Linking Smallholder Farmers to Markets and the Implications for Extension and Advisory Services

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LINKING SMALLHOLDER FARMERS TO MARKETS AND THE IMPLICATIONS FOR EXTENSION AND ADVISORY SERVICES

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Note from the Editors

The Modernizing Extension and Advisory Services (MEAS) Discussion Paper series is designed to further the comparative analysis and learning from international extension efforts. The papers contain a review of extension and advisory service best practices drawn from the global body of experience in successfully reaching resource-limited farmers. The papers identify the underlying principles associated with high levels of success in reaching women and men farmers and how, in differing contexts, these core principles have been successfully adapted to fit local conditions in establishing productive, profitable and sustainable relationships with individual producers, producer groups, the private sector, as well as associated research and education institutions.

The series include papers on a wide range of topics, such as the realities of pluralistic extension provisioning, sustainablefinancing, the role of farmer organizations, linking farmers to markets, the importance of gender, use of information and communication technologies, and climate change adaptation. The papers target policy makers, donor agency and project staff, researchers, teachers, and international development practitioners. All papers are available for download from the MEAS project website, www.meas-extension.org.

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Linking Smallholder Farmers to Markets and the Implications for Extension and Advisory Services

Introduction

Approximately 1.5 billion people are engaged in smallholder agriculture across the world. They include 75% of the world's poorest people whose food, income, and livelihood prospects depend on agriculture. They mainly live in rural communities. Despite their important role as food producers and rural stewards, the commercial prospects for millions of poor smallholders remain challenging. Income opportunities have improved since the long period of depressed commodity prices, from the 1980s until the mid-2000s; as commodity prices have recovered, the agricultural sector has shown signs of revitalization. Several global agencies have also renewed their investments in agriculture due to the realization that enterprise continues to be the best hope of improving the livelihood prospects for millions of rural families.

Growing populations, urbanization, and improved communications and infrastructure are generating opportunities in expanding domestic and export markets for those farmers who can consistently link high production with sales. The remarkable rise in Vietnamese coffee production that has taken place since the 1980s is one example of smallholder success. Another example is seen in the significant gains that smallholders have enjoyed in regional grain markets in Eastern Africa, achieved because of urbanization and new procurement policies by the World Food Program. Across the developing world, the expansion of high value horticulture in domestic and export markets is also providing opportunities for greater smallholder inclusion.

While this growth is encouraging, a more general analysis of smallholder prospects reveal a more sobering picture. Studies from several countries in Africa and Asia show that 50-70% of smallholders are not transitioning from subsistence to commercial farming. Studies in Zambia show transition for poor smallholders to high productivity agriculture ranges from 5%–25% each generation. The clear message is that most farmers, particularly those working with 1-2 hectares (ha)[1], face challenges that leave them locked in poverty. Experience shows that for agriculture to modernize there must be fewer farmers with larger land holdings. In developed countries, agricultural modernization occurred alongside industrialization, resulting in market forces that incentivized reallocating assets, such as land and labor, to support a more efficient, leaner agricultural sector, thereby reducing the number of farmers.

In many developing economies, urbanization and industrialization are not creating sufficient numbers of off-farm jobs to help consolidate and accelerate agricultural commercialization. This means that millions of smallholders are stuck with increasingly smaller parcels of land and meager prospects of escaping poverty in their lifetimes. The alternative strategy for these rural families is to invest in the education of their children and focus on income smoothing. This strategy offers families an alternative prosperity pathway that seeks intergenerational options for literate and numerate children who can access higher paying off-farm employment in the future. However, even this longer-term, non-farm strategy means that present day smallholders must upgrade their systems to achieve food security and consistently earn enough income from farm sales to pay for children's nutritional needs and education.

Overcoming the commercialization barrier requires an upgrading process that includes investment in local infrastructure, strengthening of business services, and improving farmer skills. In many low-income countries, these investments have not been made, and, with the reduction in government extension services over the past 30 years, most farmers remain unable to access vital technologies and services.

[1] 1 hectare is equivalent to 2.47 acres or 10,000 square miles

Lack of government investment has led to a more pluralistic model, but one in which extension delivery and services are spotty.

The question then remains, what types of investment in extension systems will provide consistent results in upgrading the production and market performance of smallholder farmers?

This paper explores the changing role of agricultural extension services and the growing focus on the marketing and business needs of smallholder farmers. Key issues in this debate include finding better means of coordinating and sustaining services, and generating policies that build the capabilities of farmers to raise incomes by linking to various types of markets — including informal domestic and regional markets, traditional cash crop markets, formal and higher value markets, and emerging food aid and structured public markets (Poulton, Dorward and Kydd, 2010).

This paper is useful for development practitioners who are involved, directly or peripherally, in agricultural projects or programs because it outlines how agriculture can, over time, provide a pathway out of poverty. The gains achieved by project beneficiaries are often lost when the project ends and support is no longer delivered, but practitioners can avoid this by taking the proactive steps of building farmers' capacity, creating links with local supply chain actors, and coordinating services with other actors and developing fee-for-service field agent networks. Extension delivery systems have the heavy burden of helping various farmer types to improve their production and market linkages despite having vastly different needs and capabilities. Oftentimes the farmers have very few resources to invest, which can create long-term dependence on extension systems and other service providers. The techniques outlined in this paper can empower decision-makers within extension systems, as well as extension agents on the ground, to seek new ways of assisting smallholder farmers through business-oriented approaches that build the capacities of farmers so they can become self-sufficient. Those studying International Development, Agricultural Extension, or Development Economics will benefit from learning about the various types of market options that are available to different types of smallholder farmers, as well as the obstacles they face and what it takes to enter and remain, in those markets. They will also learn how ICT and business services can complement the role that extension plays and how savings groups can be a viable gateway to more formal financial services.

The Case for Linking Farmers to Markets and Implications for Extension Services

Market Linkages

Agriculture remains the best opportunity for the estimated 1.5 to 2 billion people living in smallholder households to escape poverty. Studies show that income growth generated by agriculture is up to four times more effective in reducing poverty than growth in other sectors (Growth Commission, 2008). However, in the 1960s, governments controlled most markets and rural investments focused mainly on helping farmers raise production of staple foods to achieve food security. Over time, extension services evolved to focus more specifically on improving productivity through sustainable agricultural practices and soil health. This focus has remained the operating paradigm for investments in smallholder farming until recently.

With the structural adjustments of the 1980s, governments were forced to withdraw from markets, leading to the collapse of local farm support services and a major contraction of extension services in many countries. Poor commodity prices in the 1990s led to further deterioration in the farming sector, which, combined with poor terms of trade and currency devaluation, led to many farmers being forced to return to subsistence farming.

At the turn of the century, commodity prices improved, while recent growth in emerging markets is encouraging greater attention to the farming sector. This uptick in agricultural markets is helping to support a revival in exploring new types of services to support smallholder farmers. Growth in global markets is also causing large corporations to take a fresh view of farmers in Latin America, Asia, and Africa, both as new sources for international supply chains, and as suppliers for growing domestic and regional sales. As markets have expanded, banks have followed by exploring new ways of financing agriculture. Some of this is stimulated by low returns on government debt that is forcing banks in the emerging markets to think beyond their traditional role of investing in treasury bills to consider commercial loans for agriculture.

Though these emerging markets offer potentially high returns, they come with considerable risks. As most farming is rainfed, production is more vulnerable to volatile weather conditions (such as those caused by climate change; IPCC, 2007). For this reason, the mainstream industry must understand the new business environment in order to benefit from the market growth. Corporations are seeking new types of partnerships with local private sector entities, governments, and civil society to support a new generation of business models that can integrate smallholder farmers into their supply chains and thereby create more security. These changes suggest a thaw in the markets for agricultural products in poor countries, and perhaps also signal the start of new opportunities for farmers to access basic services, such as technology, extension, finance, and insurance that are required to operate effectively.

Given these changes, finding ways to link smallholder farmers to markets is generally considered a critical part of any long-term development strategy to reduce poverty and hunger. The development and research communities are finding that agronomic support services alone are not enough to achieve large-scale poverty reduction and resilience in rural communities. There have been a number of efforts to promote mechanisms to assist in shifting from production to market-based investment programs. These include market analysis, contract farming, certification, and strategies to strengthen local business development and support value chain investment. These methods have complemented production-based systems to facilitate market access.

The effects of market-based approaches can be dramatic for farmers who are poised to engage with markets but who lack the necessary support. This is especially true when farmers link to high value, formal markets as seen in the case study of Nicaraguan farmers who were linked to high value horticulture and coffee and markets (**Figure 1 and 2**) (Shriver and Brenes Abdalah, 2012).

Despite the dramatic economic benefits that pro-market methods might bring, development practitioners recognize that formal market linkage is not a panacea. In studies of Green Mountain Coffee Roasters, it was found that up to 50% of their suppliers endured at least three months of seasonal food insecurity (After the Harvest, 2008; Fujisaka, S. 2007). Statistically, 50% of smallholders will not be able to link to a commercial market. Therefore, it is important to keep in mind that the challenge is not merely of creating linkages to lucrative markets, but also of adequately assessing smallholder conditions, including their market options and methods of optimizing their market performance—all while ensuring that that these options are manageable for the smallholders.

Case Study: Poverty Reduction and Market Linkage: In project work in Nicaragua, Catholic Relief Services (CRS) found that market linkage support, over a five year period, helped to raise net incomes for coffee farmers from approximately $200 per hectare to more than $1500 per hectare **(Figure 1).** For the higher value horticultural sector, net incomes rose from approximately $3,000 per hectare, to more than $11,000 per hectare **(Figure 2).** The cost of this intervention was approximately $1500 per farmer.

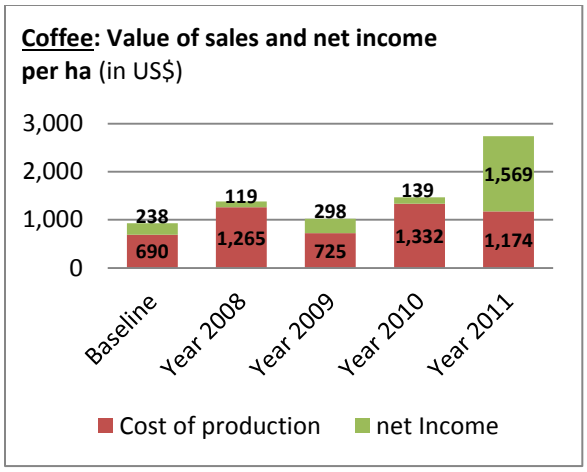

Figure 1. Changes in net income per ha for coffee producers
Source: Shriver and Brenes Abdalah, 2012.

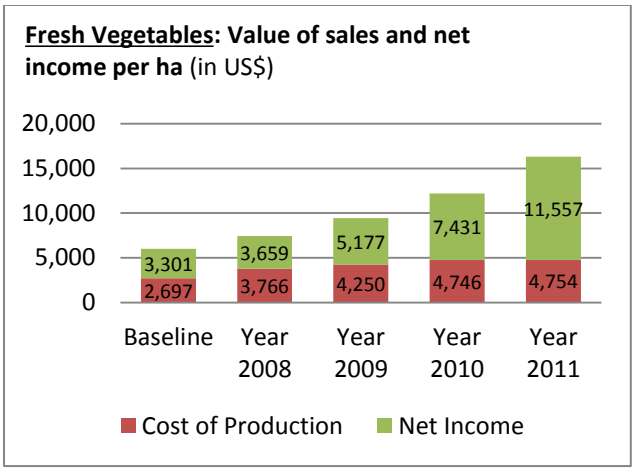

Figure 2. Changes in net income per ha for fresh vegetable producers

Research and case studies show that not every smallholder is suited to the same type of market and will not require the same support services to reach a market. This represents a significant shift in how extension and advisory services must tailor the type of support they offer to the smallholder. Extension services will play an important role in helping all types farmers realize their market aspirations. This transition from production-push to a spectrum of agronomic and business development services is taking place as agencies try to provide services to a full range of smallholder farmer segments. These include a fairly small number of more commercial smallholder farmers, as well as semi-commercial and subsistence farmers.

