



MARKET LINKAGES INITIATIVE

Lessons Learned on Integrating Smallholder Farmers into Commercial Markets in East Africa



DECEMBER 2011

This publication was produced for review by the United States Agency for International Development. It was prepared by Peter Boone and Kristin Beyard of CARANA Corporation.

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DISCLAIMER

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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TABLE OF ACRONYMS

ACE	Agricultural Commodity Exchange	MLI	Market Linkage Initiatives
ACDI/VOCA	Agricultural Cooperative Development International/Volunteers in Overseas Cooperative Assistance	NASFAM	National Smallholder Farmers' Association of Malawi
ACTESA	Alliance for Commodity Trade in Eastern and Southern Africa	NGO	Nongovernmental Organization
BDS	Business Development Service	OIBM	Opportunity International Bank of Malawi
CBO	Community Based Organization	P4P	Purchase for Progress
COTR	Contracting Officer's Technical Representative	PHL	Post-harvest Losses
DRC	Democratic Republic of Congo	RADA	Rwanda Agricultural Development Authority
EA	East Africa	RWF	Rwandan Franc
ENAS	Enterprise Nkubili and Sons	SLS	Smart Logistics Solutions
ETU	Export Trading Uganda	SME	Small to Medium Enterprises
FAO	Food and Agriculture Organization	SMS	Short Messaging Service
FH	Food for the Hungry International	TA	Technical Assistance
FTF	Feed the Future	TOT	Training of Trainers
GBC	Grain Bulking Center	US	United States
GBS	Grain Bulking System	USAID	United States Agency for International Development
KES	Kenyan Shillings	USD	United States Dollars
KPMC	Kenya Promotion & Marketing Company	USG	United States Government
MWK	Malawian Kwacha	VAC	Village Aggregation Center
M&E	Monitoring and Evaluation	VC	Value Chain
MACE	Malawi Agriculture Commodity Exchange	WFP	World Food Programme
MIS	Market Information Service	WRS	Warehouse Receipt System

INTRODUCTION & ACKNOWLEDGMENTS

The Market Linkages Initiative (MLI) is a pioneering project—one of only a few USAID food security projects worldwide focusing on increasing marketing and storage efficiency in the staple food commodity markets. As a result, CARANA undertook a study to identify key lessons learned from the MLI project, and how the impact of leveraged, market-based improvements in staple value chains can have transformative, sustainable and scalable benefits that enhance smallholder food security. The document will be broadly shared with USAID and other development stakeholders interested in food security issues and challenges.

The models developed in the six pilot countries (Burundi, DRC, Kenya, Malawi, Rwanda and Uganda) could be replicated and scaled up to tackle more widespread post-harvest challenges facing smallholders throughout East Africa and other regions worldwide. *The Lessons Learned Study* is an internal assessment undertaken by CARANA, and was not required by USAID as part of our contractual deliverables.

The research for this report was conducted by the CARANA study team during August and September of 2011. The report was written by Peter Boone and Kristin Beyard of CARANA Corporation. The team reviewed MLI Project Monitoring & Evaluation files and interviewed project stakeholders and grantees in August/September 2011; discussions with USAID took place in August of 2011.

The authors would like to thank the entire MLI project team (led by Chief of Party Anthony Ngosi) and the implementing partners for their hard work on this project and for all of their useful contributions to this study. Additionally, Eduardo Tugendhat, Santiago Sedaca, Kelly Harrison and Chris Brown provided invaluable technical guidance and editorial improvements to the report. The authors would finally like to thank the USAID East Africa team—including our COTR Francesca Nelson—for their technical and financial support for the MLI project.

EXECUTIVE SUMMARY

The purpose of the Market Linkages Initiative (MLI) project was to test the key hypothesis that: *By stimulating investments and backward linkages in commercial grain markets, we can create a powerful “pull-through effect,” stimulating increased commercialization of smallholder staple food production—which increases regional and national food security.*

There are enormous amounts of waste and inefficiencies in the system. If entrepreneurial traders can see the returns of doing business in a new way—by investing in improved post-harvest systems—while sharing the gains with smallholders, this will create a virtuous cycle where traders and processors continue to invest in backward linkages. Smallholders will also have more of an incentive (through more choices) to invest in better quality and increased production. Through this approach, traders are the direct beneficiaries of project interventions, leading to enhanced production and access to food by smallholders. To the extent that the MLI pilot results were successful, a strong case can be made for food security programs to place a greater emphasis on market demand-driven improvement of rural livelihoods and food security for poor and vulnerable segments of the population.

To test the project hypothesis, CARANA posed ten research questions to capture the difference between stakeholder behavior before the project and stakeholder behavior after project interventions. In our investigation, CARANA found that, despite its short duration, the MLI project provided several valuable lessons learned for future food security programs:

1. Strategic grants mobilize private investment and bank financing for grain storage; storage infrastructure helps facilitate new forms of financing such as Warehouse Receipt Systems (WRS).
2. Appropriate equipment and practical crop conditioning training, reinforced by buyers' presence, can improve grain quality and incentives among farmers.
3. Storage management practices and post-harvest losses (PHL) can be improved through a mix of technical assistance (TA) and co-investment grants.
4. Investments in innovations such as SMS-based market data, WFP P4P grain purchasing, WRS, commodity exchanges and production contracts all accelerate sales and improve smallholder integration in commercial markets.
5. Price discovery improves smallholders' and traders' certainty about where to buy and sell, and SMS-based systems can be cheap yet highly effective.
6. Transparent measurement tools strengthen smallholder negotiating power, providing grading/price premiums.
7. Training and equipment selection can favor women's empowerment in grain value chains (VCs).

8. Measuring and grading equipment can help buyers to offer differentiated prices to smallholders based upon different quality grades, thereby increasing incentives for improved handling.
9. Public storage options give farmers the choice to sell or to store, and expand their opportunity for profit-making.
10. New value adding services improve grain quality, provide sustainable sources of revenue for Grain Bulking Centers (GBCs)/Village Aggregation Centers (VACs) and provide equipment on a rental basis to farmers who otherwise couldn't afford it.

MLI was successful in achieving its objective of integrating smallholder producers with “downstream” grain buyers and warehouses. This was in part because of a rigorous grantee selection and approval process combined with MLI training and business development services for partners. This process ensured that MLI partnered with entrepreneurial firms willing to co-invest and consider new business models that strengthened backward linkages. Ultimately, this approach enabled MLI to award co-investment grants to 47 out of 204 grant applicants who expressed interest. The applicants' level of interest and their willingness to co-invest in the project were clear signs that private sector firms—with incentives and coaching—were prepared to introduce major changes in the system.

By stimulating partnership investments and backward linkages in post-harvest systems needed to access commercial grain markets, the project was able to create a powerful “*pull-through effect*,” stimulating *increased commercialization of smallholder staple food production* at a pilot level. USAID can apply valuable practical lessons from MLI to other Feed the Future programs:

- USAID should fund more projects that encourage traders to invest in post-harvest storage and marketing systems, because they are the actors in critical food commodity value chains who convey vital market incentives to farmers. This approach provides lasting win-win benefits for them as well as for the farmers they buy from.
- Activities could be scaled up or replicated to integrate larger numbers of smallholders into market channels by increasing the number of traders assisted, supporting the growth of existing project partners, deepening the technical assistance (TA), expanding access to sustainable commercial bank financing, and partnering with village level aggregators to train farmers.
- Matching grants to warehouse and trading enterprises are effective, but work best when paired with training and business development services.
- Malawi's market information service—using cell phone-based SMS text messaging as its primary vehicle—provides a cost-effective and promising model for other countries and projects where farmers and “downstream” enterprises in key value chains lack reliable, cheap and immediately available market price information.
- Helping warehouse managers and grain buyers integrate moisture meters and other crop conditioning equipment into their enterprises pays measurable and lasting dividends. These translate into higher farmgate prices, lower product losses during storage and improved sales revenue for traders and grain storage centers.

Overall, the MLI project shows an enormous opportunity for transforming post-harvest systems and incentives for smallholder farmers to reduce the endemic losses and inefficiencies that impede food production and distribution. While a modest pilot, it shows the potential of building partnerships around entrepreneurial traders and processors who invest in backward linkages. This can be replicated very cost effectively by USAID and other donors since the private sector is co-investing; over time it should be possible for investment in these systems to be fully commercial. There is so much waste and inefficiency in the current post-harvest systems that first mover firms can capture sizeable business gains through increased efficiency. In addition, many of these buyer firms can realize “win-win” benefits from having closer and more transparent relationships with small farmer suppliers.

CHAPTER I

OVERVIEW OF APPROACH AND HYPOTHESIS



In this report, CARANA presents an analysis of the MLI project results through a number of lenses that assess project impact on business practices in key staple crop value chains (VCs). The objective was to assess whether value chains and stakeholder behavior fundamentally changed as a result of project interventions. For a series of key VC activities and outcomes, we identify the value chain constraints, the interventions implemented by the MLI project, the impact of these interventions and, finally, the lessons learned. These changes in value chains and stakeholder behavior are tied to our overall development hypothesis for the pilot MLI project.

MLI Development Hypothesis

By stimulating investments and backward linkages in commercial grain markets, we can create a powerful “pull-through effect,” stimulating increased commercialization of smallholder staple food production—which increases regional and national food security.



There are enormous amounts of waste and inefficiencies in the post-harvest system. If entrepreneurial traders can see the returns of doing business in a new way—by investing in improved post-harvest systems—while sharing the gains with smallholders, this will create a virtuous cycle where traders and processors continue to invest in backward linkages. Smallholders will also have more of an incentive (through more choices) to invest in better quality and increased production. Through this approach, traders are the direct beneficiaries of project interventions, leading to enhanced production and access to food by smallholders. To the extent that the MLI pilot results were successful, a strong case can be made for food security programs to place a greater emphasis on market demand-driven improvement of rural livelihoods and food security for poor and vulnerable segments of the population.

The MLI project, intended strictly as a pilot effort, touched only a small part of the grain trade in the MLI countries (about 5–8 percent of the total traded grain in those countries). With two project years, we can expect only some initial changes in stakeholder behaviors. This activity will need further, longer-term tracking before definitive final conclusions can be drawn.

PROJECT GOALS

The USAID East Africa Regional Project, *Market Linkages Initiative* (MLI), was funded by the Global Hunger and Food Security Initiative. MLI was a US\$11.5 million activity that ran from September 15, 2009, to September 15, 2011.

The MLI project was undertaken within the broader strategic framework of the USAID Presidential “Feed the Future” Initiative, which focuses on improving food security at both the national and household levels. Most of the interventions under the USAID Feed the Future Initiative focus on increased production, and where marketing support has been provided, it has typically been production-focused (*i.e., how can the project help smallholders market what they produce?*) rather than market-pulled (*i.e., how can the project help smallholders produce what the market requires?*).

The MLI project’s main goal was to promote growth in food staples and food security by integrating smallholder staple food producers into national and regional markets and storage systems. Taking a *value chain approach*, MLI identified and helped overcome key bottlenecks that limit market linkages between smallholder producers (“vulnerable but viable farmers”) and commercial markets. This was achieved by encouraging investment by trading companies in backward linkages and post-harvest systems.

The working assumption for the MLI project was that *more efficient post-harvest systems can be developed through closer farmer-trader-commercial linkages and by investment by the grain traders*. The purpose of MLI co-investment grants was to test the assumption that backward linkage investments would sufficiently benefit both producers and traders to encourage new practices, higher production and greater food security. In addition, consumers would benefit through long-term lower relative prices and improved product quality.

