentum is happening and when resources shifts have to take place. The HHP service provided a catalyst to the vet services market but was not going to be the predominant offering in the marketplace.
- Understanding farmer cash flow and the value proposition for farmers is critical for effective marketing of new services to farmers. In the PROFIT experience, it was important to market the program at the end of the crop season, when farmers have the most disposable income.
- To foster growth, the government's role is important in creating an enabling environment that allows for viable commercial relationships on the input and output sides.



# COTTON SECTOR RESEARCH FINDINGS

## OVERVIEW OF PROFIT ACTIVITIES

In the cotton sector, PROFIT's objective was to improve the operations of the cotton industry by working with the lead cotton firms to improve their supply chain management and with input supply firms to increase their integration into the cotton sector. The cotton industry also benefited from the retail sector activities focused on increasing the distribution of inputs in rural communities and improving the yield and quality of various crops, including cotton.

Several important characteristics distinguish the cotton sector in Zambia. The industry operates on a contract farming basis, where the cotton farmers are locked into supplying to a particular cotton firm through the provision of inputs on credit. Farmers receive input packs (that contain seeds and chemicals) on credit from cotton firms and their cost is deducted from the cost of cotton at the time of sale. As a result of this practice, farmers in Zambia have traditionally grown cotton because it was the only commercial crop where they could get free inputs and where the end-market was secure. However, the cost of switching from growing cotton to other crops, such as maize, is very low and, if the price of cotton goes down and there is a strong demand for other crops, cotton farmers find it easy to switch to other crops from season to season. This model presents a number of challenges to sector productivity. The availability of free inputs to anyone willing to plant cotton means that the sector does not necessarily attract high-performing farmers or create incentives to improve productivity.

PROFIT's vision for improving productivity in the cotton sector was to build supply chains that fostered productivity gains at the farm level and strengthened the relationship between farmers and cotton buyers so that that input credit was not the only incentive for farmers to grow cotton. As the first step, PROFIT concentrated on improving the cotton firm supply chain management practices to stimulate a shift from focusing purely on quantity to a focus on quality and performance of farmers who receive input credit. At the beginning, PROFIT worked in the Southern province with Great Lakes, a leading cotton firm that was open to working with the project. Activities included training cotton farmers in conservation farming practices (implemented through the Conservation Farming Unit), working with Great Lakes on improving its farmer management, strengthening the involvement of input firms in the cotton sector, and developing tillage and spray service providers for cotton farmers. Because of internal management problems, Great Lakes was slow in implementing changes and, before significant results could be achieved, a crisis hit the cotton sector in 2006.

Several converging factors contributed to the 2006 crisis. During the 2006 season, the Kwacha rapidly appreciated against the U.S. dollar (almost 33 percent), and cotton farmers who were promised one price by cotton firms at the time of planting (about 1,200 Kwacha per kg) received significantly less than the expected price (about 850 Kwacha per kg). In addition, competition in the industry increased as new companies, mostly from China and India, entered the sector and started buying cotton from farmers by offering a better price than the existing cotton firms. Because cotton prices dropped and the level of loyalty to cotton firms was low, many farmers chose to side-sell their cotton to buyers that offered a better

price. This significantly hit the lead cotton firms, which had invested in inputs and, in the end, lost both their crops and their investments in loans. Due to the lack of regulations in the industry, cotton firms such as Great Lakes could not do anything to stop the predatory practices of their competitors or hold their farmers accountable for the repayment of credits. In addition, because the cost of switching from cotton to other crops was low, cotton firms were forced to compete not only against each other, but also with other crops in high demand, such as maize and soy. Many farmers lost confidence in cotton and chose to either switch out of growing cotton or to reduce the amount of cotton planted. As a result, between 2006 and 2008, the number of cotton farmers and the amount of cotton produced fell by 50 percent and the loan default rate in the industry increased to 40 percent.

While all cotton companies in Zambia suffered from this crisis, Great Lakes was hit the hardest because of its poor management practices. A low level of staff loyalty, heavy corporate focus on the number of farmers contracted as opposed to yields, and lack of attention to the quality of farmer production at the time of input distribution all led Great Lakes to close down in Zambia by the 2008/2009 planting season.