Another challenge exists in reconciling the gaps in investments for extension services made by the public and private sectors:

Private sector investments in developing countries are often restricted to better-endowed and more competitive smallholder farmers, as this segment is able to supply a better quality product at commercial volumes. While investing in the commercial smallholder segment is essential to supporting the growth of these farmers, investments of this type rarely reach down to the poorer farming communities.

Public donors tend to focus their investments on raising the wellbeing and incomes of less endowed farmers. In helping highly marginalized communities, much of the available foreign aid budget is used to help the majority of farmers strengthen their resilience to cyclical or chronic emergencies. These strategies tend to focus on stabilizing assets and traditional methods that have focused on achieving food security, before they tackle the more knowledge-intensive work of helping farmers invest in producing marketable surpluses and building better market linkages. As such, most agricultural development methods are fairly conservative and slow to catalyze diverse income streams and durable trading relationships. The poorer or more vulnerable the community is, the slower the shift is from focus on food security to market performance and overall economic growth.

Government support to the farming community is often small compared with public donors and the private sector. These investments are split between supporting key food security crops to assist the voting public and supporting export products that help generate foreign exchange income.

Over the past 50 years, smallholder farmers in many developing countries have witnessed a gradual decline in access to government services. Up until the late 1980s, almost all farm extension systems and their supporting research was in the hands of the public sector. Tightening budgets and shifts in political constituencies has led governments to explore ways to reduce public investment in these areas, generally in favor of greater public-private partnerships to deliver research and extension services. In all cases, there has been a general shift from a sole focus on production and farmer handouts to co-investment options and fee-based services.

The Australian Government has been particularly successful in setting up **Research and Development Corporation**s (RDCs) that combine public and private investments in key value chains. The RDCs bring industry and researchers together in agencies that fund strategic value chain projects to maintain innovation and competiveness in global markets. This model of joint industry and government funding has been a key element in the doubling of Australian productivity over the past 25 years.

Key changes brought about by the RDC's were to (i) regionalize / localize extension services, (ii) develop public-private industry partnerships, (iii) outsource and contract services and (iv) instigate cost recovery mechanisms based on a user fee approach. Through this process, the Australian Government was able to shift resources to private service providers where farmers or industry pay for services to support areas prone to market failure. This process also put more control of extension decisions into the hands of farmers rather than relying on a top-down science push (Marsh and Pannell, 2000).

Key Questions for Agricultural Development and the Changing Role of Extension

While there appears to be consensus emerging in the development community about the importance of integrating market linkage work with production support (to ensure viable markets for products), there is also concern that an overemphasis on the formal export market could further marginalize the most vulnerable farming households. The development community faces some key questions about markets and the smallholder farmer that have implications for extension.

For agricultural development, the questions are:

- How should we define the farming community?
- Are certain types of market support more appropriate for specific farmer segments?
- Which intervention factors can best improve market performance for smallholder farmers?
- Does improved market access help poor farmers escape poverty?

For modern extension service providers the questions raised are:

- Do extension services have the staff and skills to support market linkage development?
- How can private and public sector actors invest in ways to improve market linkage support?

Both market opportunities and the assets and capacities of farming households are diverse in nature. It is therefore necessary to ground market linkage work, and its implications for extension, in an understanding of markets and farmers. This paper shares a short overview of markets, a typology of farmers, and suggestions for identifying the entry points and approaches for matching farmers to the right markets. The paper will conclude with a summary of how these systems and approaches affect the role that extension plays in supporting smallholder farmers.

Markets and Farmers

Each farmer has different needs and a different type of market they are best suited to enter. This section looks at types of market options, farmers, and methods that are used by development programs to link the various types of farmers with markets.

Types of markets and marketing systems

In broad terms, there are three basic market types that value chain projects can target: (i) **"informal"** markets, which have few regulations and often no taxation; (ii) more regulated **"formal"** markets, which operate using standard weights and measures and where transactions are agreed upon based on clearly defined legal frameworks; and (iii) **structured public markets** that are organized by public sector buyers who offer standardized contractual buying arrangements with specific conditions (e.g., buying a percentage of the total procurement from smallholder farmers).

The complexity of the market system typically reflects the volume and value of trade, the types of products being traded, and the number of market actors who want to make use of the system. Types of exchange include barter, roadside stalls, fixed marketplaces, travelling salespersons, retail stores, auctions, commodity exchanges, stock exchanges, futures markets, and online marketplaces such as eBay (Robbins, 2011).

Informal markets

For the majority of smallholder farmers in developing countries, the most accessible markets are informal markets. They are termed informal because they exist beyond the tax system and are off-record. Informal markets trade upwards of 80-90% of the agricultural goods in most developing countries and include all transactions at the farm gate, roadside sales, village markets, rural assembly markets, and sales in the main urban wholesale and retail markets. The informal markets are particularly important for trading all products produced by smallholder farmers, including the high-volume, lower-value grain and pulse crops, as well as the higher-value fruits, vegetables, and meat products.

Typically, these markets have no formal grades, no traceability, they rarely use standard measures, and prices are set through arbitrary combinations of supply and demand, trader cartels, and local customer loyalties to specific sellers.

Positive characteristics of informal markets:

- Limited standards mean that there are relatively low levels of postharvest loss; this creates an environment where there may be extreme flexibility in value propositions, which makes these markets attractive to a wide variety of suppliers and buyers.
- Informal markets provide significant income opportunities for producers, wholesalers and retailers.
- The informal market process of multiple sellers and price fixing is used as risk management or as a safety net for sellers.

Negative characteristics of informal markets:

- They are nominally managed by local authorities and are often controlled by strong cartels of traders who limit competition, enforce arbitrary stall fees, and use favoritism to benefit their political allies, immediate family, and other relations.
- Lack of investment and poor transparency often results in crowded and unsanitary conditions.
- Often, food safety issues are overlooked, resulting in a shift in the buying habits of some middle-class consumers (although most customers still value the accessibility and low costs of informal markets).
- Markets have few modern trading facilities, and very few have computerized systems or operate in a coordinated manner. The lack of a business outlook on the part of market management limits investment and growth.

The informal market sector is in great need of modernization, including:

- The development and legal enforcement of grades and standards, as well as the equipment needed to monitor them.
- Investment in information and communication technology to enable the monitoring and sharing of information related to produce quality and volume, as well as pricing and transaction volumes. In addition to helping facilitate transactions between poor farmers and traders, it would also create an opportunity to develop effective market information and raise local taxes that can be used to invest in the marketing system.
- The upgrading of storage conditions and the development of a more standardized and hygienic system of selling goods.

Formal markets

Formal markets are characterized by modern value chain systems. These markets can link the more commercial or competitive smallholder farmers with larger commercial buyers. Formal markets can offer smallholder farmers prospects for growth (Seville, Buxton and Vorley, 2011). These markets provide an opportunity for farmers to link to a consistent source of income, with clear market signals coming from the buyers. In addition to the more consistent income, farmers who succeed in linking to formal markets generally access more support services. To work within the formal market sector, farmers must comply with the stringent quality standards and regular volume requirements of formal buyers as well as be willing to accept that prices may be below those in informal markets.

Formal market requirements for amallholders:

- It is common for firms to require traceability of lots along a supply chain. Each actor in the supply chain must adhere to a series of best practices for the production and handling of goods due to food safety standards. Failure to comply with such standards is penalized.
- Higher volumes in formal markets require a greater level of organization of smallholders through groups, associations and cooperatives, and access to specific services in order to maintain quality, volume, and flow.
- Farmers agree to lower prices in exchange for longer term buying arrangements, access to services, and social investments.

CASE STUDY: In a study by Neven, Odera, Reardon, and Wang (2009) that surveyed 115 farmers in Kenya (49 supplying the supermarket channel and 66 supplying traditional channels), the authors undertook primary data analysis of supermarket contracts and prices.

They found that the mean price offered by the supermarket was significantly lower than traditional market prices — thus undermining frequent remarks about benefits to the farmer based on stability in the prices of supermarket chains.

Formal market challenges:

- *Legal Frameworks* – In modern markets, buyers and sellers rarely meet. Trust is reinforced through clearly defined standards that are supported by documentation and, often, certification. These contractual transactions depend on a reliable legal system. The establishment of legal frameworks is mainly the responsibility of government. However, there must be qualified, independently certified lawyers who operate according to international standards and are backed by law enforcement to prevent fraud. Otherwise, no party to a transaction can be certain that the terms of any contract will be upheld.
- *Credit* – Traders extend credit, usually as a cash pre-payment, to producers in almost all of the millions of transactions that occur in agricultural markets. Most traders are not able to generate enough cash to finance large deals, nor do they like the risks that come with carrying large amounts of cash. Nearly all advanced forms of market systems rely on banks to provide credit. Such systems are only able to work where banks can be relied on to work within a legally binding regulatory

framework. Installing a robust and completely dependable legal and banking system is a massive undertaking in many developing countries, yet it is a necessary precondition for the establishment of advanced trading systems (including anything but the simplest commodity market, contractual trading, and a warehouse receipt system).

While many of the formal markets are linked to export crops or traditional cash crops, demand is also rising to supply other formal markets, including urban supermarkets, fast food chains, and tourist hotels. The options for import substitution present an opportunity for highly organized farmers who are more readily recognized by key industries in developing countries (e.g., feed millers, brewers, and food processors) who want to cut costs on products they have traditionally imported.

The prospects of farmers who are able to access and remain in formal markets are a concern for investors. There is evidence that smallholder farmers who engage in new formal markets can gradually be crowded out by middle- to large-scale farmers who can outcompete based on their economies of scale (Michelson, Reardon and Perez, 2010).

In some formal markets, new buyer standards have resulted in the exclusion of small-scale producers if additional investments in capacity are not made.

For extensionists, it is important to understand the requirements that smallholders must meet in order to gain access to formal markets. It is also important to help build the case for the benefits offered by formal market linkage, i.e., more support services, social services, and greater income security. Those working in extension must also understand what is required for traders and the smooth functioning of formal markets in conditions that lack legal services or bank credit, which could hamper the development of strong formal market linkages.

CASE STUDY: After the introduction of the compulsory GlobalGAP certification in Kenya in 2005, a survey of ten exporters by Graffham, Karehu, and MacGregor (2009) found that over 50% of the Kenyan export horticulture market was controlled by these exporters. The survey found a 60% drop in formal participation of small-scale growers in these companies' supplier networks. The authors suggest that the primary reason for this decline was financial, as the standards necessary for acquiring the certification are likely to require far more capital than many small-scale farmers can afford on their own.

Formal markets are diverse. Therefore extensionists must consider the particular requirements attached to a specific type of product. With coffee, for example, farmers can shift from selling average quality coffee through local traders to selling specialty coffee directly to roasters. These variables underscore the importance of working across the value chain.