PROJECT CONTEXT

Both the objectives and approach of the MLI project are supported by the key literature on the causes of food insecurity in East Africa—one of which has been significant post-harvest losses in commodities. An April 2011 report by the World Bank, entitled *Missing Food: The Case of Postharvest Grain Losses in Sub-Saharan Africa*, argues that losses in the staple commodity value chain affect producer and consumer incomes, and effectively place a tax on rural poor producers and urban consumers of staple crops. Post-harvest losses are estimated to range between 10-20 percent of commodities produced, depending on the grain and the season. The value of losses in East and Southern Africa alone is estimated to equate to approximately US\$1.6 billion per year.¹ Furthermore, according to a 2009 World Bank study entitled *Eastern Africa: A Study of the Regional Maize Market and Marketing Costs*, post-harvest losses are largest among small-scale farmers because of their low incomes and assets, making them less capable of investing in storage facilities.²

In addition to the losses in post-harvest handling, higher-than-average transport and logistics costs in the MLI countries—stemming from deficiencies in transport, processing and storage infrastructure—negatively impact competitiveness of local products by putting an enormous “tax” on locally produced commodities.³ Due to these inefficiencies, large buyers find it easier and cheaper to import grains from outside the East Africa region (South Africa, North America and Europe). According to the World Bank study on the *Regional Maize Market and Marketing Costs* mentioned above, the marketing costs between farmgate and capital city wholesale markets in Uganda, Kenya and Tanzania averaged up to 76 percent of total product cost, of which approximately 45 percent of the costs are incurred during the first 28 percent of the transport distance.⁴

If transport and logistics costs were lowered by 10 percent, it is estimated that agricultural growth in Africa would accelerate by 2 percent per year. This would double staple food production resulting in a decrease of around 25 percent in consumer prices, and a higher farmgate price from cost savings brought about by a more efficient system.⁵ Additionally, post-harvest losses affect these transport and marketing costs. The World Bank study argues that the average post-harvest losses in Kenya and Tanzania represent about one-half of transport charges between farmgate and domestic markets, significantly increasing the cost of rural-to-urban transport.⁶

Another major burden on food security in sub-Saharan Africa is the fragmented and informal nature of the post-harvest system in the region. A repercussion of this informality and fragmentation is the high cost associated with multiple middlemen in the value chain. According to the World Bank, the cost incurred by traders and sub-traders to collect from individual farmers and load and unload trucks is around 12 percent of total marketing costs. These costs are then further inflated by weak grade compliance systems, and the lack of trust between sellers and buyers.⁷ Therefore, there is a critical need for farmers to be integrated into more developed local and regional markets in order to cut costs and improve competitiveness. A study by the Food and Agriculture Organization (FAO), *Commercializing Small Farms: Reducing Transaction Costs*, found that vertical coordination between farmers and buyers in the supply chain is critical as there is continuous need for information sharing on consumers' preferences, quality standards, and post-production and service value addition, which require targeted investments.⁸

As a consequence of the high costs of logistics and transport and limited integration, incentives for commercialization among farmers are weak at best, as the price that farmers in the region receive from commodity sales often equals, or is less than, their costs of production.⁹ Farmers have little incentive to increase production if such a high percentage of their product is lost and if prices are depressed due to the market “tax” placed on them from the inefficiency of the marketing and storage system.

According to one 2001 study by Jayne et. al. on Kenyan commodity producers, 52 percent of small-holder farmers were net buyers of maize, and 16 percent neither bought nor sold maize, leaving only 32 percent of smallholders as net sellers.¹⁰ Despite these trends, commercialization of commodities is critical for improved incomes and food security. According to the

As a consequence of the high costs of logistics and transport and limited integration, incentives for commercialization among farmers are weak at best, as the price that farmers in the region receive from commodity sales often equals, or is less than, their costs of production.

FIGURE 1: COUNTRIES WHERE THE MLI PROJECT OPERATES

FAO, subsistence farmers obtain much lower economic returns compared with commercially oriented farmers.¹¹ Furthermore, increased commercialization allows commodity producers to shift decision making from self-sufficiency to more profit-oriented goals, leading to more market-responsive commodity output. To incentivize improved commercialization, farmers require better access to markets and profitable returns on investment. These encourage them to invest in new technologies and practices, thus producing more surplus crops.

GEOGRAPHIC COVERAGE OF THE MLI PROJECT

The MLI project covered six countries: Malawi, Uganda, Kenya, Rwanda, Burundi, and Northern DRC (Kivu region); in addition to Zambia through its support

of the Alliance for Commodity Trade in Eastern and Southern Africa (ACTESA). In Kenya, Uganda, Rwanda and Burundi, MLI promoted integrated storage systems, enhanced farmer capacity to integrate into markets and tested innovative techniques designed to improve linkages between smallholder farmers and markets. In the DRC, the project improved basic grain market facilities and services at public markets.

In Malawi, in addition to promoting integrated storage systems and enhancing producer capacity to integrate into markets, MLI facilitated the establishment of a Marketing Information System (MIS) platform in the country. Additionally, project support to ACTESA in Zambia strengthened its communication capacity, enabling ACTESA to host online service forums for the dissemination of lessons learned and best practices.

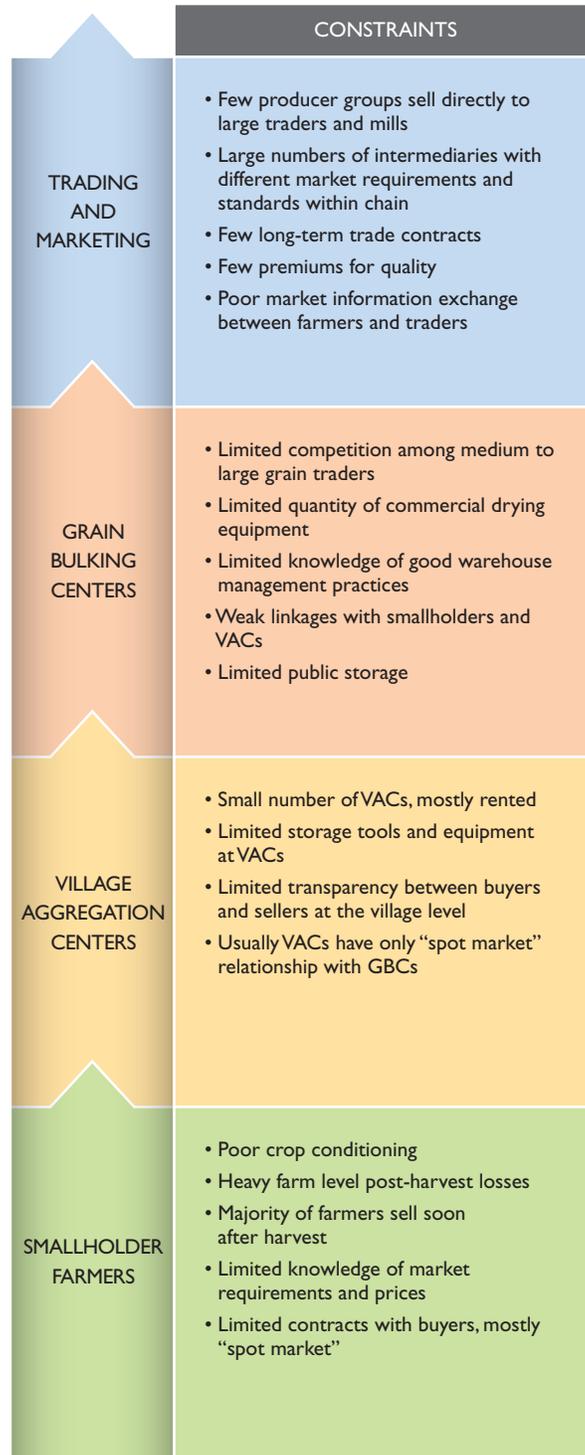
CHAPTER 2

MLI PROJECT ACTIVITIES AND INTERVENTIONS

VALUE CHAIN CONSTRAINTS & TARGET STAKEHOLDERS

There are several key actors along staple crop value chains in East Africa. As shown in Figure 2, at the base of the chain are smallholder farmers whose commodities flow up through Village Aggregation Centers (VACs), which then flow to intermediate Grain Bulking Centers (GBCs), and on to large warehouses. After commodities are aggregated at these different points, they finally reach processors or mills, whose products are then sold to end-market consumers. The traditional system is very informal with a large number of intermediaries with weak linkages between smallholders and traders. Additionally, there is a lack of physical infrastructure needed to support commercialization that benefits smallholders.

FIGURE 2: COMMODITY VALUE CHAIN CONSTRAINTS



Village Aggregation Centers (VACs) are the grain stores located in the village where the first level of commercial sale and aggregation takes place. When they exist at all, these VACs are in poor condition and are rented or owned by private grain trading companies, farmer cooperatives, or NGOs. The lack of quality VACs gives farmers no choice regarding when and who to sell to, and is a major disincentive to higher production. GBCs are usually medium- to large-sized private grain storage and trading facilities. Most are owned by private commodity traders, but several of them are managed by farmer-owned cooperatives, or Community Based Organizations. GBCs are important for food security as they serve as regional trading hubs and are supplied by a network of VACs. Unfortunately, these also tend to be relatively limited in number, size and quality and their practices in procuring, handling and storing grain contribute to the inefficiency of the system. Most GBC operators don't procure directly from farmers, but rather are typically supplied by a network of traders who have limited relationships with smallholders. Only in some cases were VACs or traders vertically integrated with GBCs. Where VACs did have regular buying-selling relationships with GBCs or were wholly-owned subsidiaries, VACs received limited support from GBCs.

Under MLI¹², CARANA targeted three main stakeholders within the staple crops value chain. The project focused primarily on supporting mid- and base-level stakeholders, specifically targeting smallholders, VACs and GBCs. Within the targeted value chains of MLI, VACs and GBCs were the stakeholders that demonstrated the most considerable constraints and opportunities with regard to increasing food security and farmer income. The project was quite novel in this respect since most USAID food security projects focus primarily on increasing production. MLI focused on strengthening the “missing middle” of the value chain with market-pulled interventions that strengthened commercial linkages between traders and producers. CARANA has found that this “missing middle” is often the critical juncture affecting smallholder incomes, consumer costs and quality.

CARANA's typical approach to working in value chains is to identify “lead firms”—potential early adopters of technological and managerial innovations crucial to achieving project objectives. These lead firms understand the benefits of strengthening their value chains by transferring know-how, providing technical extension, and facilitating access to inputs, services and credit in return for reliable supplies that meet market requirements. Services and know-how can be transferred directly by the lead firm (embedded services) or provided by contracted external Business Development Service (BDS) providers or NGOs.

We outlined specific VC constraints in Figure 2. At the farm level, principal constraints before the MLI project included poor crop conditioning, heavy post-harvest losses and limited knowledge of market requirements. At the GBC level, principal constraints included poor or missing storage infrastructure; little access to quality-enhancing equipment; lack of market information, linkages, and transparency; few long-term contracts; and lack of competition. Additionally, VACs typically did not exist or were in very poor condition. Where VACs did exist, they had limited storage tools and equipment, and limited transparency between buyers and sellers at both the GBC and VAC levels. Additionally, GBCs had only “spot market” relationships with VACs and producers. The MLI project saw a need to emphasize greater integration between VACs and GBCs by encouraging GBC owners to establish permanent, but simple, VACs and by promoting close commercial linkages between them in the same regional commercial trading areas.

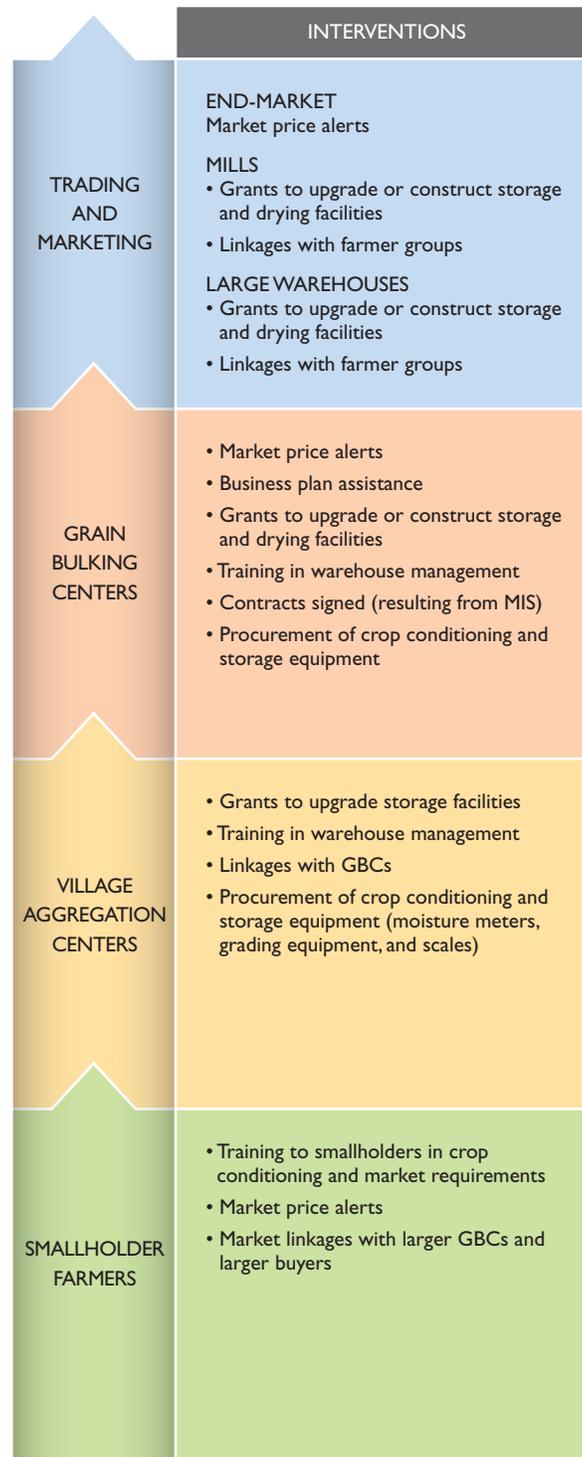
CORE MLI ACTIVITIES

The MLI project helped integrate smallholder producers into national and regional commercial markets through three key project activities:

1. Improving and expanding storage facilities and services via co-investments with lead firms to construct or upgrade Grain Bulking Centers and Village Aggregation Centers. Supported GBCs and VACs were designed to be close to rural production areas in targeted market catchment areas in order to improve the quality and availability of storage. Technical assistance to grantees in areas such as warehouse management and development of business plans accompanied the storage infrastructure assistance. In total, the project either constructed or improved 30 GBCs and 485 VACs. The provision of grants was the most critical component of the project because it helped recipients bear the adoption risk of recommended innovations.