Following the crisis, other leading firms have recognized the need for better management and relationship building with their farmers—focusing on quality and productivity of their contract farmers rather than on quantity. Most of the cotton sector activities in the South ceased and the focus shifted to the East, where PROFIT is currently working with Dunavant on improving its supply chain management through the development of a Preferred Supplier Program, developing lead firm-driven (trained and certified) spray service providers, strengthening linkages between Dunavant and input supply firms, and implementing a mobile payment services system by Dunavant.

**Qualitative research methodology:** Areas selected for the baseline study were located in the South because this was where cotton sector activities were concentrated at that time. Because the project slowed down and eventually stopped activities in these areas, opportunities for observing impact there are limited. The qualitative research team interviewed a limited sample of respondents in the baseline areas in the South. To further inform the research and lessons learned, Dunavant representatives were interviewed about firm experiences working with PROFIT in the East. Although activities in the East are too recent to draw impact from, they offer useful lessons for project implementation and demonstrate important shifts that are taking place on the cotton sector.

## **COTTON SECTOR STRATEGY**

Because of the crisis that hit the cotton industry in 2006, PROFIT approach was not fully developed in the South, but is starting to take shape in the East. Based on the interviews with Dunavant, activities facilitated by PROFIT in the East have potential to stimulate dynamic changes in the industry. Dunavant is putting increased emphasis on providing incentives and productivity-enhancing services to its farmers, recognizing their value for increasing farmer loyalty, reducing default rates, and improving quality and volumes of cotton produced.

### **IMPROVING COTTON FIRM SUPPLY CHAIN MANAGEMENT**

With PROFIT assistance, Dunavant identified and selected local cotton farmers to become its distributors (agents). They were selected on the basis of certain criteria, such as their influence in the community, their ability to read and write, and their performance as farmers. Distributors are not Dunavant employees, but, rather, work on commission. They select farmers, distribute inputs to them on behalf of Dunavant, monitor the growing process, and usually collect cotton at harvest. Their commission is based on loan

recovery and on volumes collected. Distributors that reach volume targets receive 50 Kwacha per kg as a commission; if the volume target is not met, the commission is 25 Kwacha per kg. For a 100 percent loan recovery rate, they receive 12 percent of the value of recovered loans as a commission; for a 90 percent recovery rate, 7.5 percent of the loan value; for 85%, 5 percent. Dunavant sees distributors' proximity to farmers and familiarity with their conditions and problems as the key advantage of this model.

#### **PREFERRED SUPPLIER PROGRAM**

In an effort to build farmer loyalty and create incentives for high-performing farmers, Dunavant started a Preferred Supplier Program, with PROFIT support, where well-performing farmers are identified as “gold farmers” and receive a 10 percent discount on input packs as an incentive. In addition, farmers who reach certain production targets (600 kg per hectare) become eligible to participate in a raffle where various prizes can be won, such as oxen, iron sheets, bicycles, planting seed, and chemicals. (More than 300 farmers received prizes in 2008 season). Dunavant also started providing training to its farmers on land preparation, timely planting, importance of spraying and weeding, and crop-handling techniques.

#### **DEVELOPMENT OF MANAGEMENT INFORMATION SYSTEMS FOR COLLECTING AND ANALYZING INFORMATION ON FARMERS**

PROFIT is working with Dunavant to improve the firm's knowledge about its suppliers, which has always been very low. As Dunavant is realizing the need for better management of information on farmers and their performance, it is putting in place an internal management information system to help with farmer tracking, selection, and identification of the most productive areas in terms of farmer performance.

#### **PAYMENT SYSTEMS TO LIMIT THE RISK AND COSTS OF CASH PAYMENTS**

In the East, together with Dunavant and Mobile Transactions Zambia, PROFIT helped pilot mobile payment service: Dunavant would issue its farmers receipts for the purchased cotton, which farmers could redeem for cash payment directly in their communities at selected local vendors, such as a talk-time dealer, gas station, input supplier, or food store, depending on the town. This payment process is currently being rolled out to 10,000 Dunavant farmers in the East and will serve as a starting point for developing a broader town transfer and transaction service in the future.