Commodity exchanges and auctions

Commodity exchanges and auctions are important quasi-formal market opportunities for smallholders. However, these markets have infrastructure challenges that represent significant entry points for extension and the development community to support improvements.

In a commodity market, the commodity to be traded does not have to be available for inspection at the market site. This is beneficial given that large quantities of commodities do not have to be moved every time they are bought and sold, and the commodity exchange does not need a warehouse or huge trading floor to accommodate the goods. The transactions can be recorded or even conducted electronically, and the prices can be broadcast to the wider public, including farmers and other parties, who are interested in the market price of a specific commodity.

There are, however, many challenges associated with such exchanges. Although traders do not inspect the goods for sale, they need to be assured that they exist, are stored in a convenient location, and that

they comply with quality standards. Each parcel of the commodity, therefore, has to be represented by a warehouse receipt and some quality certification; additionally, companies that are completely trusted by the traders must be the ones to issue these documents. It is possible for traders to buy and sell these receipts without taking delivery of the physical goods, thereby allowing the exchange to be a vehicle for investment or speculation. Speculation might have a positive effect by encouraging an increase in production motivated by higher pre-harvest prices; however, traders who risk too much may go bankrupt and be unable to fulfill their obligations to other traders. In countries where most farmers are net buyers, policies that raise prices will impoverish the majority of producers (Barrett, 2008). Before establishing such markets, it is important for development practitioners and extensionists to consider whether the wider market infrastructure can sustain market activities, and they must ensure there are appropriate sanctions in place to discourage inappropriate speculation.

Auctions are used to buy and sell almost any commodity, including fresh flowers, grains, fish, and live animals. Some commodities require special equipment on site, such as corrals for live animals, cold storage systems for perishable goods or concrete floors to stack non-perishable goods, and all auction sites must have good access to transport. Furthermore, the auctioneer must be independent, above suspicion of corruption, and must have the authority to eliminate market malpractice such as the manipulation of prices by groups of traders.

Auctions are an appropriate means of exchange in most developing countries. Sellers are responsible for transporting the goods to the auction site and potential buyers can inspect the goods for quality. They do not require paperwork, a quality-testing laboratory, or a legal framework, and the size of transactions can vary greatly. Similar to commodity exchanges, auction prices can be recorded for use in wider market information services.

In some countries, there is a preference to host a commodities exchange rather than an auction, given the appeal of the more modern looking electronic indicator boards and the clean environment. In comparison, however, auctions are much cheaper to establish, easier to run, less open to abuse, and, in some cases, they have the ability to perform the same function as a commodity exchange. These can be important factors for extension personnel or development practitioners who are supporting the establishment of a new market.

Formal public markets

In addition to the formal private market options, there is an emerging market opportunity, led by governments and the food aid sector, in public procurement of agricultural goods. For example, the Food Security Bureau of the United States buys surplus food stocks from domestic farmers and ships these goods, as food aid, to food-deficit countries to help avert famine. To complement transoceanic shipments of food aid, the United Nations' World Food Program (WFP), the United States Agency for International Development (USAID), and the United States Department of Agriculture (USDA) are investing in local and regional procurement (LRP) tenders for crops to enable the purchase of food surpluses from other areas of a country, or neighboring countries, to supply food aid to areas in need.

To meet the needs of food-deficit areas, LRP procurements can be considerable, requiring lot sizes of several thousand tons. The practice is growing in areas such as Eastern Africa, the Sahel, and parts of Southern Africa, where food deficits and severe food insecurity are a regular event. In addition to the general LRP processes, the WFP created the Purchase for Progress (P4P) program that buys staple food crops from smallholder farmers in 21 countries. P4P has developed smallholder-friendly procurement methods that enable the WFP to purchase up to 10% of their grain from smallholder farmers. P4P purchased 270,000 metric tons of food from smallholders between 2008 and 2013. This new market

provides farmers in surplus areas with a relatively long-term market that, compared to informal markets, pays a considerable premium.

Public procurement goes beyond humanitarian aid, as governments also buy large stocks of food products for their military and police forces as well as institutions like prisons, hospitals and schools. This high demand means that governments buy large quantities of food products from the agricultural sector. There is a growing interest in governments sourcing a percentage of the food products from smallholder farmers.

Extensionists can work with farmers to use procurement modalities, such as forward contracting offered by P4P, as a means of accessing credit to buy inputs, as warranty to access partial payments at harvest, or insurance as a means of reducing the risk of rain-fed production. In areas where these buying arrangements are located, farmers can benefit, though there are some challenges. In order to meet the high standards of the WFP, farmers must be organized and prepared to invest in technology that enables the production, storage, and conditioning of high quality grain. The size of the "quality grain market" is small in most countries where the WFP operates. For this reason, it can be difficult for farmers who supply high quality maize to food aid markets to find alternative markets. The procurement period is also lengthy when compared with selling to traders who offer cash down payments.

Farmers

Farming communities are not homogeneous. There is a wide range in types of farmers based on their assets, natural resource base, farm size, expertise, technology use, access to markets and agricultural service, level of organization, and the types of products they produce.

Farmer segments

There have been many studies showing the range of farmer types working side by side across the globe. The "Rural Worlds" classification describes three levels of farmers (shown in box below) (Vorley 2002, p.196). This typology of farmers is based on assets, land size, and access to services and market opportunities.

Rural World 1
Globally competitive, embedded in agribusiness, commodity producers and processors, politically connected, linked to formal markets, often export-driven, adopters of Green Revolution and transgenic technologies.

Rural World 2
Locally orientated, with access to and control of land, multiple enterprises, undercapitalized, declining terms of trade, the 'shrinking middle' of agriculture.

Rural World 3
Fragile livelihoods, limited access to productive resources, multi-occupational migrants straddling rural and urban residencies, unskilled and uneducated, dependent on low-waged, 'casual' family labor, redundant relative to global food and fiber production.

The key finding is that the less endowed smallholder farmers across the world are under increasing pressure to modernize and improve their market linkage if they are to rise above a subsistence farming system and make economic progress (Barrett, 2008; Jayne et al., 2010; Sitko and Jayne, 2012; Weber et al., 1998).

In this challenging environment, Dorward et al. (2009), suggests that farmers can be categorized into three types of livelihood strategies:

1. '**Hanging In**' where assets are held and activities are engaged to maintain livelihood levels, often in the face of adverse socioeconomic circumstances.
2. '**Stepping Up**' where farming activities and investments aim to expand the farm enterprise, with a view to increasing production, income, and the overall workings of the enterprise (an example might be accumulation of productive dairy livestock).
3. **'Stepping Out**' where existing activities are maintained to provide a base, or 'launch pad,' for moving into different activities that require an initial investment but lead to higher and/or more stable returns. Some examples include accumulation of livestock as savings that can be sold to finance children's education or support marriage, holding assets to be sold as needed to support urban migration, or to invest in other off-farm social, or political, contacts and advancement.

A simpler means of differentiating farmers was revealed through a series of studies on smallholder farmers in Eastern and Southern Africa, which shows a consistent pattern in farmer segmentation based on land size, **Table 1**.

Table 1. Farmer segmentation in the maize crop in East and Southern Africa

Farmer type	Share of farming population	Land holding (in acres)	Market sales	Other key assets
Commercially active smallholder farmers	2 %	10 – 30	Sell more than 98% of their produce and contribute 50% of traded grain	Consistent market access Established trade networks Mechanized Tertiary education Cash assets Manage water resources Access to credit
Periodically market-linked smallholders, "market ready"	15-20 %	5-10	Regularly sell in the market when they have surpluses	Periodic market access Technology access Favorable eco-zone Strong market access Some secondary education Some access to credit
Vulnerable, but market-viable, farmers	25 %	2-5	More opportunistic market transactions often market neutral to negative	Periodic market access Some primary education Unbanked
Vulnerable farmers "market challenged"	40-45 %	1-2	Net buyers	Infrequent market access Limited land assets Limited education Unbanked
The ultra-poor	5-10 %	<1	Net buyers who regularly need food assistance	Opportunistic market access Limited land assets High levels of illiteracy and innumeracy Unbanked

Source: Data from N. Sitko and T Jayne, 2012. Food Security Research Unit, Michigan State University.

This typology suggests there is a group of progressive smallholders who work toward incremental, though long-term, livelihood gains through farming, as well as a larger section of farmers with a more limited livelihood horizon who require higher levels of basic support to enable them to play a more active economic role in the farming community.

There are two other important subsets of the farmer segmentation, women and youth:

Women in agriculture

Women represent 43% of the agricultural labor force in developing countries, but they often have little decision-making power. Studies by the Global Forum on Agricultural Research, and the International Food Policy Research Institute indicate that women produce 25-30% less than their male counterparts, largely due to limited land tenure rights and lack of access to farm inputs, equipment, and information. Therefore, raising the productivity and returns of women farmers requires extension services directly targeted to them.

Youth in agriculture

Unlike aging Asia, there is a significant youth bulge in the labor force in Africa, which is a relatively young continent—especially in countries like Uganda where the median age, as of 2010, is 15 years.

The next generation of farmers is growing up in an environment of mobile phones and computers, making them likely to be interested in using these devices to determine how to improve their farming systems or to contact a farm support service. It is likely that they will be better educated, more amenable to trying new technologies, and will have a greater interest in higher value products and market linkages than previous generations. It is also probable that they may be more amenable to borrowing as individuals (rather than as groups) and more willing to pay for services that improve the profitability of their farming operation.

Progressive farmers will likely use technology to support their work with higher value, knowledge-intensive systems such as horticultural crops. Farmers interested in investing in technology-intensive farming systems will need to develop the business skills and market linkages needed to support such efforts. New technology requirements, in conjunction with individual approaches (rather than farmer groups), may have important consequences for how extension services operate with a new generation of farmers.

For extension agents working with the poor, these studies highlight the need to consider people's current livelihoods and long-term aspirations when developing extension programs—especially programs that aim to improve market options for different types of farmers. Extension systems must cater to more women and younger farmers. Doing so should stimulate a shift in the gender ratios of researchers and extension agents to farmers and produce a major shift in the role of communication technology to support farmers with more timely and diverse information.

Factors affecting market access

Millions of smallholders in developing countries face serious obstacles in advancing from subsistence farming to higher-income pathways. Studies by Barrett (2008) outline the prospects of smallholder farmers and Chapoto et al. (2013) provide detailed scenario options for farmers growing maize, cotton, and horticultural crops. They also offer sobering analyses that highlight the scale of the problems faced by smallholders and the generational timeframe it takes for even a few to escape rural poverty through farming. These studies help gauge the types of investments and outcomes that extension projects should expect and they stress that market linkage is not a panacea. Most smallholder farmers are unlikely to ever shift to high-income pathways. Extension services must be flexible to meet the needs of these different types of farmers.

There are numerous factors that affect farmers' prospects in the value chain and with establishing market linkages (see **Table 2**). These factors include location and business maturity within a target area, as well as access to infrastructure, agricultural services, and water and production technologies. The skills, education, and organization of the farming community are also important aspects in terms of their ambitions, discipline, and ability to plan, set goals, and follow an implementation schedule.

It is important to consider these factors when deciding whether to invest in a particular area to ensure that project designs improve market linkage prospects.

