



**Sustainable
Sourcing
for Agricultural
Supply Chains**

**Lessons from the
2013 Conference**

September 2013

DIAMOND



GOLD



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Acronyms

BMZ	Federal Ministry for Economic Cooperation and Development , Germany
CARE	Cooperative for Assistance and Relief Everywhere
CmiA	Cotton Made in Africa
CRIG	Cocoa Research Institute of Ghana
CRS	Catholic Relief Services
CSR	Corporate Social Responsibility
EUCORD	European Cooperative for Rural Development
FAO	Food and Agriculture Organization
GAP	Good Agricultural Practices
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit, Germany
ICCO	International Cocoa Organization
ILO	International Labour Organization
IMF	International Monetary Fund
INRA	Institut National de la Recherche Agronomique
(New) KCC	(New) Kenyan Cooperative Creameries
KIT	Koninklijk Instituut voor de Tropen
MIF	Multilateral Investment Fund
MIX	Microfinance Information Exchange
NGO	Non-Governmental Organization
PDER	Project to Support Rural Economic Development
PICS	Purdue Improved Cowpea Storage
PPP	Public-Private Partnership
PSF	Proyectar Sin Fronteras Foundation
RA	Rainforest Alliance
ROI	Return on Investment
SDVC	Strengthening the Dairy Value Chain
SLBL	Sierra Leone Breweries Ltd
SME	Small and Medium Enterprise
SMS	Sustainable Management Systems
TA	Technical Assistance
USAID	United States Agency for International Development
USDA	United States Department of Agriculture

Foreword

Dear Fellow Nutcrackers,

This year's Cracking the Nut conference took place in Dresden, Germany. Many people asked, "Why Dresden?" Little did we know that the Saxon State of Germany, where Dresden is based, is actually known for making Nutcrackers (see photo). The truth is that AZMJ wanted to hold the 2013 conference in Europe to demonstrate that Cracking the Nut is truly a global learning event and GIZ graciously connected us with the Messe Dresden facilities. Despite flooding just one month before the conference, Dresden turned out to be an excellent location for the conference, and the city's charm, museums and sidewalk cafes were additional benefits for conference participants.

Focused on *Sustainable Sourcing for Agricultural Supply Chains*, Cracking the Nut 2013 brought together almost 200 participants from 30 different countries, including representatives from top food companies, financial institutions, investors, donors and international development organizations. What was different about this year's Cracking the Nut event was that we had an especially high level of participation from the private sector and an apparent commitment to moving toward partnerships that build on the unique strengths and knowledge offered by the public sector, private sector and development practitioners. During the two day conference, several participants acknowledged that some of the toughest nuts were indeed being cracked, and all agreed that improved understanding and trust were part of the necessary formula to support sustainable sourcing and access to finance for rural and agricultural supply chains.

As I shared at the conference, Europe offered a microcosm of what we were seeing on the international market for small and medium enterprise (SME) finance and investment. According to the European Investment Fund, the overall environment for SMEs had deteriorated in the past six months, as the tightening of credit standards was being applied disproportionately more to small than to large firms. While private equity had rebounded a bit since the 2008/09 financial crisis, it took a hit again in 2012. Nonetheless, the silver lining was that SME securitizations had continued to perform well, despite the after-shocks of the global financial crisis, indicating that SMEs continue to be a source of investment that is not being fully tapped. Given that the global population is expected to grow from 7 billion to 9 billion people by midcentury and demand for food is to coincide, agricultural SMEs offer a particularly large untapped market and investment opportunity. It is in this spirit that we believe that there are significant financial, social and environmental benefits that can be yielded by the public and private sector working together toward sustainable sourcing for agricultural supply chains, and we thank you for your commitment to these objectives.

Sincerely,



Anita Campion,
President, AZMJ



Executive Summary

Cracking the Nut 2013 was held in Dresden, Germany, with the objective of improving sustainable sourcing and finance for rural and agricultural supply chains. As Keynote speaker, Mr. Francesco Tramontin, Sustainability Director for Mondelēz International (formerly Kraft Foods in Europe), highlighted how “Sustainability is about preserving our world – including land, air, water and people.” He emphasized how this commitment to sustainability and building trust were important parts of Mondelēz International’s long-term business growth strategy, which resonated throughout the participatory breakout sessions and knowledge generated at the conference.

Below is a summary of some of the main findings and lessons learned extracted from this learning event, according to its three core themes.

Ensuring Food Safety and Sustainability

- **Local sourcing can reduce poverty and improve food safety and security.** For example, the Royal Tropical Institute (KIT) highlighted how Heineken reduced its costs by investing in sourcing sorghum locally in Malawi. Through its research, KIT has found that companies are offering their suppliers long-term contracts, competitive prices, and access to information, as well as investing in improving the livelihoods of the poor in developing countries.
- **Ensuring food safety is good for public health and food security, as well as a good business opportunity.** Many technologies are available for reducing post-harvest losses and increasing food safety, such as crop protectants and storage containers, including hermetically sealed bags and metallic silos. Purdue University improved food security while addressing food safety by marketing cow-pea storage bags in 10 countries across sub-Saharan Africa.
- **Achieving food safety and quality standards requires working closely with employees.** By educating employees and demonstrating the benefits of achieving high standards, Ames International, a chocolate and nut company, successfully implemented high food safety and quality standards at its processing facilities in the US and India.
- **Sustainability standards can be increased across a whole industry through training and compliance verification of smallholders.** The Cotton made in Africa (CmiA) initiative, for example, increases standards for sustainable cotton by setting simple standards for smallholders while providing market incentives to make positive progress toward sustainability. Instead of using a certification process, which can be costly and requires rigorous technical assistance, CmiA sets forth a two-step process for farmers to reach sustainability gradually over time by working through their cooperatives, processors and wholesalers. On the market side, CmiA sells the rights to use its label to big retailers who support sustainability gains in the industry.
- **Transparency can improve food quality and safety, resulting in higher returns for supply chain actors.** For example, CARE worked with BRAC Dairy in Bangladesh to bring more smallholders into the formal dairy value chain and increase milk productivity and quality. The project employed the use of digital fat testing so that farmers could be paid according to the quality of milk, which reduced incentives to water down the milk and increased knowledge to ensure high quality.

Facilitating Traceability and Certification

- **Certification can be a powerful tool for connecting smallholders to global markets, but it must be a valuable investment for smallholders.** While certification can provide a gateway to global markets (e.g. Mars has pledged to certify 100% of its cocoa as sustainably produced by 2020), the return on this investment has been disappointing in terms of verified smallholder profitability and improvement of livelihoods. Therefore, smallholders should evaluate the benefits of certification as part of a business plan. In circumstances where certification is deemed necessary, certification scheme owners will need to demonstrate the value of their services beyond certification by delivering supply chain efficiencies and increasing smallholder productivity.
- **Traceability systems can create efficiencies, cut costs and help ensure success in program implementation for sustainable sourcing.** Although traceability systems have upfront costs, they also have the potential to offset these costs by creating efficiencies and tracking the necessary information for success in upgrading smallholder production. For example, by using key information from GeoTraceability's database to trace its cocoa supply – including average farm sizes, tree age, pest and disease prevalence, planting density, pruning practices and plant varieties on thousands of smallholder suppliers – Hershey's is increasing smallholder productivity and better targeting its supply chain investments in Ghana.
- **Significant public-private investments are needed to upgrade and aggregate smallholder production to pull them into global supply chains.** Increasingly, large agribusiness wholesalers are finding they need to invest in their smallholder suppliers to ensure consistency in the quality and quantity of their production. Investing in smallholders also builds the loyalty and trust needed for a long-lasting, productive relationship. One example of this is ECOM AgroIndustrial Corp Ltd.'s Sustainable Management Systems (SMS) program, a farmer promoter model that utilizes the local expertise and community organizing abilities of local farmers as a distribution channel for services. With additional development funding, this system can enable ECOM to reach its dispersed supply base with the necessary technical assistance, inputs and financial services to ensure its customers receive the quantity and quality of production demanded.

Creatively Financing Supply Chains

- **Financing agribusinesses is complex and requires a range of knowledge related to agriculture, markets and management.** As the Agricultural Investor Shark Tank panel demonstrated, impact investors have several considerations when evaluating agricultural investment opportunities, ranging from the business' organizational structure, background and management to the specific financial, social and environmental implications. Development practitioners and agribusinesses need to understand where financiers are coming from when facilitating or seeking agricultural investments.
- **Financing contract farming can be beneficial to firms and farmers if designed with the proper incentives and tools to reduce defaults.** Contract farming has the potential to offer significant benefits, but success is often undermined by the risk of contract default from both the firm and the farmer. ACDI/VOCA offers "carrots" to build trust and reinforce productive relationships, while using "sticks," such as shared liability agreements, to reduce default risk.

- **Serve the financial needs of an entire value chain by segmenting clients and integrating products to effectively mitigate risk.** Applying a value chain approach is increasing in popularity among financial institutions, however, most are limited to serving only a few levels of the value chain. Rabobank uses market segmentation to ensure that all major needs are served throughout the value chain, distinguishing between the needs of semi-commercial and commercial smallholders as well as emerging and large farmers.
- **Expanded access to information and mobile applications can reduce costs and risks of financing small farmers.** In Kenya and Uganda, for example, Mercy Corps and MobiPay partnered to launch AgriLife, a mobile-based platform to serve agricultural supply chains, which bundles services related to market information, technical assistance, market linkages and finance. As a result, AgriLife has helped to increase productivity, reduce transport costs, reduce price disparity, increase trade opportunities, as well as access to information, services and markets.
- **Public and private sector partnerships that address financial and technical constraints to value chains can significantly increase financial intermediation.** In Latin America, the World Bank is supporting the development of productive alliances between the financial sector, the public sector and organized smallholders to contribute to increased productivity and competitiveness among organized rural small-scale farmers. These partnerships focus on developing long-term financing relationships, demand-driven technical assistance, and building farmer capacity to serve market opportunities.

Moving Forward

Cracking the Nut 2013 demonstrated the complexity the world is facing related to expanding agricultural production while improving food safety. Participants agreed that the development community needs to move beyond “pilot projects” toward **scalable approaches** to sustainable sourcing and access to finance for agricultural supply chains. Below are some trends we will keep in mind as we continue our work:

- **Private agribusinesses are increasing their commitments to sustainable sourcing** and demonstrate a willingness to work with and invest in smallholders in developing countries to meet consumers’ demand for traceability and certification. Therefore, there is an opportunity for the development community to partner with private agribusinesses in a way that simultaneously combats poverty and food insecurity in developing countries.
- **Donors can leverage private sector investments**, especially by covering the costs associated with organizing and building capacity of smallholders to meet consumer demands for food safety, transparency, sustainability and certification. Nonetheless, donors and governments need to be realistic of what they can expect of the private sector, offering incentives to attract private sector investment and releasing some of the control over how results are achieved. For donors to tap the true potential value of private sector innovation, projects need to take more risk and see failure as an opportunity to improve.
- **Governments can attract more investment in agricultural supply chains by ensuring a positive enabling environment** while encouraging sustainable agricultural practices and use of natural resources. For example, poor infrastructure is major cost of doing business in Africa. Deloitte’s recent research found that by using a “trade corridors” development model, governments can create the long-term vision needed to attract investment in transportation and infrastructure projects that can be so important to agricultural development.