2. Enhancing the capacity of producer groups and farmers to integrate into Grain Bulking Systems through training to undertake pre-storage crop conditioning, ensuring higher quality crops and reducing post-harvest losses from mold, insect infestation and rodents. These new handling practices increase farmers’ ability to meet market requirements. Additionally, increased integration of smallholder farmers’ commodities into storage services increases surpluses, and thus, food security. In total, the project trained 34,817 smallholder farmers in post-harvest conditioning and integrated 96,125 farmers into GBCs. The MLI project’s vision was improved capacity of producer groups and sustainable

FIGURE 3: INTERVENTIONS



linkages with buyers in order to sustain integration and producer capacity after the project.

3. Stimulating innovative solutions that increase smallholder efficiency and improved product quality.

The main assistance in this area was the provision of equipment necessary for the operation of efficient storage and grading, particularly at the GBC and VAC levels. In total, the project field tested eight new technologies or business solutions that enhanced crop conditioning and handling skills. MLI also strengthened market institutions that improved the facilitation of commodity exchange. In Malawi, MLI helped introduce a web-based SMS Market Information Service (MIS) used by both traders and smallholders and supported the Agricultural Commodity Exchange (ACE).

MAIN MLI INTERVENTIONS

CO-INVESTMENT & MATCHING GRANTS MECHANISM

The key project assistance mechanism under the MLI project was a matching grant co-investment scheme. The objective was to promote less risky adoption of new innovations and the diffusion of these innovations. Successful innovators and early adopters who received co-investment grants could be copied by others who used the other sources of funds, thus speeding up the process of adoption of successful innovations.¹³

The project identified private sector partners within staple crop value chains who were involved in production or storage of crops and who were willing to co-invest in new facilities, equipment and practices to improve the post-harvest system and benefit smallholder producers. In the MLI grants program, the project used financial resources to leverage matching contributions from private firms, farmer organizations and NGOs to increase their investment in improving market access and enhancing grain product quality.

Typically, grantees had to provide matching grant funding that equaled 100% of MLI's contribution, through either their own funds or bank loan funding (see Figure 4 for the total level of private funding leveraged by the MLI project). Examples of grant beneficiaries included:

- **Well-functioning farmer groups** (“vulnerable but viable”) seeking training to improve their crop conditioning skills and equipment.
- **Owners/operators of commercially viable Village Aggregation Centers (VACs) and Grain Bulking Centers (GBCs)** who wanted to enhance the services offered at their storage facilities through improved equipment and technical assistance. The project offered assistance to develop their business skills as well as their technical skills in crop conditioning and grain handling and storage.
- **Private sector organizations with innovative approaches** to linking smallholder producers to wider markets.

Applications for grants needed to be accompanied by:

- A sound business plan
- A market integration strategy
- Details of the grantee's matching resources

The main uses of project grants were for construction or upgrading of:

- Grain Bulking Centers
- Village Aggregation Centers
- Grading Rooms¹⁴

Several of the co-investment projects mobilized considerably more private matching capital than the 50/50 match requirement. For example, Mama Millers (a GBC grantee in Kenya) received a co-investment grant for a dryer and a weigh station. They also invested their own capital in the purchase of new land and a new modern GBC operation that included loading equipment and seven grain storage silos. The private capital raised for the project was nearly double the grant amount. In some cases, co-investment projects also incentivized banks to get involved by offering the private sector new or alternative financing options.

EQUIPMENT AND TOOLS

MLI supported investments in storage and crop conditioning equipment and tools via grant funds for commercial traders, GBC managers and farmer groups to improve post-harvest handling practices, meet quality requirements and increase transparency between buyers and sellers. The grantees chose the equipment to ensure that it met their business needs and was a sustainable investment.

The equipment was used at the GBC or VAC level depending on need and the number and type procured. Each grantee used or distributed the equipment in different ways. Some kept all of the equipment at the GBC level, so that all grains passing through would benefit from it. Others distributed the equipment among VACs

MLI focused on strengthening the “missing middle” of the value chain with market-pulled interventions that strengthened commercial linkages between traders and producers.

FIGURE 4: PARTNER CO-INVESTMENTS

GRANTEE	AMOUNT LEVERAGED
ETS Misago	\$64,436
SODEA	\$148,347
ADRA	\$56,570
FH-DRC	\$3,500
Lesiolo	\$146,463
Mama Millers	\$526,768
Mwailu	\$72,363
SLS	\$147,543
KPMC	\$49,381
ENAS	\$393,624
UCORIBU	\$87,046
COAMV	\$30,735
SOSOMA	\$72,423
Prodev	\$185,629
Mukamira	\$82,826
ETU	\$2,217,441
Agroways	\$814,854
Upland Rice	\$240,128
Kapeeka	\$14,780
Kisiita	\$58,276
Chitsosa	\$173,635
UZ	\$131,391
Mulli Bros	\$121,257
Zwii	\$96,800
MCA	\$97,413
Mwandama	\$95,340
Cheka	\$14,135
Farmers World	\$55,159
Kasfa	\$73,243
Dalitso	\$150,877
TOTAL	\$6,474,565

and village-level stores and, in some cases, directly to farmers on a rotating basis. There were several examples of grantees who found the equipment so useful that they began investing in more equipment independent of MLI funds, or developed a fee-based mechanism to expand access to shops or farmers who requested it. The equipment and tools identified and procured under the MLI project included:

- Crop conditioning tools and equipment, including mechanical threshers, maize shellers, tarps, solar and conventional grain dryers, cleaning tables and grading and cleaning equipment.
- Crop storage equipment and tools, including fire extinguishers, pallets, ladders, grain bags, stitching machines, fumigation sheets, sprayers, grain sampling equipment, aflatoxin testing kits, scales and moisture meters.
- Equipment to strengthen grantees' business management capacity, including IT hardware (computers, modems, and printers), solar panels, receipt books, accounting software programs and motorcycles.

TRAINING AND CAPACITY BUILDING

MLI strategically partnered with local training and business development service providers including NGOs and independent consultants in Kenya, Uganda, DRC, Burundi and Malawi to address gaps in storage management and post-harvest handling and provide training for newly procured equipment or new management practices. This outsourcing of training not only built capacity of local service providers but it also allowed the MLI project team to focus on core project management functions and enabled them to implement with greater speed.

MLI defined training as a process in which significant skill is transferred from the trainer to the trainees. This could be in the form of knowledge, practice or attitude change. Training also had to be more than three days long and implemented based on a prepared curriculum. MLI, in partnership with private sector business development service providers, conducted a wide range of training and capacity building activities including:

- Training smallholders in crop conditioning, mainly through BDS providers and NGOs (34,817 trained). These were in-depth, 3+ day trainings on post-harvest handling. Topics were determined by the needs identified by MLI and the grantee, in addition to the types of commodities in which the GBCs were working. The purpose of these trainings was to improve quality of grains and reduce post-harvest losses, and topics included harvesting, drying, shelling and winnowing, pest control, mycotoxins, transport and grain handling.



- Conducting “Farmer Field Days” to introduce farmers to new crop conditioning equipment and technology (9,603 farmers attended). These were more broad than in-depth, and were not structured as trainings, but as hands-on demonstrations regarding newly procured equipment or technology and improved post-harvest practices. In the northern corridor these trainings were implemented by service providers¹⁵ in partnership with traders and GBC operators; however, in Malawi, they were structured as Training of Trainers (TOTs) to build institutional capacity within the Ministry of Agriculture.¹⁶
- Training enumerators in Malawi on collecting market price information to be entered into the MIS system. Esoko trained 13 enumerators to collect prices, offers and profiles for seven value chains across Malawi, and to register MIS users.
- Training grantees and their agents in the use of the SMS-based MIS platform in Malawi through the Malawi Agricultural Commodity Exchange (MACE). The purpose of the platform was to increase the use of the MIS by both buyers and sellers, improving market information in the commodities sectors. This method was highly cost-effective, as it took advantage of increasing availability of mobile phone services in Malawi among smallholders. In total, the project trained over 2,000 smallholders on the SMS services.
- Training VAC and GBC operators in grading and warehouse management.¹⁷ Grantees of the project, including traders, community based organizations (CBOs) and cooperatives, were trained in storage management in order to improve post-harvest handling at the GBC and VAC levels and reduce losses. Additionally, the project taught more transparent receipts/business systems to improve trust between farmers, buyers and larger commercial markets.
- Assisting with the development of business plans for grantees. The project found that this was an essential component for the success and timeliness of implementation. MLI sub-contracted eight business service providers to assist grantees to develop new business plans. These firms developed 32 business plans used by MLI to help screen grantee candidates; identify and act on growth opportunities for each business; help businesses improve marketability with clients, markets or investors; and help firms access better financing. MLI provided follow-up technical and business management assistance to support the new business plans.
- Training for grantees in financial management systems such as QuickBooks. MLI and its partner business service providers helped some traders and GBC managers improve their accounting systems through procurement of and training on QuickBooks and other software management systems.
- Ongoing technical assistance and training for traders and GBCs to help them develop linkages and networks with other stakeholders in the value chain.

The purpose of the crop conditioning trainings was to improve quality of grains and reduce post-harvest losses, and topics included harvesting, drying, shelling and winnowing, pest control, mycotoxins, transport and grain handling.

CHAPTER 3**KEY QUESTIONS & FINDINGS**

Overall, the assessment team found that MLI had a significant and positive impact on beneficiaries at each critical stage in the target value chains—from small farmers to VACs, through GBCs and on to trading and marketing enterprises. Figure 5 summarizes the status of each of these target groups before and after the MLI program.

While the MLI project did carry out an initial quantitative assessment of grain bulking capacity in four of the MLI countries in 2009 (see Annex 1 table), there was no comprehensive baseline survey covering all project indicators. Therefore, before and after project comparisons were gleaned from a combination of sources, including project team interviews with grantees, grantee capacity assessments, ongoing monitoring and evaluation (M&E) data and quarterly reports, and the external project evaluation document. Before and after photographs also help document these causal outcome comparisons.

Since MLI was only a pilot project, the results achieved do not represent transformations among *all* value chain stakeholders. However, they do represent changes in those stakeholders assisted under MLI, including warehouses, traders and smallholder farmers.

In order to test the incremental impact of the project on stakeholder behavior, the assessment team posed a series of questions about project impact and results. The ten research questions presented below fell into one of three categories:

PRE-SALE PREPARATION

1

1. What was the strategic use of grants?
2. Did product quality improve from crop conditioning training and equipment?
3. Have grain storage practices improved?

MARKET LINKAGE FACILITATION

2

4. Have smallholders been integrated into regional markets?
5. Has access to market price information opened up new markets for smallholders?
6. Is there more transparency in grain sales?

BEHAVIOR CHANGE

3

7. Has the role of women changed?
8. Is a price premium offered for quality?
9. Is there improved market timing?
10. Have new fees for services been introduced?

For each of the ten research questions, the discussion below presents the value chain constraint, the MLI project interventions, the project results with specific examples, and lessons learned.

PRE-SALE PREPARATION QUESTIONS

1 What was the strategic use of grants? How much private capital and commercial financing was mobilized by MLI grants?

For small and medium enterprises across the MLI region, access to finance has been a critical constraint to growth. In countries such as Malawi, where the government role in commodity purchase and marketing has diminished drastically, private traders' access to finance impacts not only economic growth, but also food security.

The GBCs and VACs all traditionally used their own capital or collateral-based bank loans to finance growth and trading of grains. The high costs of commercial bank loans—ranging from 18 to 25 percent across the MLI countries—seriously constrained investment in storage equipment and growth in this sector. Prior to the project, access to grant funding for GBCs and VACs was extremely rare throughout the region.

PROJECT INTERVENTIONS

MLI did not directly support improved access to finance, but its key project funding mechanism—co-investment and cost-sharing schemes to improve storage infrastructure, access to markets and services for storage and trading operators—has resulted in greatly improved access to finance. Several traders assisted by MLI (e.g. Agroways in Uganda and SLS in Kenya) introduced warehouse receipt systems (WRS), whereby receipts are used as collateral at commercial banks. Loans in Malawi to finance grain purchases are another example of a financial product that became available during the project. In several of the MLI countries, traders were helping to facilitate input credit to farmers by using their newly constructed warehouses as collateral.