Table 2. Factors affecting market performance

Key factors	Specific details
Location	• Crop productivity depends on location attributes (temperatures, rainfall, and seasonality), because certain crops can only be grown in specific agro-ecozones. • Soils and soil fertility is important in terms of production levels. • Access to water is key to being able to manage production. • Market access is highly correlated with distance to market and access to roads. • Neven et al., (2009) found that suppliers of formal market options, such as supermarkets, were all within 100 kilometers of the urban center and close to major road networks.
Farm size	• The probability of being a net seller of staple grains increases significantly with land holdings of 4 ha and above (Barrett, 2008; Jayne et al, 2010). • Net buyers typically work land parcels of 2 ha and below (Barrett, 2008). • Farmers who supply supermarkets are 5 times larger than traditional farmers, 9-18 ha compared with 1.2 - 2.4 ha (Neven et al., 2009). • In traditional markets, most smallholder farmers are constrained in their ability to supply markets by their farm size and access to water.
Financial assets and linkage to financial services	• To invest in change, farmers need financing in the form of production loans, storage, trade capital, and insurance. Most get none of these. • Larger scale farmers, and those linked to formal markets, have access to formal financial services. • Net buyers generally have no access to formal financial services. • Poor farmers may be linked to savings groups. • Most farmers borrow from family, friends and moneylenders, or they receive credit through their inputs dealers who also buy their grains.
Ability to manage water resources	• Commercial farmers of staple and higher-value produce manage their water resources. • Farmers linked to higher value markets typically have access to irrigation, whereas most smallholders, especially those growing field crops, operate in a rainfed environment (Barham and Chitemi, 2009).
Costs of inputs	• High prices, availability, and financing for inputs are major barriers to their use (Chapoto et al., 2013). • Government procurement and delivery of fertilizer is notoriously slow and distribution is often given to only a few favored farmers. • The main reason for the difference in cost is internal transport and storage— after the port, poor road systems and outdated vehicles make domestic transport costs prohibitively high, resulting in the high cost of inputs and the low rate of uptake. • At the village level, the problem of high costs is exacerbated by poor quality inputs as disreputable dealers sell adulterated products. • The cost to establish production in many types of crops can require a farmer's entire savings and loan potential.

Key factors	Specific details
Transaction costs	• Farmers are unable to switch from subsistence crops to cash crops because the income gained by producing and selling cash crops is offset by the high costs (price of goods, or distance to market) of satisfying their own food needs in produce markets (Barrett, 2008).
Price volatility	• Grains tend to be more price stable than horticultural products. • Horticultural products suffer from boom and bust cycles that carry high risk (Chapoto et al., 2013). • With limited coordination of sales, farmers are unable to know when excess supply conditions will occur, and due to lack of storage and processing facilities, they cannot find alternative markets.
Access and adoption production technologies	• Farmers with access and the ability to buy technologies (such as seeds from improved varieties or fertilizer), and who can manage water resources have sizeable advantages over farmers who are unable to use such technologies. • Free government and NGO support services have been scaled back. Farmers who want extension support will need to co-invest in upgrading processes because most services will likely be fee-based soon to allow the greatest range of coverage.
Skills training	• Farmers that receive training through formal education and farm-based extension services are more likely to invest in new technologies, build their market linkages, and improve their production and incomes in a more sustainable manner.
Access to roads and ownership of transport	• Access to roads and transport is typically a function of location, while more remote and poor farmers have less market access than those farmers living in areas with more investment do.
Use of farm labor	• Whether farmers hire or provide farm labor to others is a function of their land holdings; larger farmers tend to hire more labor in the absence of mechanized equipment. Farmers who are net buyers for their staple foods may be required to offer their labor to farmers with larger land holdings. Providing labor often reduces the productivity of smallholder farmers, as they will prepare their land or work their land at less than optimal times.
Education	• Education levels are highly correlated with market access levels. • This is typically a legacy issue in that wealthier households can educate their children who then run, or manage, the farms. • Women tend to have lower levels of education than men, which reduce their power level and ability to make decisions within their families and societies.
Linkage to groups	• In most situations, farmers in groups have been more likely to receive support from extension workers. Learning is more rapid in groups compared with physically meeting many individuals. Peer support helps farmers to learn together, stick to plans, and sell collectively. Group sales associated with aggregated sale lots are more likely to gain premium prices compared to farmers who sell as individuals.
Use of information and communication technologies	• Virtually all farmers now have access to mobile technologies. Farmers are using this technology to communicate with service providers, colleagues and buyers, and to learn about technology and market opportunities. • Systematic data collection about costing and sales records, in partnership with extension, will allow farmers to benchmark their operations and will allow extension workers to demonstrate the type of cost structures that are used by farmers that are more successful.
Marketing	• A critical challenge for smallholder farmers is the size of their production units and the associated economies of scale. To reduce the cost of inputs and improve sale prices, farmers can work together to bulk buy and market their goods.
Business relations	• Farmers with strong business relationships with buyers can access market information that is more reliable and can use their links to access better market options.

Source: Authors

In many developing countries, the balance of investments is skewed toward supporting communities that face regular food insecurity and need support to engage with markets more frequently. Those designing market linkage projects must decide where in the market process to begin, what factors might affect market access, and what the best entry point is for the type of farmers involved.

Matching farmers and markets

The goal in linking farmers to markets is not to link the most vulnerable farmers with the highest value or most dynamic markets, but to invest in ways that enable specific types of farmers, and communities of farmers, to access markets that match their capacities, production, investment, and risk profiles. This is a key distinction that extension must make when deciding how to best support smallholder farmers. Most smallholder farmers, many living in remote rural areas, are unlikely to be able to link to formal markets and many will always struggle to link consistently, even to local informal markets.

Extension must be able to recognize different farmer segments and find ways to work effectively with these types of farmers. Extension teams have several approaches they can take to support different types of players in a territory—many of them involving co-investment by the farmers. Support from extension projects and programs may be quite limited as compared with the investment options that may be available to farmers, local businesses, and the local government. Therefore, projects should focus less on meager subsidies and more on linkages that improve food security and livelihoods.

In the market component of the development process, the focus of investments depends on the initial status of farmers within a target area. The target farmers' goals, options, and aspirations also influence the decisions about which products to invest in and markets to target. There are other issues that affect how decisions are made, such as the political stability of the area, local food security conditions, environmental status, wealth of the target community, market conditions, and the maturity of the local private sector. Other key criteria for development programs include the capacities and skills of the target rural communities, as well as the production and marketing experience of the extension or facilitation team.

Differentiated marketing strategies

All marketing approaches require that support agencies undertake a series of studies to understand key issues such as: (i) market demand, (ii) local production conditions, (iii) the business environment, (iv) interests of farmers and traders, and (v) ability to access business support services. Depending on the scale of the investment, market studies will have to scope the level of analysis to the supply chain actors and identify specific products and customer segments.

One of the critical issues raised by the marketing analysis of smallholder farmers is the clear division in potential for commercialization based on land size. If this analysis holds, it may present opportunities to use certain filters to segment farmers and design customized intervention programs for each specific type of farmer.

Development horizons for land-constrained farmers

The development prospects for land-constrained smallholders in poor countries are limited. Even with significant gains in technology, most of these farming families lack sufficient land to advance to middle income levels. Investments in this social segment should aim to support resilience and generational change. Improvements in food security and modest improvements in market linkage will enable more of these farmers to educate their children and give them better prospects for off-farm activities. Increasing production of staple foods is unlikely to provide major increases in income because of the low value of grains and the fact that production is limited by land area and labor. However, production gains will reduce hunger and food purchases as farmers shift from net buyers to market neutrality and may create

a limited surplus for sales. Support for market linkage will improve aspects of collective marketing and the ability to negotiate with buyers. In prevailing resource and market conditions, these farmers should try to improve the consistency in earnings and develop greater resilience through food and income stability.

Marketing strategies for land-constrained farmers

Land-constrained farmers tend to be less organized and educated than landowners with larger holdings so more work is required to help them organize. According to analysis from several market-focused teams, most smallholder farmers in areas such as Sub-Saharan Africa rarely have enough surpluses to sell in the marketplace because of limited land size and poor access to technologies that can improve productivity. These farmers might sell some produce in the market after harvest, but over the course of the year they end up being net buyers of the major food crops in which they invest most of their land and labor.

Therefore, these farmers require support programs to improve their food security, as well as organizations to help them develop the ability to begin upgrading. When farmers are more organized, they can establish plans to help reduce the hungry months by first becoming market neutral in their sales of staple commodities. One strategy to improve their income is to use collective marketing for bulk sales to identified buyers. Catholic Relief Services (CRS) has had considerable success in helping poor farmers to organize through savings and loans communities (SILCs) (Vanmeenen 2010) before focusing on their production and marketing options. This first stage of support builds trust and financial literacy within the group, both of which are important for building durable farmer groups.

Diversification must be integrated from the outset of an upgrading approach so farmers can incrementally improve their staple food and field cropping systems and invest in small plots for higher value products and small livestock options **(Figure 3)** to smooth and increase their incomes. The limitations in land size will always restrict the ability of these farmers to increase their revenues with low value, extensive crops.

Key types of interventions include:

- Begin the process by introducing a savings and loans approach to build trust and group cohesion;
- Analyze production systems and market opportunities for staple crops and higher value crop options;
- Improve the productivity of key staples to improve food security;
- Promote diversification of higher income products for more stable cash flow to support savings and steady asset growth;
- Seek off-farm labor options;
- Create farmer groups to learn new skills and gain from scale;
- Deliver new technologies to raise on-farm productivity (seed and fertilizer);
- Provide financial education for better money management;
- Begin “value chain” methods to help farmers establish farm enterprises and sell surplus produce;
- Improve opportunities for women and youth;
- Support market linkage with an overall household upgrading process that also supports nutrition and sanitation;
- Support farmer investment in education for their children.

Progress based on developmental investment will be slow for these farmers. With few assets and limited education, it might take up to ten years to finish an effective process of community organization, market identification, production increases, and improved market linkage.

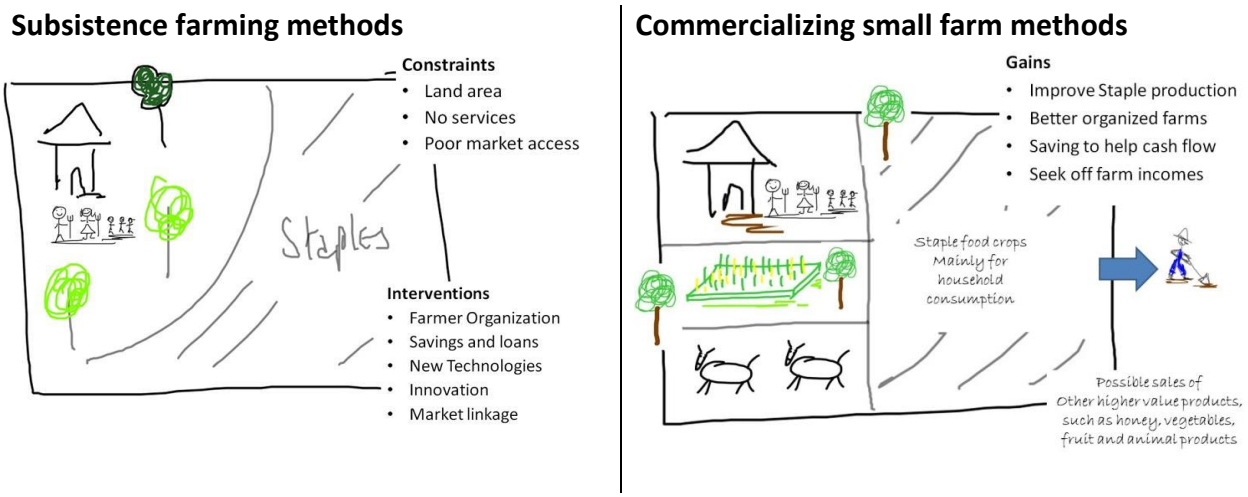

Figure 3. Transition from subsistence farming methods to more commercial farming methods

Source: Authors

Development horizons for farmers with "under-utilized" land and assets

Prospects for farmers with land and labor assets that they are unable to use effectively can change quickly when given the opportunity to link with more stable markets. These farmers are likely to show gains with access to improved production technologies. There are many cases where growth, such as staple food crops for WFP procurement programs, or in higher value crops for exports and urban domestic markets, provide farmers with stable income gains (Seville et al., 2011).