#### **INTEGRATION OF INPUT SUPPLY FIRMS INTO THE COTTON SECTOR AND DEVELOPMENT OF SPRAY SERVICE PROVIDERS**

The cotton sector model where inputs are provided on credit by the lead firm traditionally limited input firm involvement in the sector. PROFIT's strategy was to increase farmer access to inputs outside of the lead firm, which would eventually stimulate a fully commercial provision of inputs in the cotton sector. Building the input industry up to a point of being able to support the cotton industry with services and inputs was the ultimate goal. PROFIT worked with input suppliers and cotton firms (first Great Lakes and later Dunavant) to initiate the distribution of inputs through the cotton firm sheds, where farmers could purchase inputs directly. PROFIT also supported the development of spray service providers with the involvement of the lead cotton firm (as opposed to the solely input supplier-driven model that was implemented in the retail sector). In the East, Dunavant trained its distributors on spraying and on the proper use of chemicals, helping them become spray service providers to their communities, and worked



with chemical input supply firms to ensure the provision of chemicals for spraying directly to distributors/spray service providers.

### **TRAINING IN CONSERVATION FARMING PRACTICES**

In the South, PROFIT awarded a grant to the Conservation Farming Unit (CFU) to provide training to farmers on conservation farming techniques. Training was provided throughout Central, Southern, and Eastern provinces and focused on sustainable farming techniques, such as early planting into rip-lines or basins, precise plant population management followed by good crop husbandry techniques, crop rotation, and the introduction of nitrogen-fixing trees (such as acacia faidherbia) into the cotton system.

Conservation farming focuses on the use of rippers to restrict tillage of the land to the precise area where the crop is planted, thus limiting the area of the land that is tilled, and emphasizes early land preparation, before the rainy season starts.

### **DEVELOPMENT OF TILLAGE SERVICE PROVIDERS**

To strengthen the adoption of conservation farming practices, PROFIT supported the development of tillage service providers—farmers who are able and willing to invest in a ripper and provide tillage services to other farmers in the community. Rippers were available for sale at input suppliers and by cotton firms, but were not available on loan; they required a cash payment from interested farmers.

## **CHALLENGES**

Achieving changes in the cotton sector was complicated by the nature of the industry, where the decision to grow cotton is not driven by purely commercial interests but by availability of input credit. Yields were low and the sector was managed extensively by increasing the number of low-performing farmers, offering little opportunity for them to develop into competent commercial farmers. It proved a challenge to convince the lead cotton firms of the importance of farmer management and of providing a range of commercial and non-commercial incentives to farmers based on performance factors such as yields, quality, and loyalty. In addition, upgrading and restructuring of cotton firm internal management systems was necessary because they were not designed to capture information on farmer productivity and did not contain effective checks and balances at the level where farmers interacted with the firm. However, once competition hit the industry, cotton firms recognized the value of farmer selection and better supply chain management, and requested project assistance. Although companies such as Dunavant realize that shifting away from the input credit model is a good strategy in the longer run, they are unlikely to move away from it in the near future because of the significant machinery investment they have in ginneries and the need to ensure the operation of their businesses, especially because, at the time of the qualitative research, many were operating significantly under capacity.

## **NEW ACTORS AND NEW VALUE CHAIN RELATIONSHIPS**

Despite the challenges in implementation and the complications in drawing comparisons between baseline and endline data, the following features of vertical and horizontal relationships in the industry were observed by the qualitative research.



## VERTICAL RELATIONSHIPS

### Relationship between farmers and the lead firm

In the south, cotton farmers have expressed little confidence in cotton and a lack of trust in and overall dissatisfaction with cotton firms. Farmers feel they are treated unfairly by all lead firms; they have received no training or services from cotton firms and express no loyalty to them. Several farmers interviewed admitted to having sold their cotton to buyers that offered a higher price, although all of them claimed to have paid back the loans for inputs received from the cotton firms.

*Relationship [with cotton firms] is not fair. It is not a win-win situation and they get a larger chunk of the price. [FGD with cotton farmers, Choma]*

*Farmers are switching out of cotton—prices have gone down and farmers feel cheated. If farmers can't get a good price they will stop growing because there is a limited number of cotton buyers. We need a solution for cotton contract growing. In order to get the seed farmers have to depend on ginneries. Some don't want to go into contract with cotton firms, but they can't buy seed anywhere else like with other crops" [Tillage Service Provider, Choma area]*

In the East, Dunavant is implementing the Preferred Supplier Program to incentivize farmers based on performance and to train farmers. Although it is too early to tell what the impact of these initiatives will be, an important indication of potential change in value chain relationships is the lead firm recognition of the importance of providing training to and building stronger relationships with its farmers and the role it can play in helping farmers improve quality and increase yields.