- **Development practitioners can act as “facilitators” to bridge the gap between public and private sectors** in a number of ways, including by:
 - Aligning resources to meet the project goals of both public and private stakeholders and design projects that maximize the overlap of desired outcomes.
 - Highlighting approaches to proactively integrate disadvantaged populations, including youth, women and the physically impaired.
 - Expanding knowledge and developing monitoring and evaluation systems that build off private sector needs for information and analysis.
 - Forecasting impacts of global climate change and improving the resiliency of crops and the people dealing with them.

For more information on past and future Cracking the Nut learning opportunities, please visit www.crackingthenutconference.com.

I. Introduction: Purpose & Background

The main purpose of Cracking the Nut 2013 was to build on the lessons from the first and second Cracking the Nut conferences, which focused on overcoming obstacles to rural and agricultural finance and attracting private sector investment to rural and agricultural markets, respectively. In particular, Cracking the Nut 2013 aimed to improve sustainable sourcing and finance for rural and agricultural supply chains.

Cracking the Nut 2013 highlighted private sector practices for sustainable sourcing, giving an exclusive look into the successes and challenges involved in global food chains. Private sector presenters were selected based on their commitment to working with the public sector and development community to create long-term social and economic value. The conference demonstrated emerging best practices to help participating companies and development practitioners to align their initiatives to promote sustainable sourcing while leveraging resources for increasing social impact. The conference used real scenarios and investment opportunities to demonstrate the complexities of issues around sustainable sourcing and to begin to crack some of the tough nuts that are hindering collaborative public and private sector partnering.

The conference focused on the following core themes, which were exemplified by Keynote speaker, Mr. Francesco Tramontin, Sustainability Director for Mondelēz International (formerly Kraft Foods in Europe):

- 1. Ensuring Food Safety and Sustainability.** Food safety and environmental sustainability are big concerns for global consumers. Hence, global companies and regulators are meeting this challenge with complex logistical and regulatory solutions. For Mondelēz International, “Sustainability is about preserving our world – land, air, water and people.” The shift in thinking is that sustainability is no longer just a Corporate Social Responsibility (CSR) activity or a core output. Rather, it is an **input into business strategy** and a means of driving change and **delivering growth** well into the future. As Mr.

“Businesses around the world are beginning to understand that they need to think about sustainability if they are going **to survive over the longer term**. Yes, sustainability programmes are about protecting natural resources and helping to improve the reputation of the business, but, far more, **sustainability is increasingly seen as a means to achieve growth**.”

Mr. Francesco Tramontin, Mondelēz International

Tramontin explains, Mondelēz International is on a journey to ensure that sustainability is core to its future business (see textbox above, in which Mondelēz International strategy highlights the importance of food safety and sustainability).

Even though they are a global snacking powerhouse, purchasing more than \$6 billion of agricultural commodities per year, Mr. Tramontin admits that they cannot do everything. So, Mondelēz International focuses where they have the biggest impact in the food chain: in the field (sustainable ingredient sourcing) and in the individual consumer (mindful approach to snacking). Sourcing of raw materials (i.e. agricultural commodities) is where Mondelēz International has the greatest global footprint, in terms of carbon emissions, water and land use. Hence, they help farmers to become successful entrepreneurs, who are profitable, sustainable and respected for their contributions to the community.

- 2. Facilitating Traceability and Certification.** To adhere to safety and sustainability standards, global companies increasingly need traceable and certifiable supply chains. Traceability can have a positive

impact on the bottom line when combined with improved efficiencies in the supply chain. The conference showed how companies are overcoming the challenge of cost-effectively certifying and tracing their supply from farm to fork, in collaboration with development practitioners. While certification scheme owners vary in their strategy and focus, most are trying to achieve the same broad objectives – to improve farmer livelihoods, minimize environmental impact and increase productivity.

Cadbury, one of Mondelēz International's affiliates, for example, has been working on agricultural development through partnerships since 1965. More recently in 2008, Cadbury launched the Cadbury Cocoa Partnership with \$70 million of public commitment to create the next generation of cocoa farmers through thriving cocoa communities. This partnership included efforts to improve the transparency and traceability of the cocoa supply chain in Ivory Coast, for which they found they needed to go beyond the current standards to adequately respond to consumers' needs for traceability and certification.

In 2003, another Mondelēz affiliate, Kenco, began a partnership with Rainforest Alliance to buy certified coffee. Recent consumer research showed that as a result, Kenco's coffee brands have benefited from an improved reputation for sustainability, increasing market value share in the United Kingdom from 12.9% in 2003 to 18.9% in 2011.

3. **Creatively Financing Supply Chains.** Sustainable supply chains need to be efficient and market responsive to be attractive investment opportunities. Innovative finance can bring value chain actors up to speed and take advantage of market opportunities on the horizon. Certification can improve smallholders access to finance and repayment capacity as they apply required best practices. Traceability can reduce the credit risk for a commodity used as collateral. The conference presented some of the world's most advanced approaches to agricultural finance and investment, including a plenary panel that allowed the audience to experience live due diligence of an African agribusiness. As with most agribusinesses, Mondelēz International does not provide finance directly to its supply chain partners, but recognizes that it is important to the functioning of its entire supply chain. As Mr. Tramontin explains, finance is especially important to help smallholders who "are caught in what we call a vicious commodity cycle." Whether from impact investors, local financial institutions or value chain actors, access to finance often makes the difference in whether farmers can simply maintain or expand their production from year to year.

The two day conference convened some of the world's leading private sector players, including multinational food companies, agricultural financiers and investment fund managers, as well as rural and agricultural development practitioners, donors and policymakers. This publication summarizes some of the key lessons and experiences shared at the conference, which highlight strategies for building effective public and private sector partnerships based on shared value and mutual trust to improve sustainable sourcing of rural and agricultural supply chains. The publication concludes with insights into some of the remaining tough nuts that we need to crack to ensure that we are able to safely and sustainably feed the world, as global population reaches 9 billion near the year 2050.

II. Ensuring Food Safety and Sustainability

The conference highlighted that there is a wide use and variety of definitions related to “sustainability.” For some, sustainability refers primarily to environmental management and human consumption (e.g. the use of fossil fuels is not a long-term sustainable form of energy, as it is limited and damaging to the natural environment). For others, sustainability refers to economic viability, primarily related to business opportunity and financial feasibility. Others factor in a social dimension to their definition of sustainability, related to ensuring peace, security and social justice (including mitigating poverty). This inconsistent use of the term, “**sustainability**” has led to much confusion among those working in agricultural development.

For the purposes of this publication, we use the term “sustainable agriculture” to include three main goals – environmental health, economic profitability, and social and economic equity.¹ Sustainability is based on the principle that we must meet the needs of the present without compromising the ability of future generations to meet their own needs. Therefore, stewardship of natural and human resources is important. This includes consideration of social responsibilities, such as laborers’ working and living conditions, needs of rural communities, as well as consumer health and safety. The responsible planning of land and natural resources involves maintaining the resource base for the long-term. Making the transition to sustainable agriculture is a process that requires a series of small, realistic steps that are the responsibility of all participants in the value chain, including farmers, agribusinesses, retailers, policymakers and consumers.

According to the United States Department of Agriculture’s (USDA) National Institute of Food and Agriculture, “Foodborne and waterborne diarrheal diseases, such as cholera and dysentery, are leading causes of illness and death in developing countries, killing some 2.2 million people each year, most of whom are children.”² In addition, severe economic impacts can result from food safety related trade bans, such as the one placed on Honduran cantaloupe by the U.S. Food and Drug Administration due to salmonella exposure in 2008. A short-term loss of access to an export market can have a long-term negative impact on private sector investment. As such, **food safety** considerations include:

- **Accessing safe water.** Access to a safe source of water is very important as contaminated water impacts plant and animal health. Water run-off contaminated by animal and human fecal matter can easily contaminate crops, especially vegetables. Using water from the Casamance River in Southern Senegal has resulted in increasingly contaminated soil resulting from excessive salt content. Using human and animal waste as fertilizer can also contaminate crops.
- **Reducing post-harvest waste.** Losses can result from poor storage conditions, pest infestations, mold and other types of contaminations.
- **Ensuring good nutrition.** Malnourished people and animals are more susceptible to diseases, so food and water safety are particularly important to the food insecure.
- **Enabling markets and policies.** Functional markets and policies can help to facilitate access to surplus food from growers to those in need of food, including the food insecure. Markets and policies can also help to ensure that knowledge is available on food safety standards and issues. An enforceable regulatory framework can protect against certain pathogens and chemicals in food that can be hazardous to health.
- **Building capacity.** To ensure safe drinking water, water engineers are needed to provide education on water filtration and chlorination systems. Training and technical assistance on Good

¹ Definition used by Agricultural Sustainability Institute at University of California, Davis, <http://asi.ucdavis.edu/sarep/about/def>

² This section excerpted from a presentation made by Dr. Isabel Walls of USDA on March 4, 2011.

Agricultural Practices, Good Hygiene Practices and Good Manufacturing Practices can improve the safety of food at the level of growers, handlers and processors.

As companies strive to make our food safer, they are finding that sustainability can be a natural ally. Safer food means that less food would be lost and wasted. It is estimated that a third of the food for human consumption is wasted globally (around 1.3 billion tons per year). This has strong negative environmental, economic and social impacts. This chapter on “Ensuring Food Safety and Sustainability,” offers insights on how the private and public sector are working together to increase food safety and sustainability, starting from the smallholder farmers.

Lesson 1: Local Sourcing Can Reduce Poverty and Improve Food Safety and Security

Private companies are increasingly investing in developing local supply chains to serve local markets. The Royal Tropical Institute (Koninklijk Instituut voor de Tropen, KIT) based out of the Netherlands, states that local sourcing for local markets refers to “agribusiness companies in developing countries that source their food inputs locally and sell their end product to the domestic market. Local sourcing is an opportunity for companies that want to ensure sustainable supply and reduce costs by substituting imports.”

Local sourcing, a positive trend, offers real opportunity for sustainable local economic development as well as food security, as imported food can be less reliable to access. The trend is being largely fuelled by the growth of the middle class in Asia and Africa. Africa’s middle class has risen to 34% of the population, expanding to 313 million people, as per the African Development Bank.³ To meet the increasing global demand, world food production needs to rise by 70%, whereas production in developing countries needs to double by 2050, according to the FAO.⁴ To feed this growing demand, companies are now seeking to diversify their sources of supply and are increasingly approaching small-scale farmers. KIT has found through its research, that companies are offering their suppliers not only long-term contracts, competitive prices, and access to information, but are also investing in improving their livelihoods. In other words, agribusinesses are fighting competition and in the process also fighting poverty. These findings are highlighted in Box 2.1, where an African brewery cuts cost by sourcing sorghum locally.

³ <http://www.afdb.org/en/news-and-events/article/africas-middle-class-triples-to-more-than-310m-over-past-30-years-due-to-economic-growth-and-rising-job-culture-reports-afdb-7986/>

⁴ http://www.fao.org/fileadmin/templates/wsfs/docs/Issues_papers/HLEF2050_Global_Agriculture.pdf

Box 2.1: Sierra Leone Breweries Sources Sorghum Locally to Cut Costs

Sierra Leone Breweries Ltd (SLBL), owned by Heineken, became interested in sourcing sorghum locally from small scale farmers in 2005. Sorghum had the capacity to partially replace malted barley in the beer that is produced by SLBL for the Sierra Leonean market (Star, Guinness and Maltina). The partial substitution of malted barley with sorghum would lead to lower costs of imports as malted barley is not grown in Sierra Leone. It would also increase supply chain reliability and reduce costs. In addition to these economic benefits, sourcing sorghum from Sierra Leone would support the local economy, show goodwill to the Sierra Leonean government and strengthen Heineken's global reputation.