With the ability to expand production and productivity, gains by this segment of the farming community will rapidly go beyond reducing hunger and shift to increasing surpluses and bulk sales of key staple and cash crops. When these farmers are able to benefit from economies of scale, they can rely more on a less diversified market strategy that allows them to raise their incomes through greater specialization in value chains.

Marketing strategies for more endowed farmers

For those farmers with more than three or four hectares of land, it will be more effective to adopt a more aggressive approach to technology adoption that links them to higher volume and higher return market opportunities. These types of farmers will require support to increase their area of production and raise productivity and quality. An important part of this strategy will be helping groups of farmers to manage their assets more effectively and improve their business management in order to become consistent net sellers in the market.

Given the ability to expand their area of production, this group of farmers can focus on more extensive crops as their main value chains, with programs focused on improving their business capacity **(Figure 4)**. Improving these farmers' business skills also includes strengthening group action and links to business services, which will help them improve their labor use and productivity.

These farmers will benefit from:

- Interventions that support business planning and reinvestment in farm enterprises;
- Value chain methods that enable farmer groups to identify and secure new business opportunities;
- Use of new technologies that raise on-farm productivity;
- Improved financial and business planning to support more systematic farming;
- Aggregating produce for sale to target buyers;

- Better market linkage so farmers can develop farm enterprises and increase sales to target markets;
- Increasing women's roles in management and marketing.

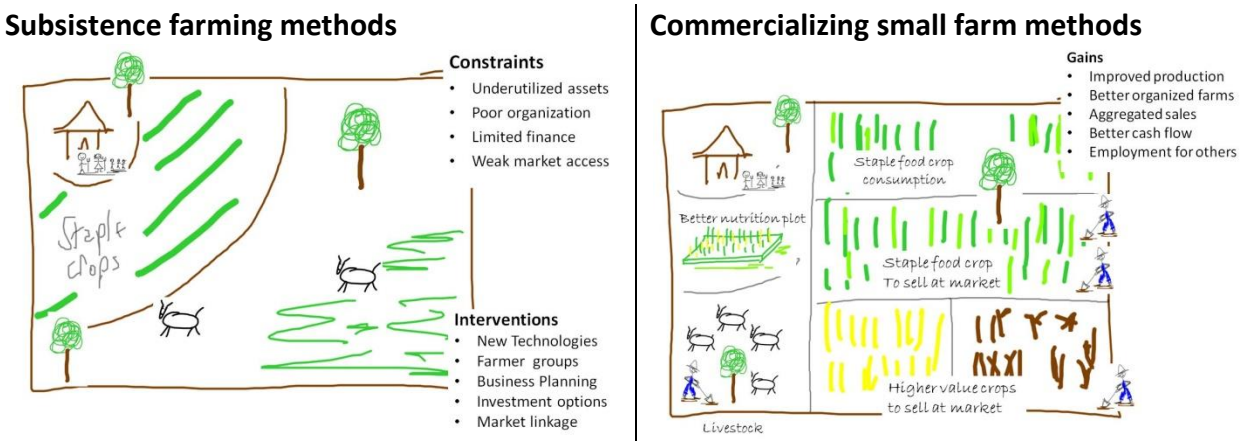

Figure 4. Transition for larger farmers from subsistence to more commercial farming methods

Source: Authors

Progress based on private or public investments may take three to five years, from start to stable market linkage, when linked to growth markets.

Market linkage approaches

There are many options for interventions based on market types and farmer assets. Smallholders require diversified business plans (including non-farm options) which may be through combinations of linking to formal and informal markets. Formal markets offer the best returns for smallholders with somewhat larger landholdings. Some form of subsidy and links to structured procurement can be a more viable long-term option for more land-constrained farmers. As competition grows, millions of rural people will opt out of farming. This transition process will require strong policies and support measures to ensure them a soft landing.

Market linkage in formal markets

There are several ways for smallholders to access formal markets:

- Smallholders actively seek links with new supply chains;
- Changes in existing supply chains that lead to more formalization;
- Initiatives by lead firms to engage farmers in more modern market systems;
- Initiatives by governments or development agencies to support greater smallholder engagement in formal markets.

Investing in value chains

Value chain methods are intended to provide a systematic process to improve market linkage for farmers. Specifically the approach aims to change the buying and selling culture from the "occasional" and "opportunistic" sales transactions of individual farmers to transient traders, to a more consistent sales approach that builds relationships between groups of organized farmers selling to known trading partners. Whether a market process is led through a company, an extension agent, a farmer organization or a chain facilitator, the process generally follows a set of basic steps (with more details Annex 1):

1. Organize support staff and meet the community (training and innovation);
2. Identify products that are in demand and farmers who are interested in supplying those goods;
3. Build relationships with buyers in formal markets to understand pertinent information (market requirements, demand, services available through the supply chain, options for trading mechanisms);
4. Collect information for a business plan (production, marketing, finance);
5. Write a business plan and prepare farmer implementation schedules (produce as individuals, but follow a group plan);
6. Market the produce as a group;
7. Review the agro-enterprise performance of the group;
8. Review, improve, and scale up the process.

The level and structure of value chain investments depends on the goal of the intervention, which is driven by the type of farmer and investor (private sector, informal private sector, government, non-governmental organization, or emergency support).

In its "path to prosperity" framework, CRS has identified three main levels of farmers, **Figure 5**:

Level 1: Farmers who are in a state of recovery; these farmers have infrequent market sales.

Level 2: Farmers who have assets, but only occasionally have sales.

Level 3: Farmers who have more consistent market sales, but seek linkages to higher value and more formal markets.

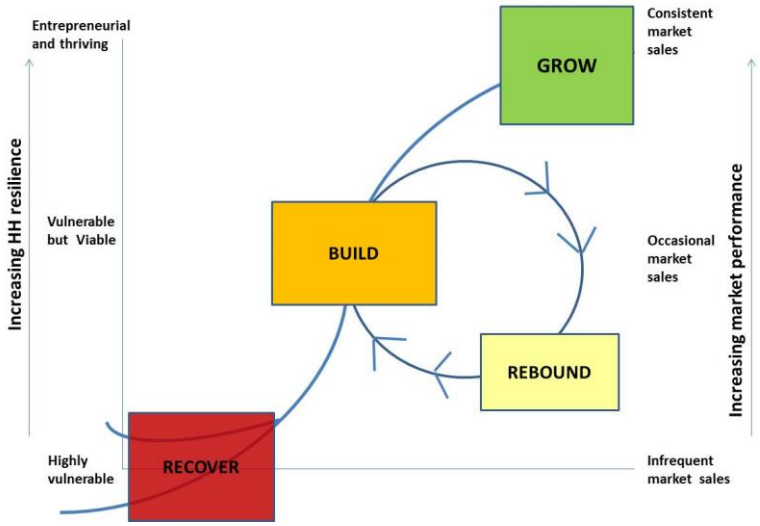

Figure 5. Path to Prosperity Framework

Source: Authors

Depending on the local context and farmer, a number of possible project entry points have been identified (**Table 3)**. Decisions on which entry point to select will be based on a combination of participatory analysis with the farmers, market studies, and farming systems analysis.

At the first "recover" level, the emphasis for the value chain team will be to support the rebuilding of the farmer group. The program will invest in basic assets for the farmers, often involving the provision of seeds and fertilizer. These farmers generally need to increase their productivity just to feed themselves before they are able to produce a surplus to sell in the market.

At the second level, the value chain team will focus on skills training and working on specific types of innovation analysis with farmers. Skills training may focus on issues such as setting up a savings and loan system within the group so farmers can save income to invest in inputs. The farmers will learn about basic market studies and establishing links to traders and basic services on a more regular basis. To improve linkage, farmers will need to aggregate their goods for sale.

At the third level, farmers are already selling to a market. In this case, the value chain team will focus on helping farmers to optimize their production and to build links with specific buyers. When farmers are already well established, the emphasis of the support will be to build linkages to other service providers, particularly from input suppliers, extension, and financial services. The approach will also help farmers to work with higher order farmer associations, rather than groups, and to find ways of adding value to their produce.

Each level in the value chain model described above has different entry points and different strategies for engaging farmers in the market process **(Table 3)**.

Table 3. Overview of possible project entry points

Entry Points	Startup activities
Natural resource management	Upgrade production sites before investing in commercial farming (essential in areas suffering erosion)
Pilot testing	Work with producers and other chain actors to test new innovations before going to commercial scale
Pre-selected commodity	Go straight to market analysis
Poor, unorganized farmers	Form groups and build social capital with savings-led methods before engaging in market linkage
More organized farmers	Focus on strengthening market linkages
Existing buyer or contract farming	Develop business plans and initiate an investment program
Support for business development services	Strengthen or develop critical business service

Source: Authors

Two of the most successful methods used by businesses to increase smallholders' market access are (i) contract farming, where farmers are locked in value chains for specific products, and (ii) certification schemes, where farmers must comply with product and trading specifications to sell to a specific market.

Contract farming

Contract farming provides smallholders with a direct sales agreement for a target market. The agreement is usually based on specifications such as price, quality standards, and sales volumes. Contracting has many variations but is generally supported by an intermediary firm who secures the market and then sources smallholder produce to aggregate supply volumes and control quality. These intermediary firms often support financing and technology and also produce logistics that significantly reduces risks for smallholders.

CASE STUDY: INDIA - There are cases in India where farmers have had to take on relatively large loans, based on contractual agreements. Later, they were later unable to repay when poor rains led to crop failure, or when market prices collapsed. This was highlighted in 2006, when crop failures in the cotton markets led to a series of suicides as farmers chose to die rather than hand over their farms to the debt collectors. Yet, crop insurance schemes associated with sales agreements are rare (ref: Wikipedia: Farmers' Suicides in India).

Contracting is used in many formal trading arrangements for goods such as coffee, cocoa, cotton, and high value horticultural produce for domestic and export markets. As countries urbanize and food systems are formalized, contracting is used to support traceability in supply chains and to ensure compliance with food quality standards. The rise in formal food markets, such as fast food restaurants and supermarkets, has also increased contracting (Reardon, 2011; Reardon and Gulati, 2008). Farmers are attracted to contracting because it allows them to access a more consistent market. Pricing in contract agreements is often competitive with farmers getting slightly below prevailing market prices. They agree to these conditions because they prefer consistent pricing to the highly volatile informal market situation (Kaganzi et al., 2009). Contract farmers also seek other benefits such as access to new technologies, financing, and improved social capital through farmer organizations that provide prospects for learning as well as future market opportunities. The disadvantage of contract farming is that smallholder inclusion may be limited to the start-up phase until the market is filled by larger, more competitive farmers.