*Capacity utilization of our gins has been below breakeven and the only way we can move back into profitability is to increase individual farmer yields and establish a more mutually trusting relationships. [Dunavant representative]*

### Relationship between farmers and spray and tillage service providers

Cotton farmers interviewed in the South have indicated increased availability and satisfaction with spray service providers. These service providers, however, operate in the area as a result of the activities on the retail sector side and do not focus exclusively on cotton, targeting a variety of different crops. They are input supplier-driven (like spray service providers described in the retail section above), rather than lead cotton firm-driven (like Dunavant's distributors in the East, who have received training in spray service provision from Dunavant).

PROFIT succeeded in linking a limited number of independent tillage service providers to client farmers in the South. They are independent of the input or cotton firms and farmers who used their services expressed satisfaction. A tillage service provider interviewed, however, showed a lower level of trust in farmers and problems with receiving payments for his services.

### Relationship between lead firms and input suppliers

Linkages between input supply firms and cotton firms are developing in the East, where input suppliers are providing inputs to Dunavant distributors/spray service providers. Dunavant is stocking inputs in its sheds for sale to farmers on behalf of the input supply firms. It is too early to tell, however, how these relationships will develop and affect the value chain dynamics.

## HORIZONTAL RELATIONSHIPS

Based on the limited data available for qualitative research, little horizontal cooperation can be observed in the cotton sector. In the South, there was little cooperation among farmers with regard to cotton growing. Cooperation among cotton firms is prevented by 1) the lack of a regulatory environment, and 2) fierce competition due to side-selling practices. There is insufficient information on whether there is any cooperation among spray and tillage service providers.

## IMPACT ON SMALLHOLDER UPGRADING

Making conclusions about the impact of PROFIT on smallholder upgrading in the cotton sector is complicated by the discontinuation of project activities in the baseline areas in the South and the short implementation period and lack of baseline data in the additional areas in the East. The following several changes in farmer practices, however, have been observed by the qualitative research and can be directly attributed to PROFIT interventions.

### INCREASED ADOPTION OF CONSERVATION FARMING PRACTICES

As a result of PROFIT-sponsored training provided to farmers by the CFU, cotton farmers have increased their use of conservation farming techniques for land preparation and have seen increased yields as a result.

*There has been improvement from the use of rippers. Cotton grows faster and it is easier to plant—now children get to plant. This has resulted in profit increases. [FGD with cotton farmers, Macha community, Choma]*

*We changed from using plows for tillage to using rippers. By using a ripper, we can plant earlier than when using plows, and our yields have increased. [FGD with cotton farmers, Choma]*

The Dunavant representative has also seen the impact of CFU training.

*During the dry season, the impact was evident—those who didn't do conservation farming, their crops were struggling. Yields are better for those farmers who do early planting and use minimal tillage. [Dunavant representative]*

### IMPROVED QUALITY OF COTTON

Although it is too early to tell, Dunavant has observed improvements in the quality of cotton that it received from farmers in the East as a result of the training it provided to its farmers on better picking techniques and using picking bags, instead of old bags from chemicals and fertilizer. Improper picking techniques and reusing bags from fertilizer can lead to contamination of the ginning process through polypropylene, which is contained in the bags.

*Self-picking methods have improved. Before, farmers would use old bags from chemicals. Dunavant trained them not to do that. [Dunavant representative]*

Increased use of chemicals and spraying services has been reported by cotton farmers in the South. However, this activity was designed to work in conjunction with the retail sector and results should also be attributed to the retail sector activities and not specifically to cotton sector activities—most of the

spray service provision in the South was driven by the input firms, not by the lead cotton firms, and was not focused exclusively on cotton.