To start sourcing locally, SLBL partnered with the Common Fund for Commodities (a UN organization with the aim of promoting commodity trade), the European Cooperative for Rural Development (EUCORD, an NGO) and Heineken, to design a five year project. Starting with 150 farmers, eventually 3,000 farmer families were brought into the program over the course of six years to start producing sorghum for the brewery. These farmers were primarily subsistence rice farmers before the start of the project.

The main components of the project were:

- 1) Developing, testing and introducing new industrial sorghum varieties
- 2) Establishing rapid multiplication enterprises and collection centers
- 3) Training of producer organizations and credit groups
- 4) Developing contracts and other partnership mechanisms between producers, input providers, intermediate agents and agro-processors
- 5) Training of input providers and credit providers

According to Heineken, this project took six years before it started paying back on its original investment of \$2 million. SLBL learned that local sourcing from smallholders takes time, needs investments and requires knowledge of local farming environments and markets. For the project, SLBL hired two full time staff, provided trainings on planting and harvesting techniques and bore the cost of transportation from collection points. The project also invested resources in building trust and managing relationships with its new stakeholders. SLBL's intentions were severely tested in 2010, when more sorghum was produced than was needed. To maintain good relations with the farmers, SLBL decided to buy the overproduction, even though it could not absorb it all in the short-term. To ensure that this problem would not occur in future years, SLBL instituted quotas for production. In the end, SLBL's investment paid off and the win-win situation it created for its farmers also contributed to increased income, access to finance, and better farming practices.

To promote sustainability, many consumers are now seeking to eat food that is produced locally. Eating local food has many benefits including being more nutritious, as the time between harvest to table is shorter. Local food supports the local economy and is reinvested in businesses and services in the community. It benefits the environment as well, by reducing the food's carbon footprint. Local foods can be safer as the steps between farm to fork are reduced and so are the chances for contamination.

While rural areas around the world typically have more access to local goods, this is not the case for urban areas, where food often travels for hundreds of miles. Urban farming is now breaking the barrier and making local food accessible to city dwellers (See Box 2.2 for the Colombian experience of growing food in urban gardens and on rooftops). Urban farming contributes to food security and food safety especially in food deserts where fresh fruits and vegetables are not easily found. Urban agriculture also promotes energy saving means of production and hence is more environmentally sustainable.

Box 2.2: Urban Farming in Colombia Lends to Food Security and Sustainability for City Dwellers

Proyectar Sin Fronteras Foundation (PSF), <http://www.ong-psf.org>, works to stimulate urban agriculture in Bogota, Colombia. The project works in San Cristobal, a low-income neighborhood in southern Bogota. Learning from previous failures in urban farming models, PSF encourages profit-oriented business models for urban farmers, using collective marketing and branding, while providing technical assistance and mentoring. Most urban farming models have gardens that are under social ownership with complex communal decision making process, and the growers use the produce for personal consumption. Community member do not have much skin in the game, and hence many of these projects fail.

PSF, through its Seeds of Confidence (Sembrando Confianza) project, works with community members who mostly grow their gardens on underused surfaces, such as rooftops. Human resources for the gardens are readily available, and women, the elderly and children participate actively. PSF educates farmers how to grow in small spaces using mostly organic means, including composting and fertilizing. The best farmers are now selling under the Seeds of Confidence brand. PSF is working hard to strengthen its brand through marketing at fairs, to connect supply and demand within the city. As the group of farmers grow, so it does the sharing of knowledge and best practices in urban agriculture. PSF provides technical assistance, mentoring and monitoring in urban agriculture, while implementing information tools for collecting data on a regular basis.

With selected house owners, PSF is now developing a microfranchise model for greenhouses, which turns underutilized space into productive space through the construction of easy-to-install greenhouses. PSF has already designed and installed its first rooftop greenhouse prototype, and the results are encouraging, both in terms of low-pricing and its potential for agriculture production. With this tested model, PSF will start selecting house owners in order to install more greenhouses in the vicinity. In addition, PSF is also creating value added products that could increase the benefits received by the urban farmers. Because urban agriculture is still a recent development, research and development funding is still needed in order to create new value chains within the city.

Lesson 2: Ensuring Food Safety is Good for Public Health and Food Security, as well as a Good Business Opportunity

Food safety and post-harvest management are strongly linked to each other. With the rise in food prices and other volatilities, including food shortages and climate change, increasing productivity has been the policy mantra of many. However, post-harvest losses are a key factor in the equation. Post-harvest losses happen at every stage of the supply chain and result in aggravating food insecurity as well as loss of expensive inputs, such as fertilizer, water and human labor. The losses are a result of decrease in quantity as well as quality and can also lead to a loss in market opportunity and nutritional value. Under certain circumstances, poor post-harvest management can pose health hazards and compromise food safety.

The African Postharvest Losses Information System estimates that physical grain losses prior to processing can range from 10 to 20 percent, leading to accumulated losses of \$4 billion a year.⁵ These losses primarily occur when grain decays or is infested by pests, fungi or microbes. Farmers are further affected, as their low quality grains fetch lower prices in the market and sometimes farmers are not able to sell their grains at all. Many technologies are available for reducing post-harvest losses and increasing food safety, such as crop protectants and storage containers, including hermetically sealed bags and metallic silos. Adoption of these technologies, however, requires serious efforts, including sensitivity to local conditions, practices, dissemination within the value chain, price, as well as awareness generation.

⁵ http://siteresources.worldbank.org/INTARD/Resources/MissingFoods10_web.pdf

Box 2.3 describes how Purdue University improved food security while addressing food safety for cowpeas (also known as black-eyed peas) in sub-Saharan Africa. The case also highlights how focusing on food safety is a good business opportunity and increases value along the chain.

Box 2.3: Chemical-Free Cowpea Storage Technology for Small-Scale Farmers

Cowpea is an important cash crop in West Africa and it is estimated that 5 million tons are produced each year. Cowpea infestation by cowpea bruchid (also known as cowpea weevil) starts in the field; the insect takes just 4 weeks to complete its full life-cycle. With an initial infestation of a few insects, the population can grow to millions of insects in a few months, destroying every grain. Farmers try several methods to control the insects, including mixing the grain with botanicals, ash and sand, or storing it in jerry cans or metal drums. However, each of these has limitations in terms of effectiveness, cost, availability and scalability. As a result, farmers have managed their risk of losses by selling shortly after harvest, when prices are at their lowest for the year. Those who opt to store resort to using insecticides. Many farmers misuse insecticides, applying products banned under the 1989 Rotterdam convention. Indiscriminate use of insecticides has led to the poisoning and death of many, resulting in the crop being nicknamed 'killer beans'.¹

The Purdue Improved Cowpea Storage (PICS) bag, which is a triple-layer plastic bag, was developed by scientists at Purdue through funding from USAID Bean Cowpea CRSP. The main innovation comes from using a triple layer bag (two high density polyethylene plastic bags inside a polypropylene sack). When tied tightly shut, the bag greatly restricts the oxygen supply, suppresses growth and reproductions and leads eventually to death. PICS bags require no insecticide, are cheap, reusable and effective even with small quantities of grain. This simple, yet appropriate technology has now led to cowpeas being safely used in farmers' houses and in school feeding programs West Africa as well. Purdue has initiated further research and found the PICS technology to be effective in storing other dry grains including maize, groundnut, wheat, pigeon pea, dry beans, Bambara groundnut and mung beans.

The case of PICS bags merits attention as a project that has been able to reach millions of farmers across 10 countries (Benin, Burkina Faso, Chad, Cameroun, Ghana, Mali, Nigeria, Niger, Senegal and Togo) and has led to the sale of more than 2.5 million bags to date. Its success lies in treating PICS bags as a viable business product, manufactured locally through 6 factories and marketed through a network of more than 1,000 wholesalers and vendors who sell directly to farmers, farmer organizations, cereal banks and cowpea vendors.

To develop the market, and to train farmers in the proper use of PICS bags, demonstration activities were held in villages across the ten West and Central African countries. In each village, the project worked with 5 households to test the technology for a minimum of 4 months; after which open-the-bag events were held to assess the quality of the grain after the storage period. Over the last 5 years, demonstrations were implemented in 31,000 villages and 500 markets with more than 150,000 bags tested by farmers. In addition, 124 radio stations were engaged and broadcasts in 75 languages were aired to promote the PICS bags. Lessons learned include: (i) there is no substitute for village demonstrations – most people do not believe that PICS bags work until the bags are opened; (ii) supply chain is key to adoption of the technology by farmers; (iii) direct communication with farmers is essential through a rigorous media campaign including posters, handouts, radio, print media, cellphone videos and TV.

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(...Box 2.3 continued)

The impact of the PICS technology is now being felt across the cowpea value chain. Farmers, as well as PICS bag vendors and cowpea traders, are benefitting. Farmers are enjoying increased incomes, improved food security and a supply of safe food, which they enjoy as do other consumers. With a limited investment of around \$2.30 per bag, farmers can double or triple their income. The project found that in the four months between the village demonstration and the subsequent open-the-bag ceremonies in Segou, Mali, cowpea prices jumped from \$35 to \$73 for a 100 kg bag. The PICS technology has created new business and employment opportunities among those who participate in the supply chain, from manufacturing, transport, distribution and retail of PICS bags. The importance of cowpea as a food and security crop has improved among government agencies and development. The biggest obstacle for wider adoption of the bags currently is the limited capacity of PICS bag vendors to develop distribution networks that reach rural areas. However, because PICS bag manufacturing and distribution are in the hands of private sector actors who making a profit, the project impact will continue to be felt long after the project ends.

¹ <http://www.vanguardngr.com/2009/08/killer-beans-kills-toddler-63-hospitalised-in-bauchi/>

Lesson 3: Achieving Food Safety and Quality Standards Requires Working Closely With Employees, Educating Them and Demonstrating the Benefits of Achieving High Standards of Excellence

Modern food trade has no borders, and food moves rapidly between countries and continents. Hence, food safety is a serious global issue with incidents having far-reaching consequences. The salmonella peanut outbreak in the US tainted more than 2,000 inter-related products in 2009.⁶ Compromising on food safety can lead to loss in consumer trust, and as the middle class in developing countries grows, consumers there are also demanding increased focus on food safety.

Food safety is required at every step of the supply chain – from farm to fork. Food safety management systems require good agricultural practices, good manufacturing practices and good distribution practices. To achieve food safety, it is good to begin by educating employees on its importance starting from their point of reference, and demonstrating the benefits of maintaining high quality. The primary challenges to implementation are lack of resources, including time, money, personnel, education and infrastructure. Producers and employees of processors also often question the value of food safety system implementation. Box 2.4 describes the case of Ames International, a chocolate and nut company that has successfully implemented a high level of food safety and quality standards at its processing facilities in the US as well as in India.