Certification schemes

Certification schemes that support smallholder production and marketing have been growing from a small volume base for more than 20 years. Now, certification is common in the retail sector and there are a number of leading certification agencies with growing market share, including Fair trade, Organic, Utz, and RainForest Alliance. Major food processing and retail companies looking for a more sustainable supply and ways to attract consumers who want assurances that their purchases were ethically produced have recently bolstered the certified market segment.

Unlike contracting that focuses on supply coordination, fair trade is based on cooperation. The schemes usually provide farmers with a minimum floor price for their goods and a premium price for highest quality goods. Social benefits, such as health clinics, schools, and roads, complement the commercial advantages. Studies show that many farmers are as interested in these non-price support mechanisms as they are in price premiums, which underscores the value that farmers place on access to social support (Setboonsarng, 2008).

The Fair Trade movement was particularly successful during the extended commodity price collapse from the 1980s until the end of the 1990s. However, as market prices strengthened, and then climbed to historic highs in 2008, many farmers, including some of the poorest, found it more lucrative to use inorganic production systems and sell through conventional markets rather than sell through fair trade and organic markets, which can have lower production rates (Gingrich and King, 2012).

This change in market prices has put pressure on the certification community to find new market options. FTUSA is exploring opportunities to offer certification to non-cooperative farmers and estate farms. This new initiative is an attempt to bring the Fair Trade concept to a new set of suppliers. Given that up to 70% of farmers in Africa do not sell their goods through cooperatives, the potential for this new approach is considerable.

Public-private approaches to value chain investment - inclusive business models

As formal markets expand through globalization and market consolidation, major food companies are actively seeking new sources of supply and are investing in local retail chains in emerging economies. Smallholders can be successful partners if they can meet the high quality requirements and competitive nature of these new markets. Companies and development agencies are converging on the idea of "inclusive business models" to help bridge the complex worlds of formal corporate business and informal smallholders **(Figure 6a)**. The concept of an extended "new business model," that goes well beyond the firm to span many unassociated chain actors in a specific value chain, is shown in **Figure 6b**.

This model suggests a higher level of integration compared with more traditional supply chain arrangements.

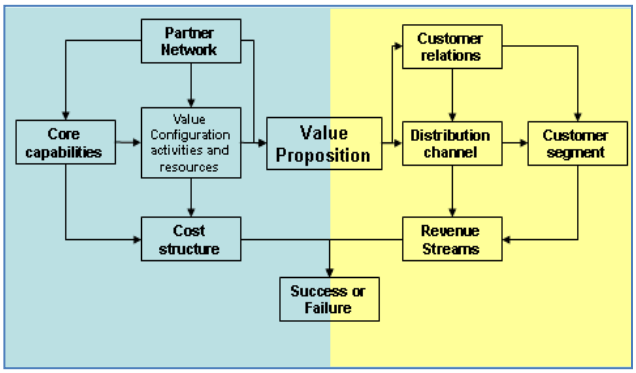

Figure 6a. Business model based on single firm activities

Source: Vorley et al., 2008

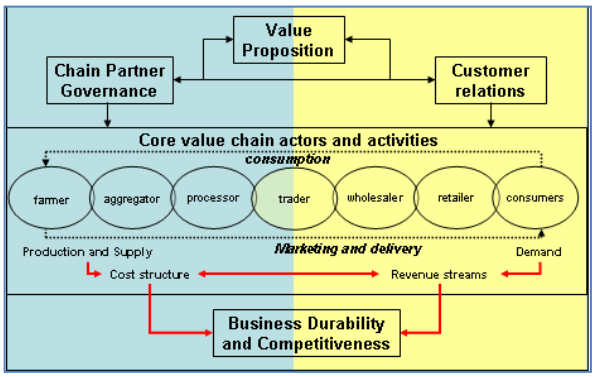

Figure 6b. Business model based on integration of value chain partners

Source: Authors

The motivation of companies to invest time and resources to source from small-scale producers varies. Company motivations range from investing in existing supply chains with small-scale producers to improve productivity and quality (supply), and developing new supply chains for new products (ethical markets), to contributing to local development through their sourcing practices (reputation).

There is consistent interest is in working to achieve reliable supply chains with small-scale producers who can meet the quality, consistency, and cost requirements of the markets. Contributing to positive social development (e.g., improved income and food security) and the adoption of good agricultural practices helps companies to avoid risk while bolstering their positive reputation.

Inclusive business models are better thought of as "more inclusive business models" where the goal is to increase accessibility to farmers with limited assets, and to women farmers—and/or to create better inclusion with greater stability, durability, or benefits.

An approach to more inclusive business was explored in the *New Business Models for Sustainable Trading Relationships* project that developed a set of principles to guide project design and evaluation that were drawn from cases, and those based on practices associated with increased and better inclusion. **Figure 7** depicts the new business model principle summary from the CIAT LINK Methodology (Lundy et al., 2012).

Progress based on developmental investment will be slow for these farmers. With few assets and limited education, it might take up to ten years to finish an effective process of community organization, market identification, production increases, and improved market linkage. The objective of these principles is to provide a framework for diagnosing gaps in existing supply chains and prioritizing and guiding investment to improve trading relationships. Findings from preliminary work[2] suggest that

[2] For information on the preliminary work, see the New Business Models for Sustainable Trading Relationships project's Case Study: *Dried Beans in Ethiopia: Increasing food security through trade* written by Ferris, S., Paschall, M., Seville, D., Dadi, L., and Kumssa, G., published by International Institute for Environment and Development/Sustainable Food Lab , 2012.

having a neutral third party from the private or public sector serve as facilitator is beneficial when working on inclusive business models that connect formal buyers with smallholder farmers. This lead facilitator must work across the chain and deploy different sets of advisors who can offer specialized technical and marketing support at key points in the value chain, such as farmer support, trade support, and retail linkage.

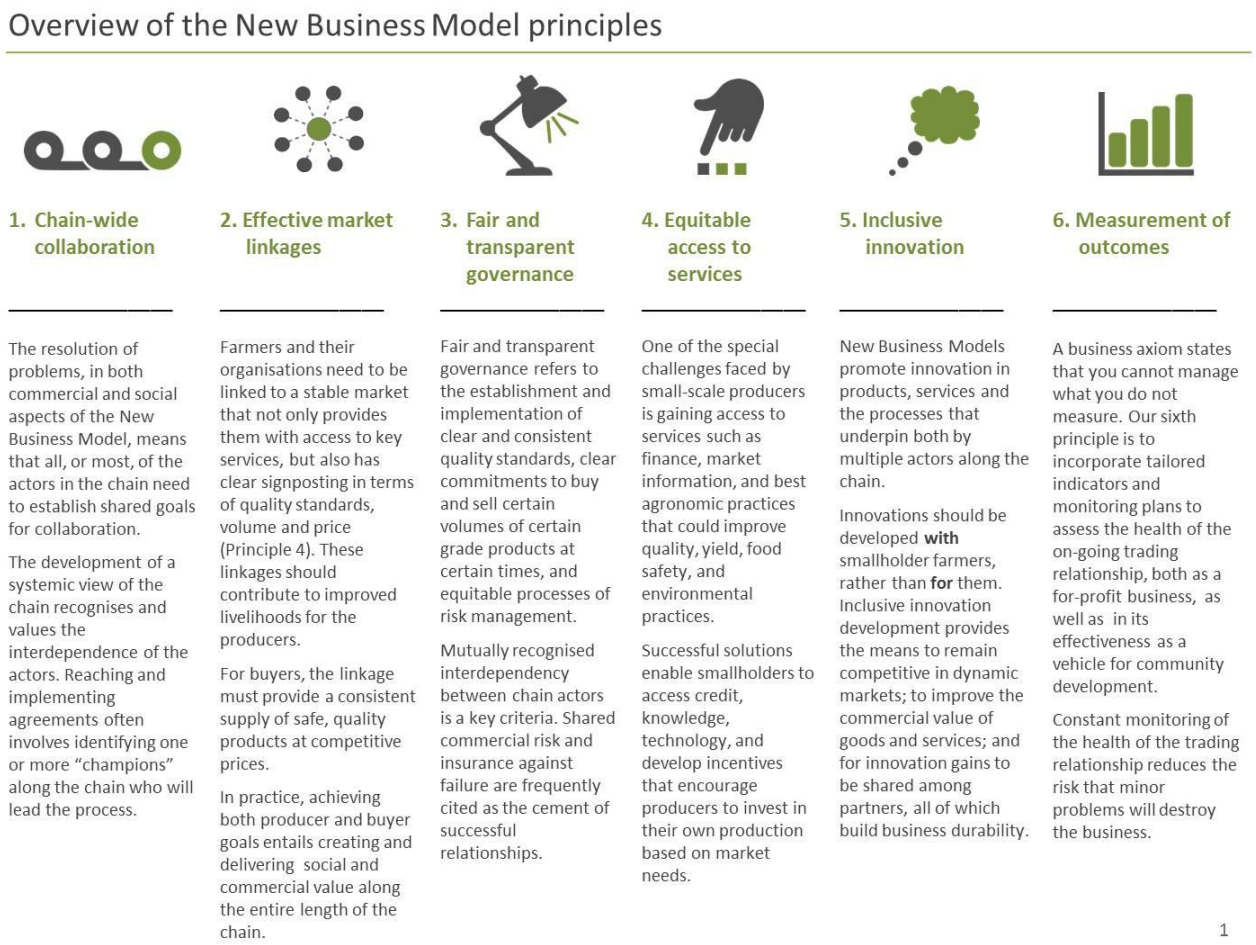

Figure 7. New business model principles

Source: Lundy et al., 2012

Putting this into practice, companies often work with local partners, such as NGOs, to facilitate discussion with supply chain and farmer partners and to bring in complementary investments. The information in **Figure 8** demonstrates the strategic territory. Inclusive business model partnerships have the ability to bring together buyers' technical skills and market access with the development and facilitation skills of NGOs and other partners to develop an integrated strategy. That strategy may include changes in the lead firm's product specifications and purchasing practices, such as payment time, the structure of the intermediary, (e.g., an outgrower scheme that provides technical assistance and extends credit to investments in upgrading skills in farmers), and through complementary public investments in livelihood strategy (e.g., diversification or asset building).

In another example, a company worked through its supply chain (in partnership with research and development organizations) to bring bouquets of flowers, grown by smallholders in Kenya, directly to retail market. This increased value for the company and farmers alike while also raising value by designing a final consumer product. A great deal of capacity building and external coordination was required while the local business developed the ability to effectively manage the challenge of supply chain planning. Moving from push (selling what you grow) to pull (selling what the consumer demands) requires significant supply chain coordination.