PROJECT RESULTS

Though an unexpected result of the project, the warehouse receipt system adopted in Uganda was achieved through MLI support to construct and rehabilitate GBCs. Both farmers and Grain Bulking System (GBS) operators reported that now they can use their warehouse receipts as collateral at commercial banks. A WRS was implemented only in Uganda because it has an advanced system of warehouse licensing and regulation by Uganda's

(continued on page 18)

FIGURE 5 : TRANSFORMATION OF VALUE CHAINS FOR MLI PARTNERS

BEFORE PROJECT		AFTER PROJECT
<ul style="list-style-type: none"> • Few producer groups sell directly to large traders and mills • Large numbers of intermediaries, with different market requirements and standards, within chain • Few long-term trade contracts • Few premiums for quality • Poor market information exchange among farmers and trade 	TRADING AND MARKETING	<ul style="list-style-type: none"> • Direct contracts between producer groups and large traders • Fewer intermediaries, and more common market requirements within value chain • Introduction of long-term trade contracts between producers and large buyers • Introduction of premiums for quality • Good information exchange between farmers and traders, resulting in better market efficiency
<ul style="list-style-type: none"> • Limited competition among medium to large grain traders • Limited quantity of commercial drying equipment • Limited knowledge of good warehouse management practices • Weak linkages with smallholders and VACs • Limited public storage 	GRAIN BULKING CENTERS	<ul style="list-style-type: none"> • More capacity and competition among medium to large grain traders • Increased quantity of commercial drying equipment • More knowledge of good warehouse management practices • Closer linkages with smallholders and VACs • Public storage and other services offered by GBCs
<ul style="list-style-type: none"> • Small number of VACs, mostly rented • Limited storage tools and equipment at VACs • Limited transparency between buyers and sellers at the village level • Usually VACs have only “spot market” relationship with GBCs 	VILLAGE AGGREGATION CENTERS	<ul style="list-style-type: none"> • Increased number of VACs, many owned by GBCs or their agents • Improved crop conditioning equipment (cleaning and grading equipment) • Scales and moisture meters create transparency between buyers and sellers at village level • Development of network of GBCs and VACs sharing storage and measurement equipment and working with common quality standards
<ul style="list-style-type: none"> • Poor crop conditioning • Heavy farm level post-harvest losses • Majority of farmers sell soon after harvest • Limited knowledge of market requirements and prices • Limited contracts with buyers, mostly “spot market” 	SMALLHOLDER FARMERS	<ul style="list-style-type: none"> • Good crop conditioning • Reduced on-farm post-harvest losses • More smallholder farmers storing own grain through public storage schemes • Better knowledge of market requirements and prices results in higher sales prices • Production contracts facilitated by price alerts and commodity exchanges

OIBM, a commercial bank in Malawi, is lending money to Chitsosa in Malawi to provide capital for purchases before big sales. In 2010, Chitsosa received a 100 million MWK loan. In 2011, they were given a 150 million MWK loan because MLI co-funded capital investments that increased their available collateral.

1 MLI Lesson Learned

Strategic grants mobilize private investment and bank financing for grain storage. Storage infrastructure helps facilitate new forms of financing such as warehouse receipts systems.



(continued from page 16)

Commodity Exchange Board, as well as deposit receipt issuing. The WRS provides many benefits to the GBS operators, including extra income to expand their operations and a ready supply of good quality grain that they can purchase on demand. For farmers (depositors), WRS has provided extra good quality storage space and a ready buyer (the warehouse operator) if better prices were not offered to them by other buyers. The deposit receipts increase both GBS operators' and smallholders' chances at accessing commercial loans by using receipts as collateral.

Four of the five private small and medium enterprises (SMEs) that MLI Malawi supported have received increased bank financing to purchase additional commodities. In all cases, the banks have cited improved infrastructure and access to markets as justification for increased financing. In total, working capital financing for these four SMEs has increased—by approximately 74 percent—moving from a total of US\$996,667 in 2010 to US\$1,732,667 in 2011. For the individual traders, the increase has ranged from 50 percent up to 231 percent. Total USG investment in these grantees comes to US\$411,468; direct grantee cost share amounts to US\$513,504; and increased bank finance has so far amounted to US\$736,000. Taken together, USAID investment in these four grantees has leveraged US\$1,249,504 in private sector investment in grain storage and trading. This represents a threefold leveraging of USG funds.

Mr. Latif Nyambi, the owner/operator of M.C. Agronomy, an SME grantee in Malawi, said, "After visiting my improved warehouse, seeing my new equipment and management practices, the bank looked at me in an entirely new way. Last year I had a loan of one million kwacha and the bank refused the 6,000 bags

I had as security because of poor storage conditions. This year they have loaned me more than 14 million kwacha." Aleksandr-Alain Kalanda, CEO of Opportunity International Bank of Malawi, explained, "These MLI grantees are really achieving the commercialization of agriculture. This is what OIBM wants to support."

2 Did product quality improve from crop conditioning training and equipment?

VALUE CHAIN CONSTRAINT

Before the project, the typical situation CARANA observed was that smallholders delivered low quality commodities (maize, beans, groundnuts, etc.) to VACs and GBCs due to poor crop conditioning. Typical moisture levels ranged from 15 to 22 percent,¹⁸ and each bag contained considerable dirt, insects and broken grains. Grain products were often dried directly on the ground or on the floor of the house and became contaminated with dirt and insects at the time of sale. Shelling of maize and groundnuts was often done by hand, with water added to the hands to make it easier on the person doing the shelling. The extra liquid raised moisture and the chances of introducing a harmful mold that grows on wet grains, aflatoxin. As a result, farm-level post-harvest losses were significant.

Faced with few premium incentives from their buyers, it was not surprising that farmers chose not to pay much attention to grain quality. The prevailing buyer-seller model was low standard prices with no grades or premium for quality, and low quality grain produced and delivered by farmers. Additionally, the "tax" from inefficiencies in post-harvest handling is borne primarily by farmers. Therefore, poor post-harvest equipment and high post-harvest losses are a major burden on farmer prices directly.

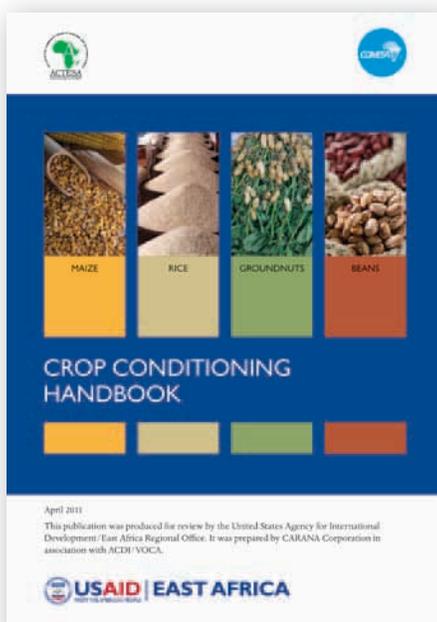
MLI INTERVENTIONS

Grants to farmer organizations and VACs for the purchase of crop conditioning equipment were a critical intervention to address grain quality. Equipment procured through co-investments with grain traders included mechanical threshers, maize shellers, mobile solar dryers, moisture meters, and cleaning tables and equipment.

These co-investments in crop-conditioning equipment were accompanied by training on their use, in addition to training on crop conditioning practices through formal trainings or farmer field days.¹⁹ The training of smallholders in crop conditioning was implemented through service providers who organized sessions in which smallholders in the catchment area of the grantee were trained on improved practices in crop storage, handling and conditioning. The project placed particular emphasis on the grantees' (grain buyers') market requirements, and grantees and their agents were an essential element of each field day and training in order to provide reinforcement for quality improvements.

The crop conditioning workshops promoted cooperation with local government extension services (particularly in Malawi) where the crop conditioning was integrated into the delivery of the extension service messages to smallholders at each field day.

MLI also developed and distributed 1,500 copies of a *Crop Conditioning Handbook* (see handbook cover below), throughout MLI countries to various stakeholders in both English and French; in Malawi, three crop conditioning videos were produced and widely distributed to GBCs.



IMPROVEMENTS

As a result of quality improvements and improved post-harvest handling, the project has likely had a positive impact on farmer prices. As farmers are the stakeholders that pay the “tax” of inefficiencies, gains from reductions in post-harvest losses have theoretically improved their prices in the market, though we require further research in this.

MAIZE SHELLERS



New MLI maize shellers decrease the amount of broken kernels and provide an easier way for farmers, particularly women, to shell their maize.

MOISTURE METER



New electronic moisture meters measure the moisture content of commodities in order to mitigate spoilage and disease.

2 MLI Lesson Learned

Appropriate equipment and practical crop conditioning training, reinforced by buyers' presence, can improve grain quality and incentives among farmers.



PROJECT RESULTS

The use of newly procured equipment gave farmers and GBC and VAC operators the tools to address quality. Sieves allowed traders to separate dirt from grains; shellers, procured for and used by farmers, reduced the number of broken maize kernels; and mobile or electronic dryers improved grain moisture content and decreased the amount of dirt usually mixed in with the grains during the drying process. The changes in crop conditioning and post-harvest losses were quantified in interviews with farmers, who cited better grain quality, lower moisture content, and reduced losses (an average of 5 percent).

As a result of the new equipment, farmers were given premium incentives for improved crop conditioning. MLI's crop conditioning training, in partnership with business service providers, was a tool to help farmers meet these demands. As a result of project interventions, 34,817 farmers attended training sessions on crop conditioning (10,987 in Malawi). Following the training and farmer field days, traders and GBC operators cited better

grains coming in from farmers in the targeted regions. Furthermore, several farmers admitted to adopting and already seeing changes as a result of new practices learned at training sessions or farmer field days.

According to the MLI USAID External Evaluation Report (by Wiedemann Associates), evaluators found that, "The capacity development of traders and farmers especially in crop conditioning has had a clear impact in the quality of grain that has been purchased by the grantees. One grantee reported that in the past, one to two bags of trash would be collected from every 15 bags of grain presented for sale whereas the volume of trash collected from the same amount of grain now was no more than a few handfuls... The improvement in grain quality was in fact due to the presence of the traders or their agents at crop conditioning training sessions and the clear message at those sessions that grain that was not up to standard would fetch a lower price [and] be rejected. This emphasis on commercial incentives reinforced or reintroduced quality advice that had hitherto been ignored."²⁰

DRYING METHODS

VALUE CHAIN CONSTRAINT



Old drying method: maize is thrown on the dirty ground indoors, attracting pests and dirt.

PROJECT RESULT



New collapsible dryers: maize is spread evenly outdoors under the sun while protected from dirt; it can also be zipped shut to protect grain from the rain.

3 Have grain storage practices improved? Has there been a measurable reduction in post-harvest losses due to improved storage under MLI?

VALUE CHAIN CONSTRAINT

Many of the MLI GBCs previously had limited technical training in warehouse management. GBCs had inadequate ventilation and limited equipment such as pallets, scales, grading equipment and scales. Due to wet grain coming in, and poor drying and ventilation in the GBCs, storage losses were generally estimated to be about 4 percent.

Storage practices among GBCs observed before the project can be summarized as follows:

- Limited competition among medium to large grain traders
- Limited quantity of commercial drying equipment
- Limited knowledge of good warehouse management practices
- High post-harvest storage losses
- Limited public storage and other services offered to producers and suppliers

MLI INTERVENTIONS

MLI provided training to VAC and GBC operators in grading and warehouse management. MLI also developed a Storage Management Manual to guide farmers as well as implementers providing training for store keepers and warehouse operators on improved household storage. The manual articulates best practices in storage management techniques and serves as a resource for the development of other training materials. This training tool discusses the actions necessary to ensure that the quality of commodities does not deteriorate during long periods of storage at the household, store and warehouse levels. MLI printed and distributed the manual to grantees and development practitioners in the region in September 2011.

The project assisted grantees, including GBCs, with the development of business plans to support them in creating new business models for expanding their grading and storage operations. MLI also co-invested in the procurement of commercial drying equipment in Uganda and Rwanda in order to expand the availability of drying equipment and improve capacity and competition among medium and large scale traders. Due to improved infrastructure, MLI-supported GBCs also increased public storage services for smallholders and small traders.

ENAS, a commodity buyer in Rwanda, stated that, “The maize and beans are coming in much cleaner because of the use of sheetings. Before, we were paying to transport a lot of dirt. Having the drying and cleaning system at the field level will decrease time and costs of transport.”