⁶ <http://online.wsj.com/article/SB10001424127887324503204578318024027438166.html>

Box 2.4: Ames International's Experience with Implementing Food Security Measures in India

Ames International processes chocolates and nuts under the brand name of 'Emily's Chocolates.' The company owns 82,000 sq. ft. of manufacturing and warehousing in Washington state. Ames started a facility in Cochin, India in 2005, to marry a business opportunity with the owner's personal drive to provide social benefits to his country of origin. The Indian facility is 65,000 sq. ft. with state of the art equipment. Both facilities are Food Safety Management Systems ISO 22000 certified and halal certified. The two processing facilities are equipped to clean and roast cashews, manufacture chocolate as well as package the end products.

The management of Ames International emphasized the importance of food safety procedures at their Indian facility from the very beginning. They realized that it was important to educate staff on food safety measures and be careful about not linking incentives only to profits, but also good practices.

The management also led by example, showing every step of the way how high standards were very important. Wash, clean, sanitize stations were put in place. The bathrooms were of five star hotel quality to emphasize good sanitation. The result was that employees were able to contribute toward food safety and also took these hygiene practices home, and improved their family's quality of life.

Lesson 4: Sustainability Standards Can be Increased Across a Whole Industry Through Training and Compliance Verification for Smallholders

Raising sustainability standards can be a daunting process for processors and smallholders alike. High costs of implementation, certification, need for rigorous technical assistance and other factors often prove prohibitive. In the case described in Box 2.5, the Cotton made in Africa (CmiA) standard, sets forth a two step process for farmers to reach sustainability, by working through their cooperatives, processors and wholesalers. Firstly, it sets out exclusion criteria, to decide whether farmers can be part of the program. Secondly, it lays out a series of sustainability indicators that farmers are trained to comply with over time. The standards work because all the criteria do not have to be met 100% right from the start.

The rights to use the Cotton made in Africa label, is in turn sold at a license fee to retailers, who support sustainability gains in the industry. Instead of using a certification process, Cotton made in Africa sets a more easily implementable standard for smallholder farmers, who are verified by independent auditors. With increased knowledge and feedback from the verification process, the system allows for standards to improve over time. As a result, CmiA in the course of the last eight years has been able to upgrade sustainability indicators in the sub-Saharan cotton industry.

Box 2.5: Aid by Trade Foundation Increases Sustainability and Mitigates Child Labor in the Sub-Saharan Cotton Industry

Cotton made in Africa (CmiA) is an Aid by Trade Foundation initiative (funded by the Bill & Melinda Gates Foundation, German Federal Ministry for Economic Cooperation and Development (BMZ), Gatsby Foundation and retailer license fee payments) that supports cotton smallholder families in sub-Saharan Africa to activate market forces and improve farmers' living conditions by trade. The project also aims to promote environmental protection by catalyzing the production of sustainable cotton. The market for sustainable cotton is favorable as many big companies have put forth ambitious sustainability goals. For example, IKEA will source 100% sustainable cotton by 2015, and Puma will source 50% sustainable cotton by 2020.

Sub-Saharan Africa is the fifth largest exporter of cotton. In the Sahel, 34 – 72% of total export revenues are derived from cotton sold by 2.2 million smallholders, making it an important cash crop. The average smallholder has a daily per capita income of just \$0.97 and 29% of the smallholders report a hungry season. Sub-Saharan cotton offers a huge potential to market sustainable cotton as well as to support economic, social and ecological development in rural Africa. It has a key role in fighting poverty as well as increasing food security through crop rotation.

The Aid by Trade Foundation works with 650,000 smallholders, through 19 cotton companies in 10 African countries (Benin, Burkina Faso, Cameroon, Cote d'Ivoire, Ghana, Malawi, Mozambique, Tanzania, Zimbabwe and Zambia), to implement the Cotton made in Africa standard. The farmers are trained in efficient and environmentally sound farming methods, including basic agricultural techniques, soil fertility, animal traction, rainwater harvesting and usage and storage of pesticides. CmiA farmers offer hand-picked cotton grown using few pesticides and no automated irrigation systems. The CmiA standard involves verification using third-party verification services that are paid for through license fees from big retailers. The license fees are used to support extension services and community projects that create social value in the cotton farmers' communities, and offer retailers an opportunity for corporate social responsibility commitment.

Cotton made in Africa creates sustainability in three areas. The standard is not organic or fair trade, but follows a People-Planet-Profit approach. In its commitment to people, it ensures the exclusion of the worst forms of child labor according to the ILO conventions, as well as works to improve education infrastructure and health. Through its commitment to the planet, the verification ensures sound water management practices, including using only rainwater for cultivation, crop rotation, integrated pest management, preservation of soil fertility and no deforestation of primary forests. Interestingly, CmiA, does not offer a premium price to its farmer, as CmiA wants its cotton to be a basic mass market product that is sold at world market prices. Instead, to satisfy economic sustainability, it ensures higher income for farmers through higher yields, punctual payments and reliable income, as well as transparent and fair contracts with cotton companies. CmiA also sets forth standards for cotton companies including ginneries.

To become part of CmiA, cotton companies working with farmers do a self-assessment and commit to stopping harmful practices. This first step lays out exclusion criteria, to decide whether the cotton company and the contracted smallholder can participate in the Cotton made in Africa initiative at all. These minimum requirements include for example a ban on slavery, human trafficking, exploitative forms of child labor and utilization of hazardous pesticides. Thereafter, the first verification is performed by third party auditors. The standard allows farmers to start at a low level of sustainability, but the farmers are trained and verified for compliance along the way. Cotton companies have to prepare plans for improvements, and to demonstrate that they are working to achieve the sustainability indicators. Compliance with the indicators is assessed by a traffic-light system, with the ratings "red," "yellow," and "green."

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(...Box 2.5 continued)

Re-verification typically happens every two years, so farmers have time to improve their sustainability practices. Auditors from EcoCert and AfricCert are trained to assess improvements made from the initial baseline and first verification levels. The average verification cost is around \$0.50 per farmer every two years.

One of the key successes of CmiA is exclusion of worst forms of child labor from the cotton industry. This has been achieved by designing a standard that is acceptable for the critical consumers while taking into account African realities. The traditional participation of children in work on their parents' farms is allowed within the framework of the ILO conventions, provided that the children do not take on unsuitable or dangerous work. The worst forms of child labor per ILO convention 182¹ are:

- work which exposes children to physical, psychological or sexual abuse;
- work underground, under water, at dangerous heights or in confined spaces;
- work with dangerous machinery, equipment and tools, or which involves the manual handling or transport of heavy loads;
- work in an unhealthy environment which may, for example, expose children to hazardous substances, agents or processes, or to temperatures, noise levels, or vibrations damaging to their health;
- work under particularly difficult conditions such as work for long hours or during the night or work where the child is unreasonably confined to the premises of the employer.

To learn more about the complete list of criteria please visit: http://www.cotton-made-in-africa.com/fileadmin/cmia_abtf/news/documents/Verification_Criteria_Matrix_EN_v2.pdf

¹ <http://www.ilo.org/ipec/facts/WorstFormsofChildLabour/lang--en/index.htm>

Lesson 5: Transparency Can Improve Food Quality and Safety, Resulting in Higher Returns for Supply Chain Actors

Agricultural supply chains, which have several actors, are often not transparent and food quality and safety can decrease as food moves along the chain to the end consumer. Streamlining the chain and implementing transparency measurements incentivizes actors to increase the quality and quantity of the food, which ensures high quality standards as well as food safety in the chain. Box 2.6 highlights the case of BRAC Dairy's work with small farmers supported by CARE. The project used digital fat testing machines to instill transparency in the chain and improve milk quality and safety.

Box 2.6: Digital Fat Testing Machines Incentivize Farmers to Improve Milk Quality

CARE supported a project in Bangladesh called the Strengthening the Dairy Value Chain (SDVC), which aimed at doubling the dairy-related incomes of small farmers by addressing the major challenges to improving smallholder participation in the value chain. In Bangladesh, smallholders account for approximately 85 – 90% of the national milk production. The informal market is quite vibrant because of high local demand but is reaching its saturation point. In the peak season, farmers have fewer opportunities for selling their milk because of surplus supply. Also, the sector for value-added milk products is underdeveloped. On the other hand, because of the weak value chain, the formal dairy sector has to import 30% of its milk, despite the domestic potential to fully meet existing processing capacity and growing urban markets' demand. In addition to shortages, the local milk available is not of a high quality. Producers were not incentivized to produce high quality milk, as the milk was aggregated and paid an average price. Informal or semi-formal collectors were also able to adulterate the milk, reducing trust and quality.

In Phase 1 (2007 – 2012), the project mobilized farmers by organizing groups, offering productivity enhancing inputs, supporting artificial insemination, and increasing access to milk markets. The project built the capacity of group leaders, dairy collectors, and livestock health workers. In total, 36,400 smallholders (82% women) in the northwest of Bangladesh were targeted. These farmers had a weak position in the dairy value chain, and were susceptible to natural disasters, such as floods. Farmers at the beginning of the project typically had less than four cows and average earnings of only \$20 - \$30 per month.

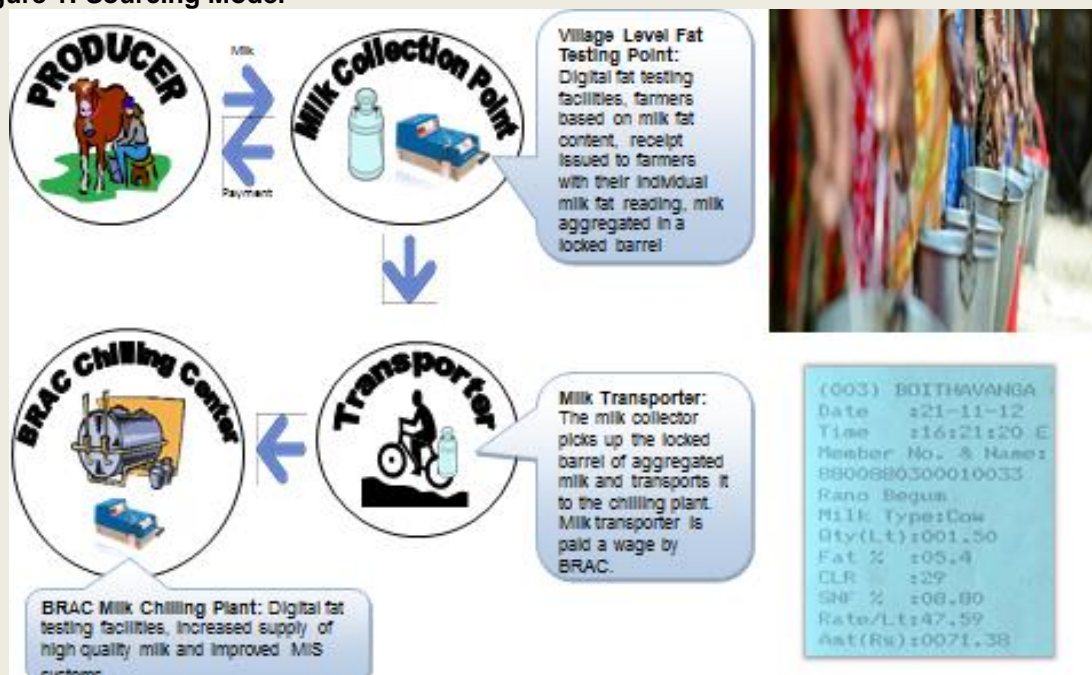
To upgrade the entire chain, the project facilitated capacity building activities and brokered linkages for a range of supply chain actors including producers, producer group leaders, milk collectors, livestock health workers, agro-input shops and community savings groups.