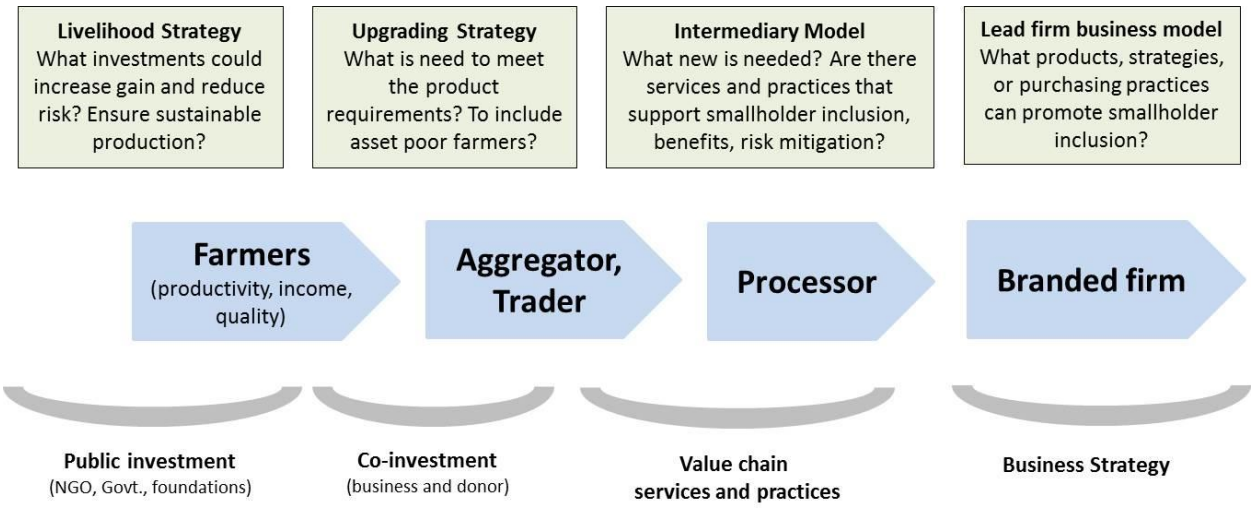

Figure 8. Facilitated chain support

Source: Authors

Having an "ethical agent" to deal with the complexity of linking with retail buyers was critical in the design and capacity building process. The ethical agent was an experienced commercial consultant who used his technical knowledge and social networks to help smallholders, cooperatives, and development agencies navigate the final links in the market chain. This approach was tested with informal smallholder flower growers in Kenya, who sold through an emerging local flower aggregator, into the retail market in the UK (Buxton and Vorley, 2012).

Formal markets have the most challenging requirements for quality, consistency, and, often, cost. Partnering with companies in the supply chain to develop business models with policies and practices that meet the needs of smallholders, while also complementing investments to upgrade their skills, can be a very effective way of creating market linkages. To be successful, it is necessary to ensure that companies have the patience needed to invest in the process and that farmers have the commitment and ability to meet the requirements.

Market linkage within informal markets

Most of the market linkage projects established in emerging economies in the past 15-20 years supported greater integration of farmers within the informal market sector. There are many examples of farmers who were able to sell their periodic small-farm surpluses in local village, district, and national markets after they received support and training as groups. A major reason that most farm produce is sold in informal markets is because formal markets are often limited in size and produce volume, and

the cost for most buyers and sellers is prohibitive. The lessons learned in supplying the informal sector are, in many ways, a stepping-stone to becoming a reliable supplier of quality goods to a higher-paying formal buyer.

Formal public markets

In the past ten years, there has been a renewed interest from governments and international donors for supporting public procurement systems that buy from smallholder farmers to assist food insecure families. These public buying schemes include the previously mentioned WFP's P4P program, and the US government's LRP programs. Public buying methods that target smallholder producers are also being established by a number of national governments to support their poverty reduction programs and strengthen their institutional procurement systems.

These new initiatives are of considerable interest to development agencies as they try to find a win-win situation wherein governments intentionally buy food products from smallholder farmers that are then allocated to a range of food distribution needs.

CASE STUDY: Purchase for Progress (P4P) is a World Food Program (WFP) pilot project being implemented in 21 countries in Africa, Latin America, and Asia. P4P uses the power of formal public procurement markets to provide more stable markets for smallholder farmers. P4P works with organized farmers who can regularly sell a surplus of a staple food. The WFP, or local governments, use the procured goods to supply safety net services for food insecure clients. From 2008–2013, P4P purchased 270,000 metric tons of grains from smallholder farmers with a value of over US$100 million.

Despite success in creating new markets, several challenges remain for P4P programs in terms of linking with extension programs. Smallholder farmers and their support organizations require considerable investment to support production, storage, and marketing capacity to sell at the required standard. There is also a lack of consistent training methods for different segments of farmers, especially the poorer farmers with limited land.

One of the main outcomes from the pilot has been the steady move of the P4P procurement teams towards public school feeding programs as the preferred and more stable delivery market.

Sustainability and business development services

For agro-enterprise projects to have long-term success, producers and other chain actors must have links with business development services (BDS). In many cases, a value chain project will provide business services to a target farming community at the outset. This can be an effective strategy when starting a process, but many projects fail if they provide services to farmers without making provisions for them to access those services after the project ends.

To avoid this, many value chain projects now refrain from providing farmers with handouts or proxy services, relying instead on building the capacity of farmers and providing links to local business development services. There is a wide range of services, financial and non-financial, that small or medium-sized agricultural enterprises may need to improve their efficiency and investments. The types of BDS services commonly provided to small enterprises are shown in **Table 4**.

In situations where business services are present, but weak, the value chain support team should find ways to strengthen the local service providers. Where business services do not exist, value chain teams may need to work with local volunteers or find private sector agents and train them to provide basic services in the target zone.

Table 4. Types of support services provided to the agri-food sector by category

Type	Examples of service provided	
Single service providers	▪ Fertilizer suppliers ▪ Seed merchants ▪ Millers ▪ Transport	▪ Market information price ▪ Warehousing ▪ Infrastructure – (roads, power, water) ▪ Telecommunications
Financial service providers	▪ Savings and loans groups ▪ Savings and Credit Cooperatives ▪ Micro-finance institutions	▪ Formal banks ▪ Insurance brokers ▪ Mobile lenders or banks
General service providers	▪ Input supply ▪ Market intelligence ▪ Market brokerage ▪ Farmer organization	▪ Market research ▪ Business management ▪ Legal services ▪ Food safety, quality, compliance
Sector/product specific	▪ Veterinary services ▪ Agricultural extension ▪ Technical assistance and training	▪ Postharvest: storage, processing, grading, packing
New business model	▪ Certification services ▪ Inclusive chain-wide service support	

Source: Authors

Changing the Role of Modern Extension Services

The consistency of the farmer segmentation across major areas of Africa suggests that extension methods should take these categories of farmers into account when developing their intervention programs. These intervention packages may be based on criteria such as assets, land size, soil fertility, production systems, lead products, access to water, and proximity to markets. When considering the best support measures to provide, it is necessary to consider farmers' aspirations, perspectives, gender, age, and whether to use an approach that targets farmer groups, or one that targets individual farmers. It is also important to consider the ability and interest of farmers to pay for services and/or to use communication technology.

For the smallholder agricultural community to take better advantage of their market opportunities, extension services will require fundamental changes. Modern services must be more agile and flexible regarding the needs of farmers, and new types of institutional arrangements are needed such that different types of service providers can meet the needs of particular farming segments.

Inefficiency in agricultural extension services is a result of many challenges; key amongst them is lack of investment in government services, which leads to staff with limited operational budgets and outdated skill sets. Another challenge is the diverse, yet less coordinated mix of development contractors and NGOs. Whilst many contractors and NGO's are better resourced than Government counterparts, they are a mixed set of actors, with ranging levels of capacity, generally working on short-term projects. As a result farmers may experience weak long term support from Government, and only bursts of stronger support from civil society actors.

The provision of private sector extension services is usually limited to select crops, mainly export products that target more commercial smallholder farmers. A number of companies such as MARS, Cadbury, Nestle, Green Mountain Coffee Roasters, and Starbucks are investing heavily in certification

schemes. These schemes are supported by longer-term production-based extension services in an effort to halt the decline in productivity and work towards more sustainable farming systems.

The scale of the task is daunting and the NGO sector is promoting community-based service providers that use a mix of voluntary and fee charging support staff who are trained by project staff to continue providing essential services when projects end.

Diversifying service delivery will require new institutional arrangements that allow for combinations of support services with representation from:

- Government field agents
- INGOs, NGOs, CBOs field agents
- Private sector field agents
- Community volunteers
- Private sector ICT based service providers
- Business-focused farmer organizations

These players must find new and more effective ways of working together within a business framework. Service providers will have to place greater emphasis on the business process if they are to create competitive options for farmers.

Coordinating diverse actors

In most countries, there is only a cursory attempt to coordinate the various types of extension service providers. Government agencies have their own priorities and investment strategies and, while there are some attempts to coordinate with the larger international donors and their favored NGO's, the process of coordinating planning, implementation, and evaluation remains weak.

Reasons for poor coordination lie in a long historical process of disaffection, fueled by differing goals and unbalanced power relations. Many international development agencies have shied away from investing in what they consider to be poorly managed government systems. At the same time governments, and to some extent the private sector, have targeted their extension and input resources to richer farmers and landowners, leading to the perception that they have ignored the plight of the poor.

If extension services are to have a more meaningful impact, it is necessary to invest in harmonizing and coordinating the efforts and investments of the various government ministries with those of the larger external agencies, both public and private. Improved planning and investment processes will help focus resources more effectively while helping to remove many inefficiencies in the agricultural system that are hampering progress.

Information management

Good management of a sector relies on access to good information. Lack of investment in the agricultural ministerial sector means that information about the production, productivity, and profitability of most crops and livestock products is uncertain.

Although information systems are improving, and national statistical units are starting to work in a more transparent fashion, many governments remain reluctant to share data on the performance of certain sectors, with agriculture and food security being a particularly sensitive area.

Most extension programs are limited in their scope and capability because of poor coordination and the use of antiquated communication and information gathering systems. This lack of maturity in the sector must be clearly understood and systems must be designed and deployed to improve data intelligence, analysis, and use.

Extension services would benefit significantly from being better informed about the needs of farmers within specific value chains. Potential donors may also be interested in investing in government and NGO extension services if they had better information on the targeting of resources and the impact that improved extension is having on farmers.

The advent of Information and Communication Technologies (ICT), and the rapid spread of mobile-based ICT, is transforming management systems throughout the world. The use of ICT is a critical building block in the upgrading of national extension services. The NGO community has a major role to play in this process because they have access to the latest ICT technologies and they have broad coverage on the ground. More efforts are needed to link technology users in order to modernize the other parts of extension. Closer ties among government and NGO's, universities, and agricultural research teams would result in better data analysis and interpretation.

Reform in skill sets

Another critical area of change lies in the ability of managers and field agents to shift from a focus on production to a broader set of skills, and a greater focus on marketing, business, and financial services. For the most part, the larger NGO projects have taken a more businesslike approach in agricultural projects and are hiring staff with more business skills. Most government research and extension agencies have been slow to reform their systems to work in a more liberalized market economy.

It is necessary to hire and retain staff with expertise in community-based learning methods if extension services are to modernize. These include adult learning and participatory methods to enable extension agents to work with farmers as equal partners rather than telling them what to do. Extension agents will have to unlearn "one size fits all" methods and learn to work with farmers and their organizations in ways that will help them undertake information gathering programs to inform them about their situations and develop plans that meet local needs. These types of analyses must be based on market and business functions to help farmers invest in individualized business opportunities, rather than the previous systems of centralized planning supported by subsidizing inputs, storage, and buying through procurement boards. Farmers and their organizations will have to become adept in basic business methods including:

- Analyzing market opportunities
- Assessing production costs
- Evaluating local service options
- Developing business plans
- Negotiating new business models with chain partners
- Evaluating profitability on a seasonal basis
- Generating long term upgrading plans that include chain-wide processes

> "According to lead firms, farmers respond better to a business service approach than to methods that focus on production support."
>
> Source: Shaun Ferris

For many years, the private sector has focused on profit and sustainability planning. There is, however, a realization that the need for new sources of production will require the sector to reach out to marginal farming communities and help strengthen farmer organizations to improve productivity and help them develop business skills, find market opportunities, and navigate modern market chains.