## **SYSTEMIC IMPACTS**

The future of the cotton industry remains unclear and depends on a range of factors, including cotton firm upgrading and modernization of management practices toward more effective supply chain management; the cotton price in the global markets; farmers upgrading their on-farm practices through conservation farming; and growth in the commercial input supply and services markets for the cotton industry. The current situation in the sector is complicated: cotton firm ginning plants are operating at only 25 percent of their capacity and the level of investment in the industry is low. However, companies like Dunavant believe that the industry is going to improve and grow in 2009–2010 because they expect prices to go back up to about 1,250 kwacha per kg (the pre-crisis level) and farmers to return to growing cotton as prices increase.

Despite the challenges with observing and attributing impact of PROFIT's activities in the cotton sector, two important shifts are taking place in the industry as a result of PROFIT facilitation:

- A shift away from locking farmers in with credit and toward locking them in with incentives and relationship-building efforts. In anticipation of a price increase and industry rebound, Dunavant is making investments in better-performing farmers through its Preferred Supplier Program, which will help Dunavant manage its farmers better and be more selective in terms of giving input packs to better-performing farmers. This indicates an important change in the lead firm management model.
- Integration of third-party input providers into the cotton sector as a result of the development of spray service providers and linkages built between cotton firms and input suppliers.

## **GENDER ISSUES**

Women and men are both involved in growing cotton. Gender dynamics have been discussed in detail in the retail sector section, and the same general practices related to decision making and income distribution apply to the cotton sector farmers. The following observations were made during the qualitative research and illustrate several gender issues related to cotton growing specifically:

- No differences were observed between men and women in terms of growing and selling cotton, where they perform the same functions.
- A lead cotton firm observed that women were more honest than men and tend to deliver all of the cotton they grow; men are more likely to side-sell or not repay input credit.
- A lead cotton firm also reported that women tend to spend more time in the field and, as a result, their cotton yields are better.

## **LESSONS LEARNED**

PROFIT experience in the cotton sector offers the following lessons on project implementation:

- Downturns can open up important opportunities for fostering systemic shifts in an industry and leveraging competitive pressure. This, in turn, can promote industry-wide upgrading. Dunavant's

strategy is an important example of a situation in which a crisis and increased competition can lead to dynamic shifts in the firm's operating model and the industry overall.

*There will be more firms that stop processing cotton until the price rebounds. When the price rebounds, some will return and others will enter for the first time. This provides a window of opportunity to restructure our business to make it more appropriate for a competitive environment—focusing investments on performing farmers. [Dunavant representative]*

- The capacity and management of the lead firm should be understood. It is often more important to assist a lead firm at the initial stages of project implementation, rather than focusing solely on the smallholder. However, understanding the full range of incentives for smallholders to produce (or not) is a critical part of building capacity of the lead firms, as demonstrated by Dunavant's Preferred Supplier Program.
- Systemic shifts in an industry ultimately define the impact on participants in the value chain. These shifts are not time-bound, and do not always fit into the timeframe of donor-supported projects. This poses a challenge to understanding impacts. All industries experience ups and downs, and projects should be assessed in the context of the industry overall.

# SUMMARY AND CONCLUSIONS

## KEY LEARNING ABOUT IMPORTANT FACTORS THAT CONTRIBUTE TO IMPACT

The qualitative study had the following objectives:

- To understand the effectiveness of the agent model in promoting the growth and development in the retail agricultural inputs sector and in expanding smallholder farmers' access to agricultural inputs.
- To understand how the agent model has worked to promote smallholder upgrading and market linkages.
- To understand how new actors and new relationships in the value chain (with the introduction of agents) affect value chain dynamics (trust, information flow), market linkages, and incentives and risks for smallholder upgrading.
- To understand the effectiveness of PROFIT interventions in fostering commercial relationships between smallholder farmers and veterinary service providers.
- To understand the effectiveness of PROFIT interventions in improving the operations in the cotton sector.
- To understand how gender affects trust and information flow in the value chain.

The following key lessons were derived from understanding the **implementation of the agent model** in the retail input sector and its impact on smallholder upgrading and value chain relationships:

- Smallholders can be a viable market and understanding farmers as consumers can be effective at fostering behavior change. Focusing on behavior change and not individual transactions has proven effective at understanding why growth is or is not happening and can help broaden project's understanding of how to catalyze change. Seeing smallholders as a market and focusing on selling to them requires one to understand where they might or might not buy, giving the smallholder the decision-making power, thereby lowering their defenses. After seeing the benefits of adopting new products and technologies, farmers are willing to invest in upgrading.
- Commercial input industry can be a key driver of innovation both on the farmer and on the input supplier side and critical for longer-term upgrading.
- Trust and relationship building takes time but can be strengthened through community involvement. Understanding the smallholder perspective and social and cultural incentives is critical.