To bring the smallholders into the formal dairy chain and increase milk productivity and quality, CARE worked with BRAC Dairy to streamline the chain. BRAC Dairy has the second largest processing operation in Bangladesh with capacity to process 300,000 liters per day; however, it is able to source only 150,000 liters per day. The project employed the use of digital fat testing so that farmers could be paid according to the quality of milk (see Figure 1 for the sourcing model). Digital fat testing is done at the village level: when a farmer brings milk to the collection center, the digital fat testing machine measures the milk's fat content, and a receipt is issued to the farmer with his individual milk fat reading and paid accordingly. Thereafter the milk is aggregated in a locked barrel that is transported to the chilling plant. These barrels can be traced back from the chilling plant and thus helps with food safety. BRAC has found that the transparency resulting from digital fat testing has increased the supply of high quality milk as farmers now have an economic incentive to take better care of their livestock and produce high quality milk.

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(...Box 2.6 continued)

Figure 1: Sourcing Model



The end of project survey showed that small farmers, who used to produce two liters/day at the start of the project, increased productivity by 50% over the course of the program. The households also reported a significant increase in the price per liter of milk. Women now have a higher proportion of household assets under their control.

In Phase 2 of the project (2013 – 2015), CARE will work with another 30,000 farmers to scale up sourcing to BRAC Dairy. The project will also connect the digital fat testing with agro-input shops.

III. Facilitating Traceability and Certification

Food chains around the world are becoming more globalized. According to the International Organization for Standardization (ISO)⁷, “Today more than ever, food products regularly cross national boundaries at every stage of the supply chain.”⁸ As a result, there is growing demand among governments to be able to track where food came from and for consumers to be able to trust what they are eating. To ensure safe and accountable agricultural supply chains, significant public and private investment is needed. Certification and traceability are tools companies often invest in to help verify their food products. While the benefits of traceability and certification are promising, the changing landscape of the global food industry is forcing these services to demonstrate their value more conclusively, as described below:

Certification has for decades provided and verified the use of sustainable production practices, a service valued as a public good while also providing a price premium in the market. Certification scheme owners have traditionally operated accordingly, receiving both public and private contributions. With price premiums diminishing and public funds less available, certification scheme owners will need to concentrate more on their market value, going beyond certification to helping smallholder farmers provide a better quality product at a competitive price.

Traceability is the ability to follow the movement of a food product through the stages of production, processing, and distribution⁹, or in simpler terms, knowing from where your food came. However, as margins on food production grow increasingly slim, traceability systems will need to further demonstrate their value by moving beyond tracking products to helping to overcome inefficiencies and reduce costs in supply chains. The information collected through traceability systems could be useful for identifying additional areas for improved cost efficiencies.

Certification and traceability also play significant roles in overcoming the challenges involved in sourcing from smallholder farmers. In this capacity, certification should be considered a cost of production and traceability a logistics cost, both providing a return on investment appropriate to the markets they serve. To remain relevant in an environment that demands efficiency, certification and traceability tools will need to be internalized into the cost of doing business, allowing public investment to concentrate on building the needed infrastructure and enabling environments to facilitate trade. Aggregation will be required for some smallholders to achieve economies of scale. As with other added-value services, both services will need to compete with similar services in the open market, by helping to build cost effective supply chains that meet consumer and regulatory standards.

Box 3.1: FAO's Criteria for Smallholder Upgrading

1. Degree of organizational capacity for production and trade.
2. The use of staggered production cycles.
3. Existing productive infrastructure (e.g. processing and packaging centers, irrigation systems, etc.).
4. Linkages to service providers and suppliers.
5. Consolidation of non-traditional markets and traditional companies.
6. Working capital for associated processes of input purchases and creating economies of scale.
7. Institutional setting that enables standards compliance

Source: Allison Loconto of Institut National de la Recherche Agronomique (INRA)

⁷ The International Organization for Standardization is an international body that promotes worldwide proprietary, industrial and commercial standards since 1947

⁸ <http://www.foodsafetynews.com/2013/05/the-changing-world-of-food-chain-traceability/#.Ufrg9JK1HXU>

⁹ “Traceability in the Supply Chain” Department of Health and Human Services: Office of Inspector General. March 2009.

This chapter on “Facilitating Traceability and Certification” highlights the business case for these verification tools and how large multinational agribusinesses are incorporating them into their supply chains while creating benefit for themselves as well as the smallholder farmers from whom they source.

Lesson 6: Certification Can be a Powerful Tool for Connecting Smallholders to Global Markets. A Business Case Needs to be Made to Invest in Smallholder Certification as a Cost of Production.

Access to viable markets is a key element to successfully translating increased farmer productivity into increased farmer incomes. While certification can provide a gateway to global markets, the return on this investment has been disappointing in terms of smallholder profitability and improvement of livelihoods. Given this uncertainty, smallholders should evaluate the benefits of certification as part of a business plan. To facilitate such evaluations, the Food and Agriculture Organization (FAO) has developed a list of indicators (see Box 3.1). Though we are far from understanding the circumstances under which certification is profitable for smallholders, “it is useful to have leading indicators of whether or not certification will be useful for different types of farmers,” says Allison Loconto of Institut National de la Recherche Agronomique (INRA).

In circumstances where certification is deemed necessary, certification scheme owners will need to demonstrate the value of their services beyond certifying sustainable production by delivering supply chain efficiencies and increasing smallholder productivity. Box 3.2 explains how Mars is using certification to push sustainable sourcing and create value in the cocoa supply chain.

Box 3.2: Mars Commits to 100% Sustainable Sourcing of Cocoa by 2020

The cocoa industry is facing possible shortages of cocoa beans, due in part to an aging farming population and aging stock of cocoa trees. Most of the world’s cocoa supply comes from smallholder farmers in developing countries, which makes reinvestment in the world’s cocoa farms a complicated endeavor. At Mars, smallholder cocoa farmers are considered to be the anchor of the supply chain, making smallholder success critical to the success of Mars.

“Farmer productivity is the engine to drive broader social change across the industry,” says Jeff Morgan of Mars, adding that certification is a mechanism to put farmers first. For this reason, Mars invests heavily in its sustainable sourcing initiatives, including certification that is accompanied by training, leading to higher returns to farmers. According to Mars, there are five key questions relevant to sustainability in the cocoa industry:

1. How do we drive prosperity rather than only reduce poverty?
2. How do we both ensure and measure consistent quality of implementation, adoption and outcomes?
3. How do we reduce costs and complexity and maximize benefits for farmers?
4. How do we transform the global cocoa sector to the point that sustainable production is the norm?
5. What are the focused roles of the key players going forward?

With these questions in mind, Mars has pledged to source 100% of its cocoa from sustainable sources by the year 2020. In order to reach this ambitious goal, Mars’ certification partners will need to coordinate their efforts and make a business case for certification (see Box 3.3).

Box 3.3: Making the Business Case for Certification

UTZ Certified, the Rainforest Alliance and Fair Trade International are certification scheme owners with close ties to Mars, as well as many other cocoa manufacturers, traders and producers. Their end client is the smallholder, with the goal of increasing farmer productivity, profitability and quality of life through sustainable production. To date, certification has had disappointing results without a clear connection to improving the productivity or profitability of smallholders beyond the diminishing premium that markets are providing for certified cocoa. For there to be a true “business case” for certification, certification scheme owners will need to demonstrate the value of their services as an integral part of a production plan that can help smallholders be more productive, professional and bankable.

To reach this standard, certification scheme owners need to reduce inefficiencies by coordinating their programs and focusing on helping farmers reinvest in their farms with better farming practices, business training and facilitated access to finance. By focusing on the longer term and sustainable value of increased productivity, quality and efficiency – instead of the perceived market value of certification – premiums for certified production will become the “icing on the cake,” according to Daan de Vries of UTZ Certified.

UTZ Certified's diagram shown below in Table 1 breaks down the value of certification to different parties in the cocoa supply chain. If multiple parties agree on the value of certification, then who should pay for it? As smallholders have control and influence over their production, a case could be made for the cost of certification being rolled into the cost of production. This would make a good business case, but only if the return on investment exceeds the costs. Companies like Mars can become a catalyst for aligning market incentives towards certified production when the return is sufficient.

Table 1: The Business Case for Who?

<i>Certification provides value to different stakeholders along the value chain through:</i>		
	Better Practices	Quality Assurance and Traceability
Farmer	Increases productivity, quality, efficiency and risk management of production	Provides access to markets, price premiums and acts as a catalyst for investment in production
Trader	Increases supplier loyalty and returns on investment in production	Acts as a catalyst for farmer aggregation and provides added value to costumers
Food Company	Secures higher quality and quantity of supply	Provides third party verification of origin and sustainable production practices
Sector	Can help ensure the long-term viability and competitiveness of the sector	Provides market incentives for sustainable practices while helping increase the competitiveness of smallholder suppliers

Source: UTZ Certified presentation at Cracking the Nut 2013

In general, a smallholder business plan, including certified production and reinvestment in the farm, will need to be financed. The Rainforest Alliance has launched an initiative to work with farmers on obtaining access to finance. The bankability of farmer business plans will depend on a strong market for certified production that reflects sustainable farming practices, which makes the case for strong coordination between farmers, certification scheme owners, buyers and financial institutions. This coordination needs to be based on trust, transparency and sustainable productivity, which can include the support of donors and governments to help establish the necessary linkages to cement long-term working relationships.

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(...Box 3.3 continued)

Like UTZ and Rainforest Alliance, Fair Trade International is focused on creating efficiencies in smallholder operations by making certification a tool for impact, not just compliance. Fair Trade sees the increased need for traceability in cocoa supply chains as an opportunity for certification scheme owners to add additional value by providing a transparent link from smallholders to markets. According to Fair Trade's Nadia Hoarau-Mwaura, if the sustainable sourcing goals of global cocoa companies like Mars are to be reached, smallholders will have to become the agents of change for sustainable production.

Lesson 7: Traceability Systems Can Create Efficiencies, Cut Costs and Help Ensure Success in Program Implementation for Sustainable Sourcing

Traceability technology is a promising tool for empowering smallholders as change agents and for developing safe and accountable supply chains. This is done by tracking enormous amounts of data and making it easily accessible to clients to use to verify the origin of production and increase the efficiency of production practices. Companies like Armajaro Trading, one of the world's largest soft commodity traders, are investing heavily in traceability to exceed the standards set by their customers and the service expectations of their smallholder suppliers. See Box 3.4 for an example of how Hershey's, one of Armajaro's key customers, uses the traceability portal it holds with GeoTraceability, a traceability and data collection solutions company, to overcome inefficiencies in their supply chain.

Box 3.4: Hershey's Uses Traceability Systems to Make Targeted Investments in its Supply Chain

The demand for traceability in global food supply chains could dramatically increase the cost of sourcing from developing markets. From a supply chain management point of view, traceability should be considered as a logistical cost rather than a production cost. Although traceability systems have upfront costs, they have the potential to offset these costs by creating efficiencies and tracking the necessary information for success in upgrading smallholder production.