IMPROVEMENTS

M.C. Agronomy is a growing SME in Malawi. In 2009, owner Latif Nyambi built a rudimentary grain store from wood off-cuts (see picture on the next page). In 2010 he was awarded a grant of US\$77,500 to build a new GBC, procure warehouse equipment and train staff and local farmers. The MLI grant-related activities and results for M.C. Agronomy included:

- Construction of a new GBC
- Procurement of weighing, grading, handling and storage equipment
- Information about the importance of crop conditioning through field days among farmers who deliver to his VACs
- Training for his warehouse staff on storage management
- Registration of some of his farmers on the Esoko platform
- Linkage with the Agricultural Commodity Exchange
- New business relationships with established agricultural organizations like NASFAM
- Increased trading volume from 55 tons in 2008 to over 1,000 tons in 2011

Mr. Nyambi summarized his MLI experience as follows: “I moved a mountain. I never thought I could have such equipment and the number of my employees has increased to levels I never thought before. Farmers now see me as a different trader where they take their produce to.”

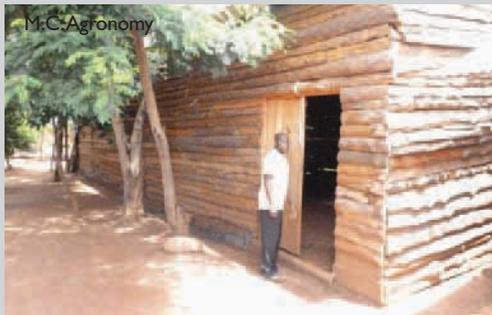
3 MLI Lesson Learned

Storage management practices and post-harvest losses can be improved through a mix of technical assistance and co-investment grants.



WAREHOUSE IMPROVEMENTS

BEFORE MLI



The old M.C. Agronomy facility was made of logs with very limited protection from pests and dirt, and limited storage capacity. It experienced storage losses of 20% due to rain damaging the product.

AFTER MLI



The new, larger M.C. Agronomy warehouse, co-funded by a USAID/MLI grant, has proper ventilation and insulation, mitigating dirt and pests and enabling longer and greater storage capacity.

PROJECT RESULTS

It is evident that the development of physical GBS infrastructure and the associated training of both grantees and smallholders have increased volumes of business for most GBCs. With the new storage capacity at GBCs, there was an associated growth in demand along those trade corridors for new grain to flow through market channels. The development of VAC networks has reduced farmer transport costs and streamlined marketing along these channels.

At the GBC level, MLI appeared to have helped several GBCs reduce PHL from about 4-5 percent to 1-2 percent.²¹ Moisture meters helped ensure that the grain was the right moisture level, and the dryers provided a means to the ideal moisture level. As a result, grain can be stored longer without losing quality.

Any improvement in post-harvest losses—whether at the farm level or GBC—is a step forward in reducing the overall PHL in the region, which are estimated to be in the range of 10 to 20 percent.²² As suggested by the literature, a reduction in losses improves prices by eliminating the “tax” on farmers, which is disproportionately high for these stakeholders. Consequently, farmers should be capturing most of the benefits of these changes, but the relationship needs more research.

Mama Millers (Kenya) noted the impact of MLI’s equipment at the GBC level on post-harvest losses: “Before the moisture meters and dryer, we had storage losses of 4%. This year we expect storage losses to be 1%.”

MARKET FACILITATION QUESTIONS

4 Have smallholders been integrated into regional markets? Has the project strengthened backward linkages of traders to smallholders? Is there evidence of closer buyer-seller relationships between grain traders and farmers and joint risk sharing?

VALUE CHAIN CONSTRAINT

CARANA has observed that in the countries where MLI operated, commercial grain traders were regularly dismissed as exploitative, sometimes being called “parasites” and other derogatory names. Trust between suppliers and traders has been very low. There have tended to be numerous transactions and intermediaries along the value chain and there are typically limited numbers of written contracts. Most sales are on a spot market basis. Rarely did smallholders transact directly with larger buyers unless the buyers sent agents to the farmers’ villages. As a result, farmers had limited knowledge of market requirements.

MLI INTERVENTION

The project supported the development of networks of GBCs and VACs in key rural areas or trading routes in order to improve trader development and integration with smallholder farmers. While the grantees clearly valued the training and capacity development components of the project, most considered construction and upgrading of GBCs to be the most important MLI intervention, driving all the new trade activity and new relationships with smallholders.

MLI also attempted to improve farmer integration via farmer field days, whereby traders were significantly involved in the demonstration trainings and presentations. Additionally, MLI’s introduction of a transaction receipts system was used to improve transparency and accountability between farmers and traders. MLI’s support of the Esoko MIS system—which uses SMS technology to send out offers to buy and sell—in addition to collaboration with Malawi’s Agriculture Commodity Exchange (MACE), was used as a means to strengthen linkages between traders and farmers. Close working relations with WFP P4P, and the support of long-term contracts, also encouraged integration.

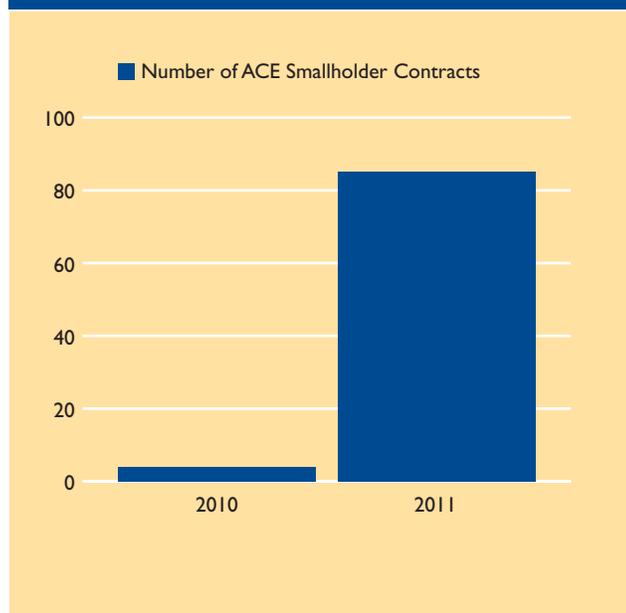
PROJECT RESULTS

The objective of increased smallholder integration appears to have been met by the project. Following the construction and upgrading of GBCs, grantees reported

an immediate increase in turnover ranging from 30 percent to more than 100 percent. The volume of grain flowing into MLI-supported Grain Bulking Systems was 107,214 tons during the life of the project, versus an end of project target of 96,350 tons. The value of commodities flowing into MLI-supported Grain Bulking Systems was US\$32.97 million by the project’s close, versus an end-of-project target of US\$12.4 million. The higher-than-expected value was in large part due to the dramatic increases in prices over the past year. However, MLI anticipates that in the coming buying seasons, grantees and smallholders targeted under the MLI project will see even larger volumes of commodities and stronger relationships between farmers and traders.

Several market linkages have taken hold as a result of the project, particularly with the introduction and integration of contract-based farmer support under the WFP P4P program in Rwanda, Uganda, Malawi and Kenya through traders such as Mwilu and agricultural cooperatives, including Kisiita, UCORIBU, COAMV, and Cheka. Furthermore, three grantees—SLS, Farmers Centre and Prodev—are engaging in contract farming, which has ensured longer-term relationships for farmers in these areas of Kenya, Uganda and Rwanda. In Malawi, the Agricultural Commodity Exchange successfully introduced smallholder contracts via Esoko’s MIS system. Previously, ACE had only been able to contract with larger buyers through e-mail solicitations. By supplying the subscription and providing technical assistance for Esoko’s use, MLI assisted ACE to reach smaller traders. Due to this new marketing channel, the number of smallholder contracts achieved via ACE skyrocketed over the past year from four contracts in 2010 to 85 contracts in 2011 (see Figure 6 below).

FIGURE 6: NUMBER OF ACE SMALLHOLDER CONTRACTS



4 MLI Lesson Learned

Investments in innovations such as SMS-based market data, WFP P4P grain purchasing, WRS, commodity exchanges, and production contracts all accelerate sales, and improve smallholder integration in commercial markets.



Some examples of increased smallholder integration into more formal regional markets include Cheka, a trader in Malawi, and Mwilu, a Kenyan trader, who both signed contracts with the WFP in 2011 because of MLI assistance.

An unexpected byproduct of closer commercial relationships between lead firms and smallholders was that several traders—including KPMC and Mama Millers in Kenya and Export Trading in Uganda—have taken steps to share risk with farmers. An example of shared risk includes the introduction of crop insurance in order to protect farmers from factors affecting poor crop yields, while serving as a guarantee among banks and input providers. These systems are beneficial for both traders and producers. For example, in the case of SLS in Kenya, farmers had 100 percent crop failure. However, through an insurance/input-purchasing scheme in which SLS, input providers, farmers and the bank participated, farmers were able to recover 80 percent of their lost sales. Meanwhile, if the season had been good, SLS would have received much higher yields and quality grain because of improved farmer access to inputs.

5 Has access to market price information opened up new markets to smallholders?

VALUE CHAIN CONSTRAINT

One of the main value chain constraints in MLI countries is that prices are not widely disseminated and smallholders are mostly “price takers,” selling to the limited buyers who visit their villages after the harvest. Smallholders have little access to market information, limited knowledge of market requirements, and little basis for negotiating prices. Farmers often travel several kilometers by bicycle to sell their grain to nearby small aggregation centers, usually selling at whatever price the centers offer, as the alternative would be to return to their farms without a sale.

Traders reported that, before the project, they usually did not advertise their buying prices at all. In those cases when they did advertise, for instance in Malawi, they usually did so by radio, or on posters. It was reported that frequently these posters were torn down by competitors. Overall, these advertising methods were both inefficient and expensive.

MLI INTERVENTIONS

In Malawi, MLI partnered with Esoko, a Ghana-based company, to develop an SMS-based MIS platform in order to improve market information for traders and farmers. The MIS platform in Malawi featured:

- Twice weekly price updates for key food staple crops in 13 regional markets in Malawi
- SMS Push—Key messages sent to targeted users, including technical information, event or training reminders and advertisements
- SMS bids and offers—Matchmaking platform linking buyers and sellers
- SMS Polling—Questions automatically sent to thousands to gather key data, useful for business tracking and surveys

The MLI project provided support to the MIS platform in Malawi in a number of areas, including meeting the costs of:

- Training the enumerators collecting market price information that is entered into the system
- Training grantees and their agents in the use of an MIS platform
- Initial licenses for traders in Malawi who would have otherwise paid the annual fee.

MLI also facilitated the development of a licensing franchise arrangement with a for-profit Malawian company named Wellspring.²³ This private investment enabled the system to be sustainably implemented on a commercial basis after the end of the project. The Wellspring business model is based on the assumption that grain market stakeholders, including GBCs, mills, VACs and wholesale buyers, will be willing and able to pay for Esoko subscriptions after the MLI project has ended. In discussions with CARANA, Wellspring said they expected that most smallholder farmers would need to have a subsidy from government or donors in order to pay for this service, under the understanding that farmers' willingness and ability to pay is limited but there are good public arguments for a small subsidy to continue for several years.

Under the project, designated GBCs received Esoko subscriptions, enrolled their supplying farmers on a database, and used the MIS platform to better manage their supply chains—from farmer to final customer. Additionally, enrolled farmers received updated price information via SMS-based price alerts for seven grain commodities collected in 13 key markets across the country.

PROJECT RESULTS

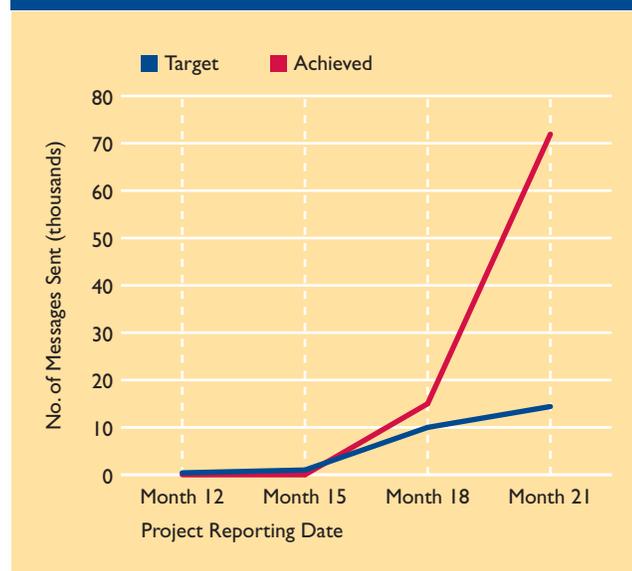
As a result of the MIS initiative, market information in Malawi improved significantly. GBC operators advertised their needs for grain and their offer prices, while farmers were alerted on prevailing commodity prices, allowing them to make much more informed decisions about where and when to sell their products.²⁴

One indicator measuring the success of this feature is the number of GBC operators and farmers subscribed to the price alert service: The April-June 2011 MLI reporting quarter saw an extremely high growth in the traffic of price alerts, bids, and offers sent by smallholder farmers and GBC operators, from 15,000 to 71,928—an increase of 379 percent. (See Figure 7).