PROFIT experience in **fostering commercial relationships between smallholder farmers and veterinary service providers** offered the following key learning:

- No one model usually offers a complete solution to complex problems and often multiple mechanisms are needed. This makes the ability to adapt to changing market environments important. Understanding

and maintaining a system-wide perspective is critical for project implementers to see where momentum is happening and when resource shifts have to take place.

- Understanding farmer cash flow and the value proposition for farmers is critical for effective marketing of new services to farmers. In PROFIT experience, it was important to market the program at the end of the crop season when farmers have the most disposable income.
- To foster growth, the government's role is important in creating an enabling environment that allows for viable commercial relationships on the input and output side.

Efforts to **improve the operations in the cotton sector** demonstrated that:

- Downturns can open up important opportunities for fostering systemic shifts in an industry and leveraging competitive pressure in an industry is often effective at fostering industry-wide upgrading.
- The capacity and management of the lead firm should be understood. Often, assistance to lead firms is more important at the initial stages of project implementation rather than focusing solely on the smallholder. However, understanding the full range of incentives for smallholders to produce (or not) is a critical part of building capacity of the lead firms.

Observations about **gender effects on trust and information flow in the value chain** showed that:

- Limited attention to the gender division of labor in smallholder production may limit understanding of the range of factors that affect incentives and risks for smallholders to adopt new technologies, use new types of inputs, or respond to new market opportunities. It also affects who is best placed to receive training, information, and access to input and services. Women play a dominant role as smallholder farmers, and are active in raising livestock. However, they are largely absent as actors and in relationships in other segments of these value chains.

# ANNEX

## LIST OF INTERVIEWS

### RETAIL SECTOR

Mkushi – Baseline Area	
Farmers	Farmers: Philip Kamanya, Lawrence Mshili, Charity Shinka, Abel Lupango, James Zulu, Kabinda Bafford, Aaron Mwansa, Chola Mulenga Women farmers : Mrs William Mumba, Monica Chunwa, Maltida Mwape, Catherine Kabamba
Agents	Rhoda Kabamba, Gibson Malwa, Azifi Phiri, Justin Chiyesu
Choma – Additional Area	
Farmers	Nine men farmers (no names) Women farmers : Gertrude Mwetwa, Mary Mwetwa, Saviour Mwetwa, Irene Hangungula
Agents	Godwin Mulenga and three other agents (no names)
Input Suppliers	PANNAR Seed, Cropserve, MRI
Lusaka – Cross Cutting	
Input Suppliers	Cropserve, Minelands, Twiga
Buyers	Zambian Agricultural Commodity Exchange (ZAMACE)
Industry Organizations	Croplife

### LIVESTOCK SECTOR

Mazabuka – Baseline Areas	
Farmers	Richard Zulu, Trust Muyene, Joes Mwelwa, Mainza Chibale, Anold Mwanamuyumu, Lenesi Cheelo, Trust Mweene
Agents	Tide Chibala, Obert Halangu, Kelvin Mlweka
Veterinarians	Dr. Nawo, public veterinarian Mr. Rogers and Dr. Noline Parsons, Matobo Vet Clinit, private veterinarian
Chongwe – Additional Areas	
Farmers	6 men and 1 woman farmers (no names)
Agents	2 veterinarian agents for Dr. Moosa, a private veterinarian
Veterinarians	Dr. Moosa, private veterinarian
Lusaka – Cross Cutting	
Buyers	Parmalat, Dairy King

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## COTTON SECTOR

Choma – Baseline Area	
Farmers	Mike Mudenda, OBed Mwetwa, Fry Mwelwa
Tillage and Spray Service Providers	Jones Kawilila, Carles Mukombwe, Alias Lwee, Hagai Siachalinga, Audrey Mugwagwa
Eastern Province – Additional Area	
Lead firm	Dunavant, Lusaka; Dunavant, Eastern Province

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