Hershey's uses GeoTraceability's database to trace its cocoa supply in Ghana. By tracking key information, including average farm sizes, tree age, pest and disease prevalence, planting density, pruning practices and plant varieties on thousands of smallholder suppliers, Hershey's can better target its supply chain investments. The goal is to increase productivity by promoting better farming practices and more efficient use of inputs, while streamlining the Hershey's supply chain with more accurate production estimates.

Success in sustainable sourcing depends on the ability to track large amounts of information from hundreds of thousands of individual suppliers. This is a very difficult and expensive task, especially when dealing with smallholder farmers in developing countries. GeoTraceability and other similar firms offer traceability and data collection services that go beyond simply providing systems to trace supply; they also help companies overcome gaps in their supply chain, build and implement better smallholder production plans and manage investments in supply chain upgrading. Ultimately, these benefits can outweigh the costs, making it profitable to be traceable.

To date, the potential value of a traceable supply chain has barely been explored. Better smallholder production plans have led to increases in smallholder productivity. This documented increase in the value of farming along with the aggregation of many smallholders around a buyer's traceable supply chain can

help facilitate access to finance, allowing smallholders to reinvest in their own production. By taking control of their production, smallholders will be able to build the confidence needed to better manage long-term relationships with buyers and take advantage of new market opportunities.

Lesson 8: Significant Public-Private Investments are Needed to Upgrade and Aggregate Smallholder Production and Pull them into Global Supply Chains

Food companies increasingly rely on smallholder production to meet global food demand, creating market opportunities for increased production. Beyond certification and traceability, food companies are investing heavily in improving smallholder production with farm-level interventions that provide value through increased productivity and long-term buyer-seller relationships. Box 3.5 makes a case for coordinating public and private investments to pull smallholders into global markets.

There is increasing demand for sustainably sourced food products and an overdependence on fragmented, underproductive smallholder production. To overcome this market challenge, significant investments are needed to modernize global food supply chains. Public-private co-investment in smallholder production is the best way to increase their productivity, aggregate production and pull the poor into global markets.

There are approximately 500 million smallholder farmers in operation globally. Their production is critical to many supply chains, yet only 10% of smallholders actually reach export markets. The vast majority of smallholders (80%) sell to local markets. The remaining 10% produce for subsistence. These figures are surprising given most of the world's maize and rice are produced by smallholders, as well as the world's supply of tropical commodities such as coffee, cocoa, tea and coconut. With sustainable sourcing as a goal for most global companies, heavy investment is needed, not only for the farmers currently reaching export markets, but also to bring the other 90% into the fold. According to Russell Brott of Fintrac, this investment cannot come exclusively in the form of traditional development programs (see textbox).

"We cannot focus exclusively on smallholder farmers if our goal is agricultural transformation or poverty reduction. The development community must work in collaboration with the private sector, government and others in a way that supports the inclusion of smallholders into local and global supply chains. In our experience, partnership with larger agribusinesses is a useful strategy, in fact, often an essential strategy for the smallholders whom we want to help."

Russell Brott, Fintrac

According to Dr. Christof Walter of Christof Walter Consulting Ltd., the key challenges facing smallholders include:

- A lack of ability to achieve economies of scale,
- Poor access to technical assistance, inputs, improved planting material, finance and market information,
- Lack of infrastructure with large distances to markets,
- Undereducation with an unprofessional approach to farming,
- Gender biases and deep-rooted cultural barriers, and
- Low professional esteem, with work often done by an aging population.

To overcome these significant challenges, companies like ECOM AgroIndustrial Corp Ltd. are developing bottom line approaches to upgrading the productivity and livelihoods of smallholders. Sustainable Management Systems (SMS) is an ECOM farmer support company charged with increasing the quality and quantity of smallholder production while decreasing the cost of sourcing from

smallholders. “The mission of the SMS group is to improve the economic, social, environmental, and health conditions of coffee growers and their families.” (www.ecomtrading.com) The SMS program moves beyond Corporate Social Responsibility (CSR) and sustainability initiatives into a core business activity for ECOM’s supply chain.

Box 3.5: ECOM Makes Investing in its Smallholders a Core Business Activity

To reach its hundreds of thousands of smallholder suppliers, SMS employs a farmer promoter model that utilizes the expertise and community organizing abilities of local farmers as a distribution channel for services. This system enables ECOM to reach its dispersed supply base with the necessary technical assistance, inputs and financial services to ensure its customers receive the quantity and quality of production they demand. These services are part of a value package offered by ECOM to its smallholders which includes a fair price for production. In return, ECOM seeks loyalty from its suppliers as a foundation for building a lasting relationship. This buyer-smallholder relationship is key to increasing the bankability of smallholders as well as the willingness of international food companies to invest in integrating a significant portion of the world’s smallholders into global markets.

ECOM has achieved measurable success in their programs in terms of increasing:

- participation of women in their training programs*,
- the average yield of smallholder coffee trees from 1kg to 3.5kg,
- the average payment per kilogram of coffee,
- converting 2,000 promoter farmer farms into demonstration plots, and
- increasing farmer adaptation to climate change, certification of production and use of modern farming techniques and technology.

*According to Anthony Ngugi of ECOM, “ECOM’s SMS programs target women farmers as a link to the next generation. Women teach their children good farming practices, which incentivizes youth to stay on the farm. This gender dynamic is a crucial component for SMS given the aging population of coffee farmers in Africa.”

Like ECOM, Tchibo, a global coffee buyer and retailer, realizes the importance of improving the livelihoods and productivity of smallholders. This is a bottom line motivation as the demand for coffee cannot be filled without smallholder production. According to Cornel Kuhrt of Tchibo, “The job of obtaining a sustainable supply chain is that of multiple stakeholders, with three parallel roads towards a sustainable coffee sector:

1. Bottom up, with field level interventions to increase the quality and quantity of smallholder production,
2. Top down, developing an enabling environment conducive to investment in coffee supply chains, and
3. Horizontal, collaborating with multiple stakeholders improving the livelihoods and profitability of smallholder farming.”

Aggregation is the key to connecting smallholders to global markets. Global food companies can provide aggregation through their buying operations including services focused on improving farmer productivity and livelihoods. The best way to scale these positive results is to facilitate co-investment on the part of public and private entities. To co-invest, both sides of the investment equation will have to agree on common indicators including the quality and quantity of smallholder production.

As safe and accountable supply chains become the norm instead of the exception, the price premium for the product differentiation provided by traceability and certification will continue to diminish. This is not necessarily a bad thing, as it introduces a competitive element that can create efficiencies in sustainable production, pushing the bar even higher for sustainably-produced products looking to differentiate themselves. The World Bank is supporting a project that promotes biodiversity-friendly labeling as an indicator of both quality and sustainability in honey production (see Box 3.6). Preliminary results show a consumer willingness to pay a premium for biodiversity-friendly products. Though this next wave of sustainable practices may also become the norm, eroding price premiums and allowing the market to respond will continue to drive sustainability as a bottom line initiative for food companies.

Growth in demand for certified, traceable food products is being driven by market forces that demand efficiency while providing diminishing returns. If certification scheme owners are to remain relevant, they too will need to be driven by market forces as a service provider included in the cost of production. Traceability can offer very promising solutions to developing safe and accountable supply chains in a cost effective manner. As traceability technology evolves, it will need to coordinate with other services, including certification, in order to scale its results. Both certification and traceability have the potential to strengthen the business case of sustainable sourcing, including the cost effectiveness of sourcing from smallholder farmers. A strong business case for sourcing from smallholders can lead to the facilitation of needed services, including access to finance, technical assistance and opening new markets.

Box 3.6: Market Differentiation Strategies for Biodiversity-Friendly Products



Some products such as wine, chocolate and honey, have highly sophisticated market segments that derive value through differentiation including flavor, nutrition and production profiles. One additional key differentiating factor could be biodiversity-friendly certification. The World Bank, with support from the Global Environmental Facility (GEF), Conabio and Ecosur, is testing the value of biodiversity certification for Mexican honey as a way to use market demand as a tool to conserve unique habitats where honey is produced. The impact of biodiversity-friendly honey goes beyond conservation, providing unique flavor profiles and nutritional benefits to consumers. Preliminary results have shown that there is a willingness to pay a premium for biodiversity certification, with an essential element being the story behind where the honey comes from.

IV. Creatively Financing Supply Chains

Agricultural supply chains across the world have been making advancements to become increasingly efficient and competitive in the global marketplace; however, the age-old tough nut to crack continues to be how to facilitate the flow of finance to all actors in the supply chain. To meet increasing global demand for food, farmers and agribusiness SMEs in particular, need access to finance to make productive investments. Despite their demand, financiers continue to perceive farmers and agribusiness SMEs as risky and are reluctant to finance them. To facilitate their own growth and access to sufficient supply, some large multinational agribusinesses have resorted to directly financing the farmers in their supply chains, but most would prefer formal financial institutions serve this need, as providing financial services is not their core business. To overcome these constraints, one must consider supply chains from a holistic perspective and seek to mitigate risks in a way that works for the financiers, the farmers and other actors in the chain as a whole. This chapter on “Creatively Financing Supply Chains” presents best practices and lessons learned on how to facilitate finance in supply chains, supporting increased productivity and efficiency.

Lesson 9: Financing Agribusinesses is Complex and Requires a Range of Knowledge Related to Agriculture, Markets and Management.

One of the most popular sessions at Cracking the Nut 2013 was the “Agricultural Investor Shark Tank” through which participants were able to observe a live due diligence evaluation of an agribusiness investment in South Africa. Roger Frank of Innovare Advisors presented the case of Organimark to three European impact investors: KfW, responsAbility Social Investments AG and Triodos. Innovare had already made a successful \$200,000 investment in Organimark’s Venda Avocados, which was used to modernize a central collection facility, purchase and transport the avocados to nearby markets and start an avocado oil processing business with links to international buyers. This was a pilot program to gauge the community’s interest in supporting such a commercial enterprise. Given the overwhelming positive response, Mr. Frank was confident that Organimark’s next venture, Venda Fruit, would be attractive to multiple investors (see Box 4.1 for a description of the investment opportunity).

Impact investors’ questions covered the gamut from the business’s organizational structure, background and management to the specific financial, social and environmental implications of the potential investment. Here are some of the questions that impact investors typically ask to assess a potential investment in an agribusiness:

Box 4.1: Organimark’s Venda Fruit Investment Proposition

In the Venda region of South Africa (the Limpopo province near the Zimbabwean border), avocados, mangoes and bananas grow abundantly. Currently, only 20% of the fruit is used for personal consumption or sold as fresh fruit, while the rest rots on the ground. With \$3 million to create Venda Fruit, OrganiMark sees a market opportunity to create financial and social benefits for the rural poor of the Venda region. Designed as a cooperative to be 30% owned by local farmers in the region (capitalized with \$1 million from the Government of South Africa), Venda Fruit could expand to serve 10,000-15,000 farmers, and include a regional packing house and juice pulping processor. The funds would be used to develop the regional infrastructure, which includes bulking and processing facilities and building out the collection facilities originally used for the avocados. The investment would be backed by OrganiMark, as well as purchase agreements with regional and international buyers.

- **What is the management and governance structure of the agribusiness?** In general, investors prefer to invest in entities that can show a positive 2-3 year track record (including audited

financials) in the business or closely related business. The investors agreed that good management was a baseline requirement, but an extremely strong manager could move them to take on more risk or a larger investment. Alternatively, a strong organization backing the investment can also improve the risk profile.