Farmers in Malawi rated the impact of the MIS platform to be the most beneficial project intervention they received. The benefits of the improved MIS information for smallholders included:

- **Increased price discovery**, which **improved their bargaining power** when negotiating with traders
- **Knowledge** of which markets were most attractive to sell their products
- Ability to compare the **profitability of different crops**
- Ability to respond quickly to **individual trader's specific and definite buying prices** and make a **decision about whether to transport their crop** to the VAC for sale.

FIGURE 7: SMS TEXT OFFERS TO BUY AND SELL SENT THROUGH THE ESOKO MIS PLATFORM



5 MLI Lesson Learned

Price discovery improves smallholders' and traders' certainty about where to buy and sell, and SMS-based systems can be cheap yet highly effective.



The key benefits for farmers of the MIS system were reduced uncertainty, and cost and time savings, as farmers no longer had to travel to market only to find that the buying price was lower than expected. The certainty provided by the Esoko MIS platform represented real and direct cost savings and empowerment. The MIS platform also benefited traders in Malawi, as it introduced immediate and potentially sustainable changes to the way they communicate with smallholders.

Overall, the benefits of the Malawi MIS platform are considered to be “business neutral” and have empowered both traders and smallholders. The cost of the support has been relatively small compared with the overall budget of MLI in Malawi, and the exercise could be replicated in other countries at relatively low costs (the project spent US\$86,500 on Esoko versus US\$1.4 million for grants and sub-contracts in Malawi).

The MIS platform was only implemented in Malawi and not in the other MLI countries. Based on the success of the MIS platform in Malawi, we believe there is potential to scale up similar market information platforms in other countries. According to interviews in other MLI countries, the study team found that only in Malawi were MLI smallholder farmers selling on the commodity exchange.

6 Is there more transparency in grain sales? Have smallholders had increased negotiating power due to more transparent measurements in sales transactions?

VALUE CHAIN CONSTRAINT

One of the biggest challenges affecting transparency of the staple value chains in MLI's countries of operation is the absence of standard weights and measures from the point of production to the final point of consumption.

Mulli Brothers, a GBC in Malawi, is using the Esoko MIS system to target specific farmers and sectors, send information on their prices and offers on where they want to buy.

Value chain actors often reference prices or fees paid per bowl, per bag (of different sizes) or per shipment, rather than per kilogram or other standardized measure.

The CARANA team also saw evidence that some of the scales used by traders in these MLI countries were locked or rigged so that the apparent weight was less than the actual weight of the grain. Without accurate scales, smallholders believed that they were often cheated by about 5 to 10 percent of the sales transaction by traders. To offset some of these practices, some of the farmers reportedly added moisture to grains to give them higher weight at time of sale.

Prior to MLI, nearly all of the GBCs and VACs we contacted did not possess meters to accurately measure moisture. The few moisture meters that they did possess were often inexpensive models that were out of calibration and gave inaccurate readings. Where there were no moisture meters, traditional methods of biting the grain or adding salt to measure the moisture provided “order of magnitude” estimates and lacked the precision necessary to make definitive grading and acceptance/rejection decisions. Furthermore, in the East

Africa region, it was standard practice for buyers not to provide receipts or written records of the transaction.

Overall, the transaction environment for small quantities from farmers and VACs was one characterized by lack of transparency and limited standards of measurement. The overall environment tended to be very informal, and the lack of information and standards tended to minimize the bargaining strength of small farmers and VACs when selling to larger traders.

MLI INTERVENTIONS

MLI jointly invested in improved grading equipment such as moisture meters and electronic weigh scales for GBC and VAC operators. The reasoning behind the procurement of these two pieces of equipment in particular was to improve transparency during the transaction process. However, none of the equipment decisions were forced upon traders; the project asked traders and GBC operators to identify their equipment needs, and then cost-shared the purchase of equipment, ensuring sustainability and use of equipment. In fact, in several cases, grantees used 100 percent of their own funds to buy more equipment than what was piloted under MLI. Electronic weigh scales and moisture meters were particularly popular.

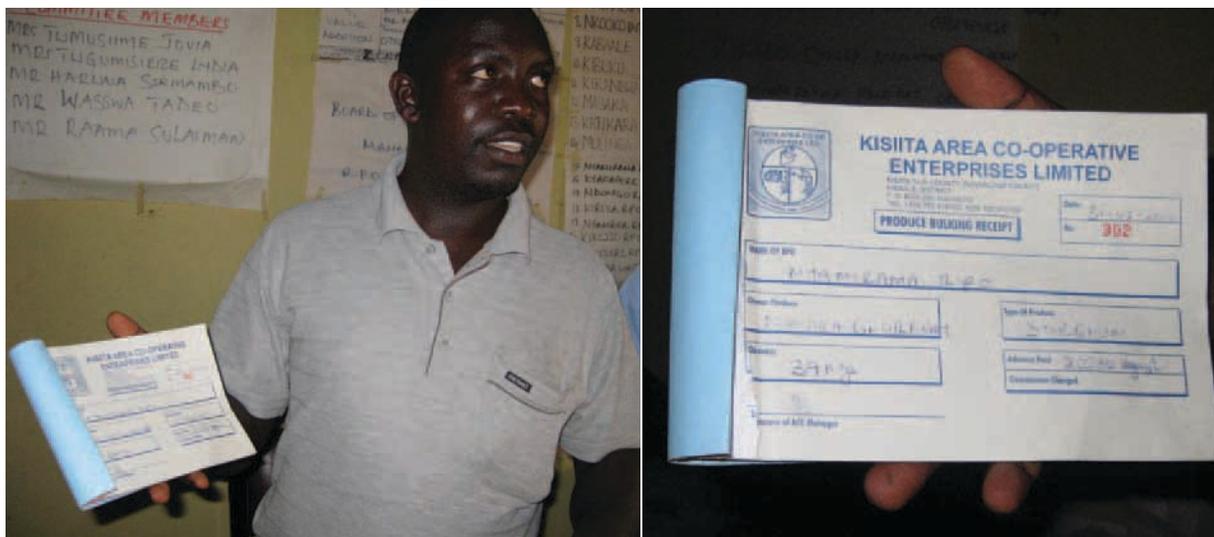
The introduction of transparent receipt systems in Malawi, Uganda and Kenya also helped improve

transparency; these receipts listed price, weight and grain grade. In Malawi, all MLI grantee buyers are required to provide a written receipt (see picture below) to each seller at every transaction. The receipt details the quantity of product sold, the price and the grade of the product. Unlike the warehouse receipt system in Uganda, the receipt issued in Malawi is not a tradable document. However, it does allow for the collection and verification of the volumes of crops held by individual traders.

PROJECT RESULTS

The equipment chosen by MLI and grantees helped to improve transparency. New electronic scales give more accurate weight readings and are harder to rig. In addition, new electronic moisture meters introduced through MLI provide an objective market-driven measure of quality and improved criteria for differentiating prices.

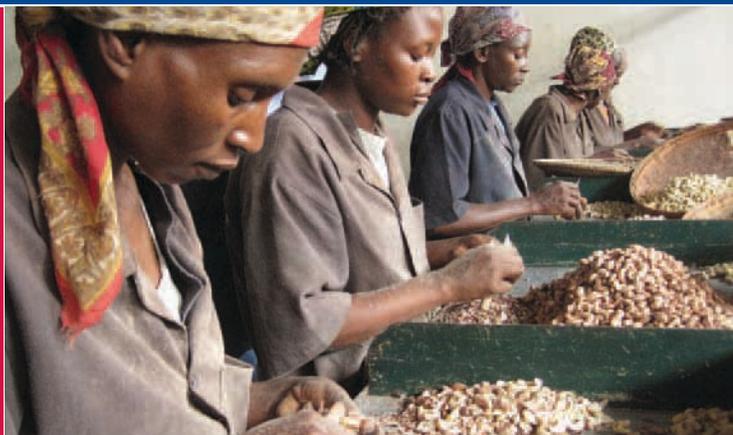
The receipt system is benefitting farmers by documenting prices based on grain quality and weights. As a result, buyers can be confident that traders have the capacity to meet the commitments they make when responding to purchase offers. The system is also reported to be useful to farmers for record keeping of price and volume amounts from their different sales outlets. They can also use these detailed receipts to know how future sales should be priced, rather than depending solely on arbitrary prices proposed by traders.



Commodity Receipt used for grain sales

6 MLI Lesson Learned

Transparent measurement tools strengthen smallholder negotiating power and provide grading and price premiums.



WEIGHING METHODS

BEFORE MLI



Traditional hanging scales can only measure one bag at a time, are difficult to use and can give inaccurate weight readings.

AFTER MLI



New electronic platform scales from MLI can weigh more than one bag at a time, are easier to load and give more transparent and accurate weight readings.

BEHAVIOR CHANGE QUESTIONS

7 Has the role of women changed? What is the role of gender in crop conditioning?

VALUE CHAIN CONSTRAINT

While gender roles vary by country, region and individual family in the MLI countries, women producers generally play a key role in certain aspects of maize production (particularly crop sowing, weeding and harvesting) but engage less actively in maize marketing. In most of the countries—including Kenya, Malawi, and Uganda—women play a major role in production, conditioning and marketing of beans and groundnuts. In all MLI countries, women are heavily involved in crop conditioning, including grain threshing, shelling, cleaning and drying. Many of the traditional crop conditioning methods include using sticks for threshing and shelling maize, and shelling groundnuts by hand instead of with mechanical tools.

In most of the MLI countries, women also play an important role in small scale trading (such as Village Aggregation Centers) and often act as buying agents for the GBCs' large wholesale trading of staple crops in urban markets. In Rwanda in particular, there is a large emphasis on cooperatives which, in that country, typically have higher numbers of women than men, and are often managed by women.

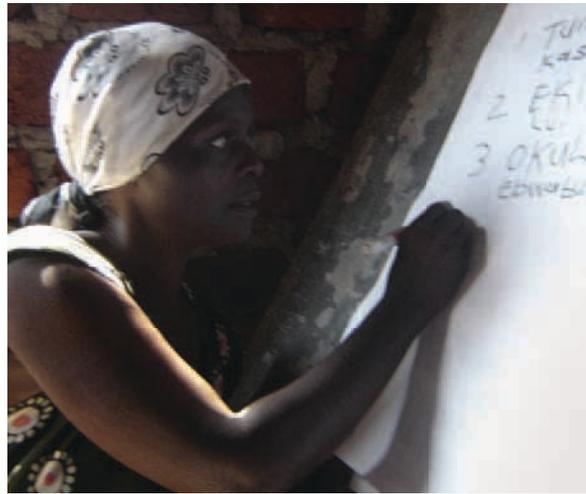
In almost all of the project countries, men have played the most dominant role in loading and unloading bags from trucks, and in driving bicycles and trucks to transport the grain. One of the factors leading to men participating in the bag handling to such a degree is the large size of the grain bags in most countries—averaging 90 to 120 kgs—which is usually too heavy for a woman to lift. Typically, only young men aged 18 to 30 tend to engage in this task.

MLI INTERVENTIONS

MLI aimed to target a proportionate number of women beneficiaries in the project performance monitoring plan. Women's participation in grain bulking systems and farmer trainings was a key indicator of the project, which ensured that the needs of women involved in the commodity value chain were taken into consideration. Although grants for infrastructure and equipment procurement and trainings were not aimed specifically at women, some circumstantial, yet interesting lessons, on the role of women and gender in crop conditioning and market linkages programs can be gleaned from the project.

PROJECT RESULTS

Women's participation was a key indicator of training activities, and MLI played a role in proactively targeting women farmers. It was interesting to observe that women played a more active role in crop conditioning training than was originally anticipated. A total of 15,317



Crop conditioning training in Uganda.



New platform scale at a woman-owned VAC supplier to Mama Millers, a GBC in Kenya.

women were trained during the life of the project, more than double the end-of-project target.

Several MLI choices of equipment, technologies and grain bags had favorable effects on enabling women to participate more actively in the crop conditioning, transportation and marketing of these staple crops. Although the benefit of this equipment to women was not necessarily an explicit goal of the project, it was an important outcome. According to COAMV, the maize shellers used by MLI are especially easy for women, as the traditional method of hand shelling hurt their hands/fingers. However, according to one of UCORIBU's VACs, winnowing machines are mechanical and take a lot of work to operate. A lot of the cooperative members are opting to do the winnowing manually, especially women who find the traditional method easier.