- **What is the specific market opportunity and what is your competitive advantage?** Here investors want to see that the business understands its place in the global, regional and local markets. They want to hear a convincing argument of how it will compete in those markets. Investors want to understand exactly what they are investing in and the projected timing of cash flows.
- **What is the potential social impact?** Most impact investors want to make sure that there will be direct benefits and involvement of the rural poor. They want to be able to count the number of beneficiaries and have some demonstration that the investment is having a positive impact on their lives (in terms of income, assets and empowerment). In the case of Venda Fruit, Innovare estimated that the investment would result in additional income of approximately R 4,000 (US\$440) per growing season for each of the 10,000 families in the Venda region, as well as 250 permanent jobs, primarily for young people.
- **What are the potential environmental implications?** Most impact investors are looking for ways in which they can argue that the investment will actually improve the environment or at least protect the existing flora and fauna. Here, the promotion of organic products and sustainable rural livelihoods can be important selling points. While certification of good agricultural practices isn't always a requirement, most want some proof of the baseline status of the environment prior to the investment and regular monitoring against that baseline.

These factors must be considered as development practitioners work to facilitate rural and agricultural investments. In addition to these basic questions, agribusiness investors will drill down on each specific investment opportunity to make sure that all risks and potentialities have been considered and addressed in the business model.

Lesson 10: Financing Contract Farming can be Beneficial to Firms and Farmers if Designed with the Proper Incentives and Tools to Reduce Defaults.

Contract farming has proven to be a useful tool to help agribusiness firms access a consistent supply of agricultural products that meet their quality, quantity and timing needs, while helping farmers to have a guaranteed market for their production and access to in-kind financing through the provision of farming inputs, such as seeds and fertilizers. While contract farming has the potential to offer significant benefits to both the firm and the farmer, success is often undermined by the key risk of contract default. When thinking of contract default, the first thing that comes to mind is farmer default, mainly in the context of side-selling; however, it is important to note that firms can also default on their end of the contract or make the contract so stringent that farmers are compelled to side-sell. While each party has its role to play in the success and failure of any agreement, it is important for firms to realize that it is in its best interest to deliver on its promises and structure contracts with the farmers' concerns in mind, as it will build farmers' trust needed for a good long-term relationship. Based on experiences in Zimbabwe, ACDI/VOCA has learned that mitigating contract default requires a carrot and stick approach (see Box 4.2).

Box 4.2: Strategies to Mitigate Default in Contract Framing – The Carrot and Stick Approach

Based on ACDI/VOCA's experience in Zimbabwe, one of the best strategies to avoid default is to establish a contract farming structure in which farmers' incentives align with adhering to the contract terms (the carrot) while ensuring that there are consequences or disincentives for default (the stick). The following strategies are based on what firms can do to mitigate default.

“The Carrot” (i.e. incentives for meeting contract terms)

- Build trust through good management practices, such as:
 - Deliver on what is promised – firms that meet their commitments to farmers in terms of timeliness of input delivery, product collection and services avoid farmer discontent
 - Set realistic expectations by working with a crop budget that works for smallholders
 - Be transparent – share the crop budget and the contract. Make sure that farmers understand the contract terms and provide the right details, such as clear definition of grades and agricultural practices required
 - Time input delivery to when farmers need them to minimize opportunity for diversion or selling of inputs
- Structure payment terms so that farmers have access to cash – addressing farmers' short-term financial needs is the best way to deter side-selling as cash-strapped farmers need cash for emergencies and other important expenditures.
- Develop incentive payment structures where the bonus is higher than the salary or profits to be received. For example, when bonuses to farmer group leaders were aligned to the performance of the group, the lead farmer repaid others' debts because the bonus was higher than the loan amount.
- Offer a preferred supplier program through which firms provide farmers with access to additional services or terms when they have demonstrated high performance.

“The Stick” (i.e. disincentives for defaulting)

- Farmer Selection – Firms need to really know their farmers and monitor them through field agents to detect potential issues early on.
- Firm Coordination – Firms can share information on defaulters through shared clearance systems. For example, cotton firms in Zimbabwe have one database of all farmers and know which farmers contract to which firms.
- Joint Liability – Firms can structure contracts to make the group responsible for each group members' loans, utilizing social pressure.
- Suing Farmers in Court – Although generally not cost effective, some firms will pick 3-4 high profile or politically connected farmers to make an example of them and instill fear in others.
- Debt Collection – Generally not cost effective, unless assets are used to secure loans.

Emerging Strategies to Mitigate Default

- Use technology to improve efficiency and relationships (i.e. using text messaging services to coordinate input delivery, product collection, price information, extension services; direct deposit, barcodes, etc.).
- Biometrics – Firms can use fingerprints, iris scanners, voice recognition, etc. to identify farmers with relative certainty. Although expensive, the use of biometrics is generally cost effective within the first season as it greatly improves repayment rates.

Lesson 11: Serve the Financial Needs of an Entire Value Chain by Segmenting Clients and Integrating Products to Effectively Mitigate Risk

Value chain finance is a comprehensive approach that looks not only at the direct borrower, but rather analyzes the entire value chain and its actors – from input suppliers to final buyers – to structure financing according to those needs.¹⁰ Although value chain finance is increasing in popularity, most agricultural financiers only have the resources and capacity to intervene at one or two levels of the value chain. On the other hand, Rabobank, a global leader in food and agribusiness financing, works through its various business units and subsidiaries to serve the financial needs of an entire value chain. Rabobank International provides financial services to its corporate clients, including multinational traders and processors such as ECOM AgroIndustrials, one of world's leading cocoa processors, while Rabobank Foundation and Rabo Development support financial services development from the bottom of the pyramid all the way to large farmers in developing countries by working through local partner banks. Rabobank works with its financial partners to look at all players in the value chain and serve them in a segmented and adapted way (see Box 4.3).

Box 4.3: Client Segmentation Drives Financing Approach

Based on Rabobank Foundation and Rabo Development's work in 26 countries globally and through its partnerships with eight banks, Rabobank has developed the following agricultural financing principles:

- Agriculture is different from other sectors due to its specific risks. Financiers need to have a good knowledge of the agricultural sector, both the trends on specific subsectors (globally, regionally, at the farmer level, etc.) and sector reference data at counterparty level.
- The value chain approach is key as it considers all actors in a value chain. After all, a chain is only as strong as its weakest link.
- Use client segmentation to drive the financing approach. Look at all players in value chain and have a strategy for serving them in a segmented and adapted way. (See below for discussion on how farmer segmentation drives the financial services provided.)
- Focus on repayment capacity, as cash is what is going to pay back the loan in the end; collateral is a second line of defense.
- Transaction costs of small loans are typically too high and do not cover a financial institution's expenses; hence, there is a need for aggregators, such as cooperatives or processors, who can facilitate on-lending to the farmers.
- Farmers and cooperatives need to understand bank requirements and vice-versa. Similarly, to be able to obtain (access) financial services, the market needs to know the way the bank looks at the world and what the background is of their questions.

Client segmentation is important for determining clients' financing needs and the appropriate financial services to provide. Rabobank segments farmers as outlined below:

- *Large farmers* – Given the financial needs of large farmers in developing agricultural markets, both in terms of size of and range of services, banks typically take a relationship approach with these farmers. These farmers receive the highest portion of finance, which can also be based in foreign currency (USD or Euros).

(continued on next page...)

¹⁰ <http://www.fao.org/ag/ags/agricultural-finance-and-investment/value-chain-finance/en/>

(...Box 4.3 continued)

- *Emerging farmers* are successful commercial smallholders with good entrepreneurial skills, on their way to becoming large farmers. These farmers are well suited for a retail approach and need technical assistance, such as management skills and agronomical support services, to help them succeed. Financing includes working capital as well as mechanization finance. Focus on farmers with a minimum of three years of experience, entrepreneurial character, adequate equity, minimum farm size (depending on sector), and growth ambitions.
- *Commercial smallholders* – Transaction costs of small loans are high, yet providing technical assistance and/or using a value chain approach (e.g., out grower scheme) can reduce business risks.
- *Large farmers* – Given the financial needs of large farmers in developing agricultural markets, both in terms of size of and range of services, banks typically take a relationship approach with these farmers. These farmers receive the highest portion of finance, which can also be based in foreign currency (USD or Euros).
- *Semi-commercial smallholders* – Since this class of smallholders can be difficult to lend to cost effectively, financing approaches often involve savings for loan schemes, group guarantees, credit score assessments (incorporating factors, such as age of farmer, age of children, experience, affiliation with a cooperative, etc.). Furthermore, since these farmers are small and generally have little bargaining power, it is important that they be organized.

Lesson 12: Expanded Access to Information and Mobile Applications can Reduce Costs and Risks of Financing Small Farmers.

Worldwide, mobile banking (m-banking) is beginning to deliver on the promise of offering affordable financial services to millions of the world's poor. M-banking has demonstrated its ability to: reduce costs, facilitate financial identity and control, extend outreach to underserved areas, and reduce fraud. As the m-banking industry continues to grow, innovation is driving the advancement of what is possible in rural and agricultural finance and development. In addition to providing a broad range of financial services (i.e. loans, savings, insurance, remittances, leasing, merchant transactions, salary payments, etc.), m-banking has expanded to include innovative mobile applications, such as mobile market places, market pricing, virtual agricultural extension services, productivity tools, and even supply chain management. In Kenya and Uganda, Mercy Corps and MobiPay, a technology and software solutions company based in Nairobi, Kenya, took mobile innovation to the next level by bundling mobile applications and financial services to provide a holistic and systemic approach to reducing the costs and risks of financing smallholder farmers (see Box 4.4).

Box 4.4: Providing Bundled Services through AgriLife

In Kenya and Uganda, Mercy Corps and MobiPay partnered to launch AgriLife, a mobile-based platform to serve agricultural supply chains, which bundles services related to market information, technical assistance, market linkages and finance. Using a holistic approach, AgriLife brings together the needs of farmers, buyers and financial institutions in a way where there is shared value, creating a win-win-win solution, as follows:

- **Farmers** gain access to the formal financial sector. AgriLife provides farmers with a financial identity and harnesses data on historical sales, income history, and cash flow analyses (to be used in lieu of collateral).
- **Buyers** gain access to a management information system and automated warehouse receipt system that collects and tracks data on their supply chain to improve efficiency. Furthermore, new revenue sources are established through a loan origination fee deducted from the loan.
- **Financial institutions** gain access to critical data on farmers' historical sales and projected cash flows, thus reducing credit risk and providing access to an otherwise unreachable client group as well as the opportunity for cross selling other products.

The benefits of using AgriLife include increased productivity, reduced transport costs, reduced price disparity, increased trade opportunities, increased access to information, services and markets, increased trust, and risk mitigation. Key aspects of AgriLife include:

- **Farmer Score** – AgriLife uses a credit scoring model to assign each farmer a “Farmer Score,” which is derived from several data sets, including credit score, systemic risk, credit risk, financial activity (loans, savings, insurance, etc.), as well as information on the size of the farm, production history, and quality of produce.
- **Revenue Model** – Farmer Scores are offered to banks on a subscription basis. Banks provide 30 day loans at 3%, splitting the interest with MobiPay (0.25%), and the cooperatives and processors (0.25% - 0.3%). Everyone in the chain gets something to provide the proper incentives.
- **Service Components** – AgriLife's services include four components: capturing data via mobile or web, creating new services for AgriLife's users, facilitating transactions, payments, decision making, and reporting.

Launched in Kenya in December 2012, AgriLife has achieved impressive results in a short time. As of June 2013, three microfinance institutions (Rafiki, Century and Jamii Bora) as well as one processor, New Kenyan Cooperative Creameries (New KCC), a milk processing cooperative, have signed up to participate in AgriLife. In the past three months alone, AgriLife has processed USD \$3 million in farmer payments from New KCC, impacting over 40,000 farmers in 100 farmer groups, with the potential to reach 300,000 farmers through New KCC alone. Through AgriLife, MobiPay expects to process USD \$40 million in payments and reach 200,000 farmers by December 2013. MobiPay plans to increase their footprint in Uganda and expand to Zimbabwe.

Lesson 13: Public and Private Sector Partnerships that Address Financial and Technical Constraints to Value Chains Can Significantly Increase Financial Intermediation.

Smallholders face financial constraints that hinder technology adoption, thereby limiting their capacity to move up the production curve. Despite improved information technology and reduced transactions costs, access to effective rural finance remains low, particularly for capital acquisition. A three-way partnership between the financial sector, the public sector and organized smallholders can relax financial constraints, facilitate technology transfer and promote greater land and labor productivity, all of which are essential

for competitiveness. In Latin America, the World Bank has supported the development of financial and technical public-private partnerships that are helping to increase financial intermediation, reduce existing productivity gaps and raise market participation among smallholders (see Box 4.5)

Box 4.5: Productive Partnerships: From a Short Handshake to Long-term Engagement

In Latin America, the World Bank is supporting the development of productive alliances to contribute to increased productivity and competitiveness among organized rural small-scale farmers. Key lessons learned from World Bank's experiences in Honduras, Brazil, Guatemala and Colombia include:

Make the business case for investing in smallholder agriculture. In addition to the attention dedicated to social and environmental objectives, it is critical to invest in those businesses which objectively demonstrate their viability through sound financial analysis as a necessary condition for their competitiveness.

Develop long-term financing partnerships (i.e., 3+ years) where each stakeholder has “skin in the game.” For the Honduran Rural Competitiveness Project (COMRURAL), producer organizations must bring to the table at least 40% of their proposed business plan – in the form of either equity participation or external finance – to be eligible for the project's matching grant facility (up to 60% match). To date the ratio between non-grant/grant funds has been 46/53, which is an indication that the incentives are aligned in the right direction.

Demand-driven technical assistance. For COMRURAL, producers had a pre-approved list of 20 technical assistance (TA) providers from which they could choose with whom to work. The TA providers were compensated based on pay-for-performance contracts to ensure that they shared the risk as well as the reward. In Guatemala, TA is provided through business development partners, which are companies that support producer organizations to become more competitive.

Build up farmer capacity to serve larger, more commercial end market opportunities by using institutional or national markets as a stepping stone to serving larger markets. For example, for the Pernambuco Rural Economic Inclusion Program based in Northeast Brazil, the National School Feeding Program, which mandated 30% of school lunches be purchased from nearby family farms, served as a stepping stone to serving private markets.

Results. Using this productive partnerships approach, World Bank's projects have achieved the following results:

- In Honduras, COMRURAL has facilitated investment into 73 productive alliances – benefiting nearly 7,000 organized small-scale producers' families – including \$11.6 million in combined producer organization equity and commercial finance, and \$13.2 million in matching grant funds.
- In Guatemala, the Project to Support Rural Economic Development (PDER) generated an additional \$1.90 in sales for every \$1.00 invested and helped beneficiaries and their families increase their incomes by \$1,247 annually. Product quality and overall competitiveness has been improved. In Guatemala, the model of productive alliances has been “institutionalized”, i.e. adopted by the Government as a national program for developing competitiveness of rural agri-businesses.
- In Colombia, the Productive Partnerships project has funded 557 productive alliances since 2002, reaching 36,600 beneficiaries. The project is at the end of its second phase. The Government of Colombia has decided to institutionalize the approach within the framework of its regular activities and will fund subsequent phases by itself.

V. Moving Forward

Cracking the Nut 2013 was a success as it demonstrated a merging of minds between public and private sector actors. Collectively, participants recognized the importance of building **trust** through long-term commitments and partnerships and the need to move beyond pilot projects toward **scalable approaches** to sustainable sourcing and access to finance for agricultural supply chains.

“We have cracked several nuts over the past two days!”

Albert Engel, Deputy Director General,
Sectoral Department, GIZ

Cracking the Nut 2013 also demonstrated the increasing complexity the world is facing related to expanding agricultural production while improving food safety. To ensure that the world is able to feed a population of 9 billion people by 2050, all actors need to work together. Below are some of the trends happening to encourage the development of sustainable supply chains.

Private agribusinesses are increasing their commitments to sustainable sourcing and demonstrate a willingness to work with and invest in smallholders in developing countries to meet consumers’ demand for traceability and certification. Given the narrow profit margins of most agribusinesses, they cannot cover all the costs and investment needed to reach their sustainability targets. They come to the table requesting support from the public sector and development community. In particular, they need help organizing and building capacity of smallholders, they need assistance in facilitating access to reasonable cost finance at all levels of the supply chain, and they need local governments to invest in local infrastructure and ensure an enabling environment that balances protecting local communities with encouraging competitive markets and investment.

Donors can leverage private sector investments, especially by covering the costs associated with organizing and building capacity of smallholders to meet consumer demands for food safety, transparency, sustainability and certification. For example, USAID is increasingly looking to support projects that strengthen producers and cooperatives, facilitate access to markets and buyers and improve supply chain efficiency. Bernai Velarde of USAID explained that donors are increasingly seeking to partner with the private sector and share risk, so that “everyone has something to win and something to lose.” Donors can also support the role of development community facilitators, who can facilitate linkages between smallholders and markets, as well as between supply chain actors and investors (ranging from local financial institutions to international impact investors and private equity investors). For example, as part of the Peru Cocoa Alliance, AZMJ participated in the due diligence process to facilitate Calvert Foundation’s investments in two cocoa cooperatives in USAID/Peru’s target alternative development areas in San Martin and Huanuco.

Governments can attract more investment in agricultural supply chains by ensuring a positive enabling environment while encouraging sustainable agricultural practices and use of natural resources. According to the World Bank, more than 40% of transport related costs of doing business in Africa are due to poor infrastructure; because of this, local governments have a major opportunity to use public-private partnerships to **build critical infrastructure** (electricity, roads, communication systems, etc.). Deloitte’s recent research found that by using a “trade corridors” development model, governments can create the long-term vision needed to attract investment in transportation and infrastructure projects that can be so important to agricultural development, despite the short-term nature of politics. (see Box 5.1) Governments should find ways to leverage public sector funds (i.e. fees and tax revenues) to leverage private sector and impact investment funds needed to develop the necessary infrastructure to ensure agribusiness success.

Box 5.1. Public Investment in Trade and Transport Corridors Can Facilitate Investment in Agriculture

Deloitte's recent study¹ on economic corridors found that public investment in trade and transport can facilitate the flow of private sector investment in agricultural value chains. They found that public investments in logistics infrastructure and regulatory streamlining were especially important factors in achieving the goals set forth by various economic corridors in developing countries.

According to Emerson Zhou, Executive Director of Beira Agricultural Growth Corridor in Mozambique, trade corridors are important to investors in the following ways:

- Identifying potential investment opportunities;
- Facilitating partnerships on the ground (e.g. help investor set up processing plant and link to smallholders);
- Mobilizing government support and aligning public investments with those of the private sector; and
- Coordinating efforts with donors.

In summary, Deloitte's research highlighted the following emerging best practices:

1. Corridor management authorities must have the ability to impact the enabling environment and ensure effective land management.
2. Corridor authorities need to have the authority to coordinate infrastructure master plans and the ability to develop effective public-private partnerships. The World Bank estimates that 50% of infrastructure projects in Africa are not placed where they would need to be to maximize economic benefit.
3. Corridor authorities should have a dedicated source of finance for their activities beyond donor support, such as fees generated and taxes.
4. Investment facilitation activities need to be combined with finance to attract early stage investors, who can make the case for success for larger, international investors. For example, a catalytic fund, combining local and international equity and debt capital, can be used to drive investment in local SMEs and start-ups.
5. Corridor authorities need senior level champions for their activities and an institutional framework that can coordinate stakeholders.

¹Deloitte's study was based on extensive desk research, key stakeholder interviews, and quantitative and qualitative analysis. The research focused on 11 corridors spanning 19 countries in Africa, as well as two best practice corridors in Asia and Latin America.

The development community can act as “facilitators” to bridge the gap between public and private sectors in a number of ways. For example, some firms have found that by partnering with a development community facilitator for competitive grants, they are better able to convey the shared value they can offer by co-investing in agricultural development objectives. Development community facilitators can include non-governmental organizations, private consulting firms, and private networks and voluntary organizations, who are working to improve the lives of the disadvantaged in developing countries.

The development community can also play an important role in the following:

Highlighting approaches to proactively integrate disadvantaged populations, including youth, women and the physically impaired. The MasterCard Foundation invests heavily in youth capacity building and training, which is needed to make working in agriculture more attractive to young professionals. Regarding women, their work in agriculture is often less visible and valued than men's;

and they tend to be excluded from the more profitable aspects. Hence, there is a business case as well as a social justice case for convincing value chain actors and supporters to address gender inequities. Evidence from a World Bank review and other recent studies suggest that societies that increase women's access to education, health care, employment and credit and that reduced differences between men and women increase the pace of economic development and reduce poverty (Stotsky, IMF, 2006). Mariel Mensink of Terrafina suggests that all relevant stakeholders (including financial service providers) be involved in developing “win-win” value chain development strategies. By integrating women at the onset, development community facilitators have been more likely to work with women outside of their traditional roles and help them to move into new activities and other value chains. Integrating diverse populations into value chain initiatives generally improves decision making, as different knowledge and perspectives are considered.

Expanding knowledge and developing monitoring and evaluation systems. By facilitating the sharing of data, which tends to get trapped in information silos, development practitioners can make sure that information is leveraged to further market development. While the private sector is increasingly interested in ensuring that smallholders benefit from their investments, the development community will likely continue to need public sector money to support the types of poverty and impact research that donors will continue to require. To address these needs for richer market information, MIX, for example, is developing tools for mapping financial inclusion that rely on geo-contextual data related to population density, income and infrastructure (use of mobile phones, TV, electricity, etc.), to provide context to the financial services offered by financial institutions that reach these target clients. Using these tools, MIX is working to aggregate and link financial inclusion data in a way that facilitates a more integrated and granular understanding of markets.

Building knowledge base and forecast impacts of global climate change and identify ways to improve the resiliency of crops and people dealing with them. With global climate change will come increased temperatures, flooding and drought, which have serious implications for food and water safety. We are likely to experience increased microbial foodborne diseases, contamination from mycotoxins, biotoxins and mercury, as well as from pesticides and veterinary drugs.

These are just a few of the remaining tough nuts to crack. We have more work to do if we are to expand rural and agricultural markets and finance to meet the needs of our growing global population. We hope you will join us at the next learning event Cracking the Nut Africa, which will focus on *Improving Rural Livelihoods and Food Security*. The event will take place in Kigali, Rwanda in January 2014. For more information, please visit www.crackingthenutconference.com.



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