Priscilla Chelagat is a trader who operated a VAC in cooperation with Mama Millers GBC in Kenya. Before the project, Priscilla used hanging scales to weigh the grain farmers sold to the VAC. This took a lot of time and effort to use, as it could only handle one bag at a time and women could not usually lift the bags up to the hanging scale. The new scale decreases the strain on arms and backs and allows women to lift the bags onto the scale. It also saves Priscilla time; it used to take her two hours to load a five-ton truck with hanging scales, but it now takes her 40 minutes.

7 MLI Lesson Learned

Training and equipment selection can favor women's empowerment in grain value chains.



Another positive finding was that many of the GBC and grants managers were women (Mulli Brothers, Mama Millers, Sosoma, ENAS, ETS Misago, SLS, and KPMC). As a result, one of the unexpected results of the MLI project was the capacity improvements among women farther up the commodity value chains in roles of management, operations and accounting. As a result of the trainings and technical assistance provided by MLI and its training partners in storage management, accounting and grain handling, these women gained important business skills. Furthermore, many of the VACs were women-run, and consequently, these women were empowered by increased access to markets and knowledge on improved business practices introduced under the project.

8 Is a price premium offered for quality? What is the impact of MLI on product prices and smallholder incomes?

VALUE CHAIN CONSTRAINT

One of the primary value chain constraints identified was that GBCs and warehouses in the project areas often paid an average (usually a low price) for all grains they purchased. Without moisture meters or grading equipment it was very difficult for them to measure or grade the quality and therefore offer differentiated prices. Therefore, few buyers offered premiums for higher quality grain.

Without any premiums for higher quality grain, smallholder farmers had little incentive to produce better-conditioned, higher quality grain or to intensify production without an increase in producer prices.

MLI INTERVENTION

The goal of MLI was to increase storage and marketing efficiency, thereby increasing prices received by farmers. Over the longer term, this should encourage more intensive production while reducing prices to consumers. In the technical assistance provided to GBCs and VACs, the project team recommended that buyers send out stronger price signals to suppliers by offering adequate prices and premiums for quality grain.

With the introduction of moisture meters and grading equipment, MLI's GBCs and their affiliated VACs were able to measure quality. MLI supported this by co-investing in grading rooms and quality-measuring equipment. The traders, GBCs and VACs were willing to put their own money into the purchases, as they saw the increased benefits of being able to differentiate quality and pay prices reflective of product quality.

PROJECT RESULTS

Several MLI buyers are beginning to offer a higher price for higher-grade grain, or they impose a penalty for lower quality grain. Among those not yet offering premiums, many are rejecting shipments that are coming

One of the farmers supplying to ENAS, a trader in Rwanda, reported that the shellers and tarpaulins have helped facilitate access to markets like RADA and the WFP, and have increased prices. This was “something I never could have imagined before.”

8 MLI Lesson Learned

Measuring and grading equipment can help buyers offer differentiated prices to smallholders based upon different quality grades, thereby increasing incentives for improved handling.



in with moisture levels above 14 percent. Some of those who have not yet introduced price premiums for higher quality grain were already planning on introducing them in the near future. The combination of price premiums for quality with the crop conditioning training gave smallholders the price incentives and technical know-how to produce higher quality grain.

CARANA's experience suggests that we would not expect to see prices rise in the short-term, as it is expected to take longer as buyers compete with one another for good quality product, thereby driving up prices. However, in several cases, farmers are already responding to differentiated prices. For example, Cheka Cooperative in Malawi is able to grade their grains at the GBC level, but not yet at the VAC level. Therefore, Cheka continues to pay an average price at their VACs, but pays based on two different grades at the GBC. As a result of this new grading system, Cheka found that more farmers are coming to the GBC because they can get a higher price for better quality. Farmers are already responding to price incentives to improve the quality of their grains, and are reaping more profits as a result.

9 Is there improved market timing? If sales were postponed, were sale prices higher?

VALUE CHAIN CONSTRAINT

Smallholders throughout the region typically sell their grains immediately after the harvest, when supply is greatest relative to demand, and prices usually are at their lowest. The reason that smallholders decide to sell right after the harvest is that their income and savings levels are very low at this time, and their household food supply is often almost depleted. It is not uncommon for many smallholders to be net buyers of grain, storing very little, and being compelled to buy back grain from traders when prices are higher later in the year.

As mentioned previously, in the majority of countries where MLI operated, CARANA observed that traders are often described as exploitative. In addition, there has been a long history of seasonally fluctuating grain prices in these countries, where traders buy grain at low prices just after harvest, and sell later in the year at a substantial profit. Traders are able to make most of the profit from these price increases because of limited storage opportunities for farmers, including access to warehouse receipts systems (WRS) or other forms of inventory financing.

MLI INTERVENTIONS

MLI provided support for storage services or storage financing through technical assistance for traders interested in pursuing them. Additionally, as a result of MLI's infrastructure support to traders through the development of GBCs and VACs—structures capable of providing longer-term storage—traders and GBC operators developed the capability to offer smallholder producers or small traders the opportunity to store their grain at the GBC for a monthly (or daily) fee.

Additionally, MLI's business plan support and provision of networking opportunities during grantee/stakeholder meetings allowed partners to exchange business ideas. As an unexpected outcome of these learning exchanges, ideas for public storage services and warehouse receipts systems were shared among project partners, and became a new and viable business model for several grantees.

PROJECT RESULTS

Several GBCs began offering public storage for the first time under the MLI project. Farmers given the choice to sell or to store had greater opportunities to improve

9 MLI Lesson Learned

Public storage options give farmers the choice to sell or to store, and expand their opportunity for profit-making.



profits and thus, incomes. The following grantees are currently offering this service to the public:

- Mama Millers (Kenya)
- KPMC (Kenya)
- Agroways (Uganda)
- Kisiita (Uganda)

In addition, ENAS (Rwanda), Farmers World (Malawi), and Nuru (Kenya) plan to begin offering public storage soon.

Some of these grantees are offering, or soon will offer, public storage at the VAC level while others are offering a new service to buy grain from farmers at their VACs and reserve the grain to sell back to the same farmers after storing it. At least three grantees are offering a service whereby the smallholders sell some of their grain to the VAC and the VAC offers to buy a portion (about a third of the grain marketed) and reserve it for later sale. The plan is for the smallholder farmers to

buy back this reserved grain after about nine months of storage, just a few months before the next harvest.

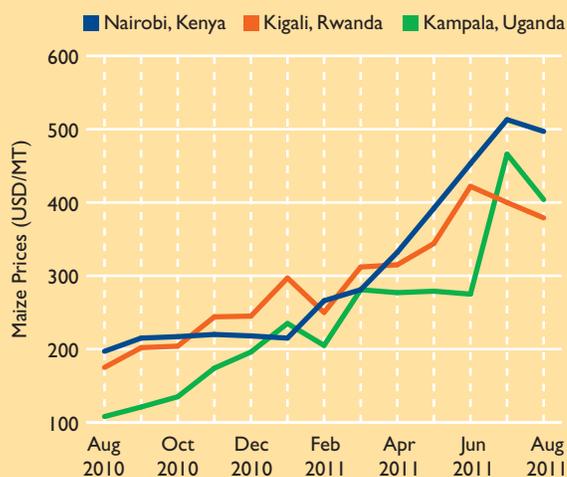
Under this new service, the VAC will sell back grain to the farmer at a price that includes a cost for storage. However, since the grain remains in the village, there will be no extra transport or re-bagging charges when the farmer buys the grain back. While this service may not be as attractive to the smallholder as public storage, it does offer access to purchased grain at a price that is lower than the full price of grain transported from regional grain bulking centers—the current practice in many of the production areas. It also may be a realistic alternative to public storage if the farmer does not have any access to seasonal credit.

Due to the recent drought conditions in several countries in East Africa (Kenya, Uganda, Rwanda, Burundi and DRC), retail prices for grain have risen sharply in the past year (see Figure 8). As a result of these price increases, many MLI grantees had the opportunity to reap windfall profits by storing their grain over the past year.

If a VC stakeholder such as a farmer or small trader was able to store his own grain for 2 to 3 months more than usual, through a public storage system or other arrangements, then he had a chance to sell his grain at substantially higher prices than right after the harvest. Price gains of 50 percent or more could be achieved this past year by storing grain for only 2 to 3 months. Larger traders who had the financial resources to store grain for longer periods reaped even higher gains this past year. Although the price increases were circumstantial, the availability of storage services gave farmers an important choice about something that had a significant impact on profit-making opportunities.

In order to expand public storage opportunities for smallholders, most of the MLI smallholder farmers and SMEVACs will require financing in order to store their grain for more than a month, due to cash-flow constraints. The ability to store grain for these stakeholders is closely associated with their ability to access

FIGURE 8: MONTHLY MAIZE PRICES IN EAST AFRICA



10 MLI Lesson Learned

New value adding services improve grain quality, provide a sustainable source of revenue for GBCs/VACs and provide equipment on a rental basis to farmers who otherwise could not afford it.



crop storage financing. Warehouse receipt schemes and other forms of inventory finance and seasonal crop credit loans are needed for this to happen.

10 Have new fees for services been introduced? If so, how has this strengthened the value chain?

VALUE CHAIN CONSTRAINTS

CARANA observed that in the countries where MLI operated, the typical constraint within the commodity value chain is that GBCs and VACs often offer few or no services to their suppliers since they have so little equipment and machinery. They usually buy an average low price and offer no tests, measurements or other value added services for a fee. The main service options are bagging and re-bagging and sometimes they offer transport as a service. Moreover, GBCs and VACs offer limited technical advice to suppliers.

MLI INTERVENTIONS

MLI did not offer any direct interventions in building up fee-for-services, yet its cost share support for equipment procurement and infrastructure development has helped grantees develop new business models and services. These services were born entirely out of grantees' interest in increasing revenue opportunities, and the demand among farmers and small traders for services otherwise not available in the market.

PROJECT RESULTS

As a result of the project, a range of new tests and services are emerging at the VAC and GBC levels that add more value and quality to the product and provide a sustainable stream of income that can help finance future investments in these technologies. This tangible revenue stream bodes well for the sustainability of the financial model and makes it much more likely that GBCs and VACs will be willing to purchase new products and equipment such as scales, moisture meters, aflatoxin tests, shellers and sieves once the MLI project is complete.

Agroways in Uganda and ENAS in Rwanda will begin providing public storage and drying services for a fee to farmers or farmers' groups. Mwilu, a trader in Kenya, has seen so much demand for moisture testing with moisture meters that he is charging a small fee for non-registered sellers, in order to help control the large demand without limiting access. KPMC in Kenya is charging farmers for the use of aflatoxin tests procured under the project, and has developed a new business model for its threshers, training unemployed youth to manage the rental process.

The fees that farmers are willing to pay for these services, although unexpected, demonstrate the sustainability and utility of the equipment. The availability of the equipment for farmers via a fee-based system increases the competition and viability of the traders offering these services.

KPMC (Kenya) is renting out their threshers for 70 KES/bag and their drying cases for 100 KES/day. They are also charging 1500 KES for a batch of three aflatoxin tests for farmers, and are also thinking of starting to lease their equipment.

CHAPTER 4

CONCLUSIONS AND IMPLICATIONS FOR FUTURE FOOD SECURITY PROGRAMS

The Lessons Learned Assessment found that the MLI project was transformational, scalable and sustainable by strengthening relationships between value chain actors and implementing market-driven activities that ensured buy-in from the private sector. Projects like MLI improve food security by addressing challenges to food quality, access and availability. This closing chapter proposes answers to four critical strategic questions (see figure below), and suggests specific implications for future USAID-funded food security programs.



1

WAS THE MLI ACTIVITY TRANSFORMATIONAL?

CONCLUSIONS

The project was novel in three ways:

- **The project helped integrate smallholders** into formal markets via commodity exchanges, price information systems and strategic buyers such as WFP and Strategic Grain Reserves.
- **The project stimulated farmers and downstream entrepreneurs** (and showed evidence of secondary adopters as well) to adopt improved technology and innovation, reducing post-harvest losses and improving marketing and storage efficiency.
- **The project demonstrated that more efficient post-harvest systems can be developed through backward linkages and investment by the traders and buyers.** One of the major goals of the MLI grants was to partially subsidize these investments and linkages to demonstrate that new (more efficient and lower-cost) ways of doing business are a good investment by ensuring greater and higher quality supply from producers.

PROGRAM IMPLICATIONS

The opportunity for future programs similar to MLI will be to **continue to encourage traders to invest in post-harvest storage and marketing systems**, as there are win-win benefits from improving these systems.

The objective in future iterations of MLI would be to reach a “tipping point” where enough lead firms and smallholders are changing their practices and others follow. When a critical mass is reached, traders will recognize the business opportunity clearly enough so that they will invest in these activities without grants or subsidies.

2

IS THE PROJECT SCALABLE?

CONCLUSIONS

- MLI support for grain bulking systems has had a **clear and positive impact upon the selected grantees’ financial “bottom line.”**
- If USAID or other donors undertook similar interventions—but on a more **intensive scale—reaching, for example, 20 to 30 percent of staple crop value chains**, the outcome would be **increased efficiency and competition within the target value chains and reduced transaction costs to the benefit of smallholders.**
- We conclude that several components of the MLI project can be **scaled up in cost-effective ways.**

PROGRAM IMPLICATIONS

The MLI project contains the following elements that can easily be scaled up to reach large numbers of farmers:

- **Increasing the number of traders supported:** Numerous MLI applicants who did not receive grants could be eligible for future grants by allowing more time to implement, or adjusting the cost-share requirements for some of the applicants. A scaled-up package could readily be modified to provide additional support to the “next tier” of traders.

- **Scaling along the value chain:** Our experience suggests that programs like MLI can integrate larger numbers of farmers into each GBC-centered value chain through the growth of GBCs and traders. When other producer groups see the benefits of first-mover activities, they usually want to join the network. This expansion is cost effective.
- **Deepening technical assistance:** Another opportunity to scale up MLI activities is by deepening the technical assistance (business development services and warehouse management improvements) provided to grantees to facilitate their growth. It is likely that capacity building in the form of training in business, financial and human resource management would be required to ensure that greater numbers of entrepreneurs were able to access and benefit from assistance in GBS construction.
- **Scaling up access to finance:** Future projects could provide informational outreach to banks and insurance companies to entice them to lend, especially through warehouse receipt systems and other inventory financing schemes. Financial assistance should be provided in a manner that places less strain on business finances, either by reducing the cost share requirement, by allowing for it to be paid over a longer period, or by making the finance available as a long-term loan. Future USAID investments in financing grain bulking should also inform entrepreneurs and financiers on the benefits of financing GBCs and larger firms in order to attract private investment capital that would allow USAID to phase out its own support.
- **Expanding the SMS model of MIS:** The facilitation of web-based SMS market information systems that have been undertaken by MLI in Malawi through support to Esoko could easily be scaled up. Market linkages between smallholders and commercial traders could be combined with commodity exchanges and with warehouse receipt schemes at national levels. As a pilot project, MLI demonstrated the clear potential of the SMS technology as an effective means of linking smallholders into markets. In Malawi, the MIS platform has strengthened the overall MLI support to traders and has introduced immediate and potentially sustainable change in how they communicate with smallholders. Furthermore, there are other competitors to Esoko, and the market for MIS services could be expanded within Malawi and other countries in the region. This MIS system has been business neutral by empowering both traders and smallholders alike. The cost of the support has been relatively small when compared with the overall budget of MLI in Malawi, and the exercise could be replicated in other countries at relatively little cost. It would be beneficial if the MIS platform could be included in any future iteration of an MLI.
- **Training and Equipment in Crop Conditioning:** The procurement of crop conditioning equipment, particularly moisture meters, had immediate direct impacts on traders and farmers. This aspect of MLI could readily be scaled up with little difficulty, but it would achieve little impact as a project on its own. Crop conditioning components would need to be tied to market requirements from buyers for the need to improve product quality. We believe it is a useful addition to the overall MLI package and any scaling up in the future should be undertaken within that context. The crop conditioning training reached about 35,000 farmers and could easily be replicated and scaled up to reach much larger numbers if resources were available. The most important lesson learned is that farmers will pay more attention to the crop conditioning training if buyers are present at the training and are reinforcing the need for better crop conditioning through their buying practices by offering premiums for quality.



ARE THE RESULTS SUSTAINABLE?

CONCLUSIONS

- **The sustainability of the MLI interventions** depends upon a number of variables, most importantly whether traders continue to see the benefit of investing in backward linkages and whether producers see the benefit of investing in new practices. Sustainability is likely to vary according to the nature of the intervention.
- CARANA believes that the investment in **GBS infrastructure can be expected to remain**, but the **sustainability of the business built around it will vary** according to the business capacity of the grantees. Some of them **may require further training and project support to sustain better warehouse practices**. The MLI experience suggests to us that some of the benefits achieved could be lost if grantees are unable to access further training that will enable them to deal with changing circumstances in the future. MLI grantees suggested that such training should include human resource management, time management and financial management.
- In the future, **further systematic product quality improvements such as inspection and certification of good warehouse management practices** will surely reinforce better storage systems being introduced in MLI. Commercial and government standards and grades for grain and grain bags will be needed to reinforce the sustainability of better grain storage practices.
- **The sustainability of the trainings is already apparent**. In Malawi, Wakala (the training provider used by MLI) is using the same crop conditioning training developed under the project to train Agriculture Extension Workers for the Ministry of Agriculture. In Kenya, grantees have said that they plan to use the training provider there through the Cereal Growers' Association (CGA) to carry out future trainings for their farmers. USAID in Rwanda and Uganda both expressed interest in translating the MLI crop conditioning manual into local languages.
- Regarding **the sustainability of crop conditioning equipment** (e.g., moisture meters, platform scales, and grading and cleaning equipment) it is not yet known how this equipment will be maintained and/or replaced in the future. Through MLI, many of the GBCs and VACs introduced a range of new grain product tests and services that add more value and quality to the products and provide a sustainable stream of income that can help finance future investments in these technologies.

PROGRAM IMPLICATIONS

Specific measures must be taken to ensure that USAID programs of this type maximize their chances of leaving behind sustainable systems and impact.

- Future programs will need to focus on **assisting VC stakeholders with financial models outlining tangible revenue streams for value adding services**. The identification of specific revenue streams bodes well for the sustainability of the business model and makes it much more likely that GBCs and VACs will be willing to purchase new products and equipment such as dryers, scales, moisture meters, aflatoxin testers, grain shellers and sieves. Several of these crop conditioning products could be purchased through sustainable micro lending schemes.
- As mentioned above, similar projects can be sustainable when the **grant financing can be replaced by renewable sources of financing such as commercial bank lending**. Future USAID investments in financing grain bulking should inform entrepreneurs and financial institutions about the benefits of financing GBCs and VACs in order to attract private investment capital that would allow USAID to phase out its financial support for these activities. Future programs of this nature will need to focus on **providing informational outreach to banks and insurance companies to entice them to lend**, especially through warehouse receipt schemes and other inventory financing schemes.

4

HOW DO MLI-TYPE PROJECTS FIT INTO USAID'S FEED THE FUTURE FRAMEWORK?

CONCLUSIONS

- Projects like MLI **fit well within USAID's Feed the Future Strategy**, particularly under the "Private Sector Engagement" strategic component of the **Feed the Future Strategy**. Feed the Future (FTF) is engaging the private sector to develop models that are integral to core business strategies and meet regional and global food security challenges.
- These "win-win" **partnerships with the private sector** will advance the impact of sustainable development and will foster private sector-led growth in emerging markets, critical to reducing poverty, fighting hunger and improving nutrition.
- The innovative private sector partnerships and co-investment models are a crucial part of providing market-led solutions to food security challenges.

PROGRAM IMPLICATIONS

- USAID should fund more projects that encourage traders to invest in **post-harvest storage and marketing systems**, because they are the actors in critical food commodity value chains who convey vital market incentives to farmers. This approach provides lasting win-win benefits for them as well as for the farmers they buy from.
- The experience of MLI also suggests that more FTF projects should focus on **market-pulled solutions, focusing on how to help smallholders produce what the market requires** and ensuring they are not supply-driven, focusing on how to help smallholders market what they already produce.
- The MLI experience also suggests that it will be effective **for FTF programs to pinpoint key leverage points within the staple crop value chains**. Targeting key VC leverage points, these programs can tighten supply chain efficiency while building more professional and commercially-based relationships within the value chains.



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ANNEX I

BASELINE DATA

BASELINE DATA FOR SELECT GRAIN BULKING INSTITUTIONS IN 2009

GBC (Country)	Volumes of staple grains passing through the Grain Bulking Systems (metric tons)	Value of staple grains passing through the Grain Bulking Systems	Number and type of suppliers
MALAWI (cumulative)	23,464 MT cumulative for maize, beans, soybeans, groundnuts, other (e.g. sunflower)	Not available	1,621 commercial traders 417 small scale traders 34,616 smallholders Total: 36,654
AGROWAYS (Uganda)	10,300 MT of maize	740,000 US dollars	1,612 smallholders supplied the 4 Agroways VACs, of whom 1,370 were male and 242 were female
KISIITA ACE LTD (Uganda)	2,525 MT maize 300 MT beans 380 MT sorghum	830,000 Ugandan Shillings for maize 2,200,000 Ugandan Shillings for beans 520,000 Ugandan Shillings for sorghum	The farming population is composed of 3,011 farmers of whom 1,128 are females and 1,883 are males. However, only 1,700 active farmers.
MUKWANO GROUP OF COMPANIES (Uganda)	1,800 MT and 900 MT of maize and soybean grain, respectively, in the 2nd half of 2009	Not available	40,000 smallholder producers

Source: MLI Project M&E Unit

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6. Ibid, p. xvi
7. Ibid, p. xv
8. Pingali, Prabhu, Yasmeen Khwaja and Madelon Meijer. United Nations. Food and Agriculture Organization (FAO). *Commercializing Small Farms: Reducing Transaction Costs*. October 2005. Web. 22 Sept. 2011, p. 11.
9. Estimates of farm-level costs of production in the East Africa region are highly variable, and are very sensitive to different assumptions about the imputed (but not actually paid) value of farmers' own labor on the farm.
10. T.S. Jayne, T. Yamano, J. Nyoro, and T. Awuor, Tegemeo. Institute of Agricultural Policy and Development. *Do Farmers Benefit From High Food Prices? Balancing Rural Interests in Kenya's Maize Pricing and Marketing Policy*. 2001. Web. 22 Sept. 2011.
11. Pingali, Prabhu, Yasmeen Khwaja and Madelon Meijer. United Nations. Food and Agriculture Organization (FAO). *Commercializing Small Farms: Reducing Transaction Costs*. October 2005. Web. 22 Sept. 2011, p. 4.
12. The MLI project design and RFP explicitly recognized the strategic importance of strengthening the middle of the value chain and enhancing commercial linkages between the middle of the value chain and smallholder producers.
13. MLI didn't capture all of the "imitators" of the project, but it would be worth following up through monitoring and evaluation.

14. Grading Rooms are rooms at the GBC with cleaning and grading equipment and testing equipment such as moisture meters used to measure the quality of grain coming into the GBC.
15. The selection of service providers is a very cost-effective approach but requires careful selection and oversight of service providers to ensure quality delivery of services.
16. Our experience on other projects is that experiential learning is critical for adoption.
17. The MLI project did not offer training to GBCs in fumigation because USAID environmental regulations would make it difficult to receive approval for this training within the short two-year implementation period. However, the project stakeholders did recognize that pest control was a problem and an important cause of PHL. They felt that training in this area could have a significant effect on reducing storage losses over time. Other donors are taking some interest in this area. For instance, the Government of Malawi has decided to fund post-harvest fumigation training in Malawi through the ASWAP development loan project with the World Bank.
18. Grain moisture levels were highest in Uganda and Rwanda, where the rains often continue after the harvest.
19. Kenya, Malawi, Uganda, Rwanda, and Burundi
20. See *MLI Draft Evaluation Report*, by Weidemann Associates, August 2011, page 34
21. Many of the grantees were just beginning to use the new equipment and facilities by August 2011, so it was too early to determine equipment and training impact on their storage losses.
22. CARANA and ACIDI-VOCA observed that many farmers in the EA region consider drying to be a source of PHL. However, what they are often observing is normal shrinkage from drying—for example, bringing 15 bags and only having 14 bags once dried because they have lost water. That is not a PHL and there probably needs to be education in the region so farmers understand this.
23. With financial support from MLI, Wellspring conducted interviews and analysis of the Malawi market to develop a blueprint business plan for setting up Esoko as a commercially sustainable business or Public Private Partnership (PPP) within Malawi.
24. According to the CIA's *World Fact Book*, as of 2009 there were 2.4 million cellphones in Malawi, and in interviews with Malawian farmers, it was revealed that nearly all smallholder farmers either owned a cell phone in their family or had access through close friends or family members.



PROJECT CONSTRUCTION OF 1500 METRIC TONNES STORE

CLIENT  **Upland Rice Millers Co. Ltd**
Plot 3 Ddiba Road

FUNDED BY  **USAID**
FROM THE AMERICAN PEOPLE

SUPERVISOR  **CARANA CORPORATION** Market Linkages Initiative (MLI)

TECHNICAL SUPERVISOR **UGANDA COMMODITY EXCHANGE**
KAMPALA

MAIN CONTRACTOR **Combine Engineering Services**
P. O. Box 40145, Jinja

SUB-CONTRACTOR ELECTRICAL **Rotoma Electrical Services**
P. O. Box 300, Jinja.

SUB-CONTRACTOR FIRE SYSTEM **International Fire Services**
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