Although the commercial sector is improving its business-oriented extension services, it tends to work with the more endowed farmers. The challenge is to find ways of introducing a business culture to the other extension systems, and to accelerate the use of business-oriented training for the range of farmers in the more vulnerable farming community. This includes farmers with limited assets, vulnerable—but market-viable farmers—and specific target groups such as women and youth.

Extension's role in the marketing approach

In order to help farmers improve their competitiveness within a market chain or business model process, extension must simultaneously focus on farmer organization and on improving the management skills of existing structures.

Some examples of methods for farmer organization in market linkage include:

- Farmer groups in collective marketing
- Cooperative support
- Value chain support within the chain
- Agri-dealer networks
- Agent networks
- Fee-based community service providers

Farmer groups in collective marketing

Results from a study undertaken by Catholic Relief Services and the International Centre for Tropical Agriculture in 2005–2006 indicated that farmers required multiple skills to improve their market linkage, Ashby et al, 2011. The study found that the desired set of skills was common across wealth levels and locations in the farmer groups. The skill sets were classified as follows: (1) group management skills; (2) financial skills (starting with internal savings and lending); (3) marketing skills; (4) innovation skills for accessing new technology; (5) sustainable production and natural resource management skills.

Most groups proactively sought to develop most, if not all, of these skill sets, even in the absence of external support. This is a strong signal to modern extension service providers that their strategies could benefit from developing programs that address the demand for this set of skills.

The area of innovation is also often limited to ideas of demonstration plots, but this is a somewhat outdated, top-down, approach. Extension systems must significantly change their approach to farmer-led experimentation and information gathering if innovation is to tackle the highly diverse needs of farming communities.

Farmer organization to support collective marketing

One of the most important aspects of a marketing approach project is to help farmers organize and gain economies of scale so they can compete with larger farmers and imports. Extension agencies must approach projects and programs with a strategy to build farmers' capability to buy inputs in bulk, and later the agencies must support bulked sales of the produce.

In a typical value chain project the market approach has a basic market analysis and upgrading package. This process entails conducting a market analysis, using improved technologies to enhance productivity, bulk harvesting, and selling to an identified buyer. The ultimate goal of an extensive process, however, will be leaving behind some form of farmer organization that supports durable trading relationships. This section explores some of the farmer organizations being tested and scaled by various extension services that have successfully linked farmers to markets.

Collective marketing groups

At the most basic level, extension workers can help organize farmers into groups where they can learn new technologies and prepare plans to produce a specific level of surplus for sale to a local trader. Organizing farmers into groups is beneficial for training and provides farmers with better negotiating power at the time of sale through collective marketing.

The diagram below, **Figure 9**, provides an example of a flexible approach to aggregate produce for sales. The approach can be used at the local level with less than 100 farmers. When only a few farmers are

involved, the management can be minimal, and meetings may only be required to agree on sales conditions, at the start of the season, then at the time of storage, and sales. It is important that when farmers start to associate beyond the primary group, they have a transparent system for group representation at the association level and they have reporting mechanisms to provide regular and timely feedback to members. This process can be scaled to include several thousand farmers, but as the number of associated groups grows, more effort is required at the second order level to provide effective and transparent management.

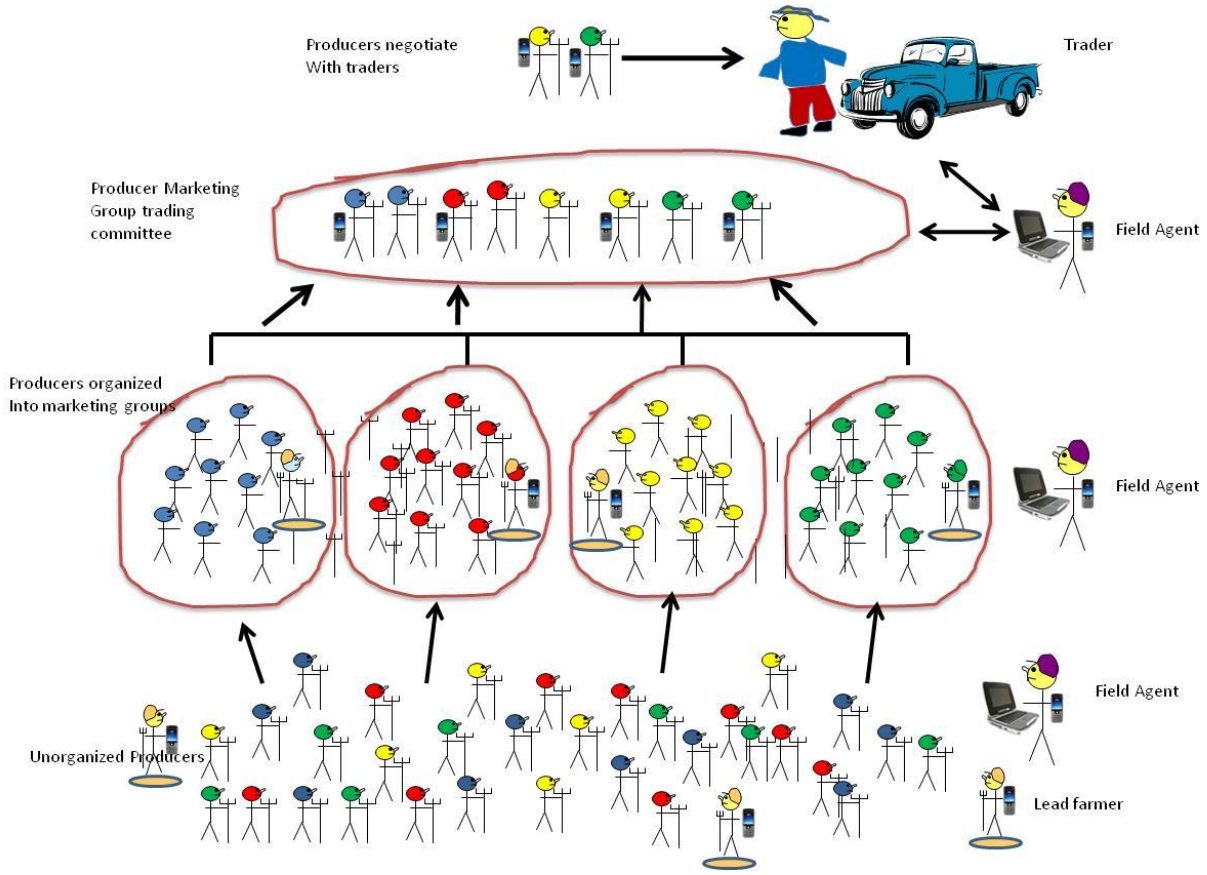

Figure 9. Collective marketing organizations

Source: Authors

Cooperative support

A cooperative is the classic form of a farmer based organization. The cooperative movement has a long history based on a more formal arrangement of farmer groups linked to professional associations or second-tier organizations. When working well, the cooperative movement has helped improve the fortunes of millions of farmers. Cooperatives, through market linkage mechanisms such as certification schemes, have improved long-term trading relations in specific value chains (e.g., coffee).

However, the cooperative movement has also suffered from major problems with corruption and inept management, particularly in situations where governments were instrumental in establishing the organizations. Many of these cooperatives were manipulated for political purposes, with cooperative funds being misdirected to support political campaigns at the expense of the farmers. Frustration with years of mismanagement, often linked to poorly managed financial arrangements, led many farmers to

abandon the cooperative movement and strike out as lone operators. Even if working alone reduced their market options, it shielded them from extortion and intimidation.

The role of governments in most agricultural marketing systems has declined due to reforms such as the structural adjustment programs. As a result, farmers have begun returning to more formal farming organizations, though they have a lingering preference for lean management systems and fair representation in the marketplace.

Value chain support within the chain

In situations where there is reluctance from farmers to work in cooperatives, or lack of farmer cooperatives in key value chains, modern extension services will have to devise different systems of organization that support greater collective action in value chains. NGOs have piloted a number of interim structures that support better market coordination of farmers.

The level of maturity or formality within the chain, and the emphasis that is placed on developing durable trading relationships, are important factors in the design of these value chain structures.

In the example depicted in **Figure 10**, support from the external agency is situated firmly within the supply chain. In this process, the facilitating agency controls inputs to farmer groups, has staff playing coordinating roles within the chain, and also manages pack house operations. This method seeks to support rapid integration of farmer produce with the needs of the buyers.

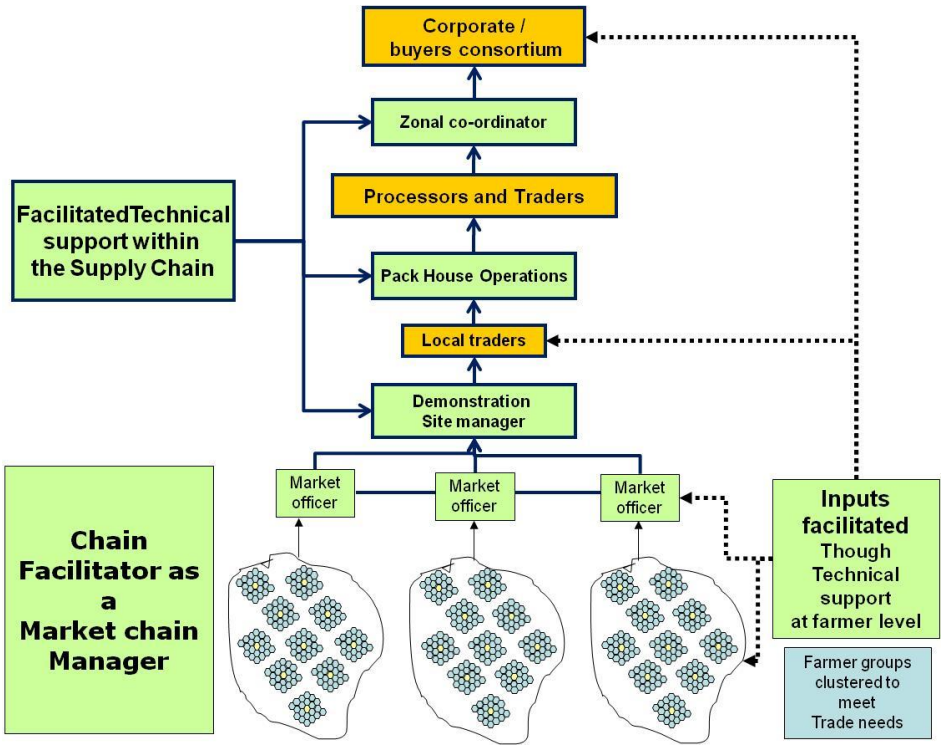

Figure 10. Extension support within the supply chain

Source: Authors

This type of approach can be very effective in introducing farmers into a formal supply chain, but the costs are generally high and can be a challenge to maintain when the project ends. The viability of the chain can be compromised if the various chain actors (local input service providers, farmers, traders, and processors) are not able to profit by the end of the project.

Facilitated value chain support

To avoid problems associated with being too heavily involved in the chain, many external agencies now facilitate the roles of chain actors, rather than work directly within the chain (**Figure 11**). In this case, chain actors are given technical advice and training to take on an upgrading process that they implement. The purpose of remaining outside the chain is to promote greater sustainability of the value chain when the facilitation process ends.

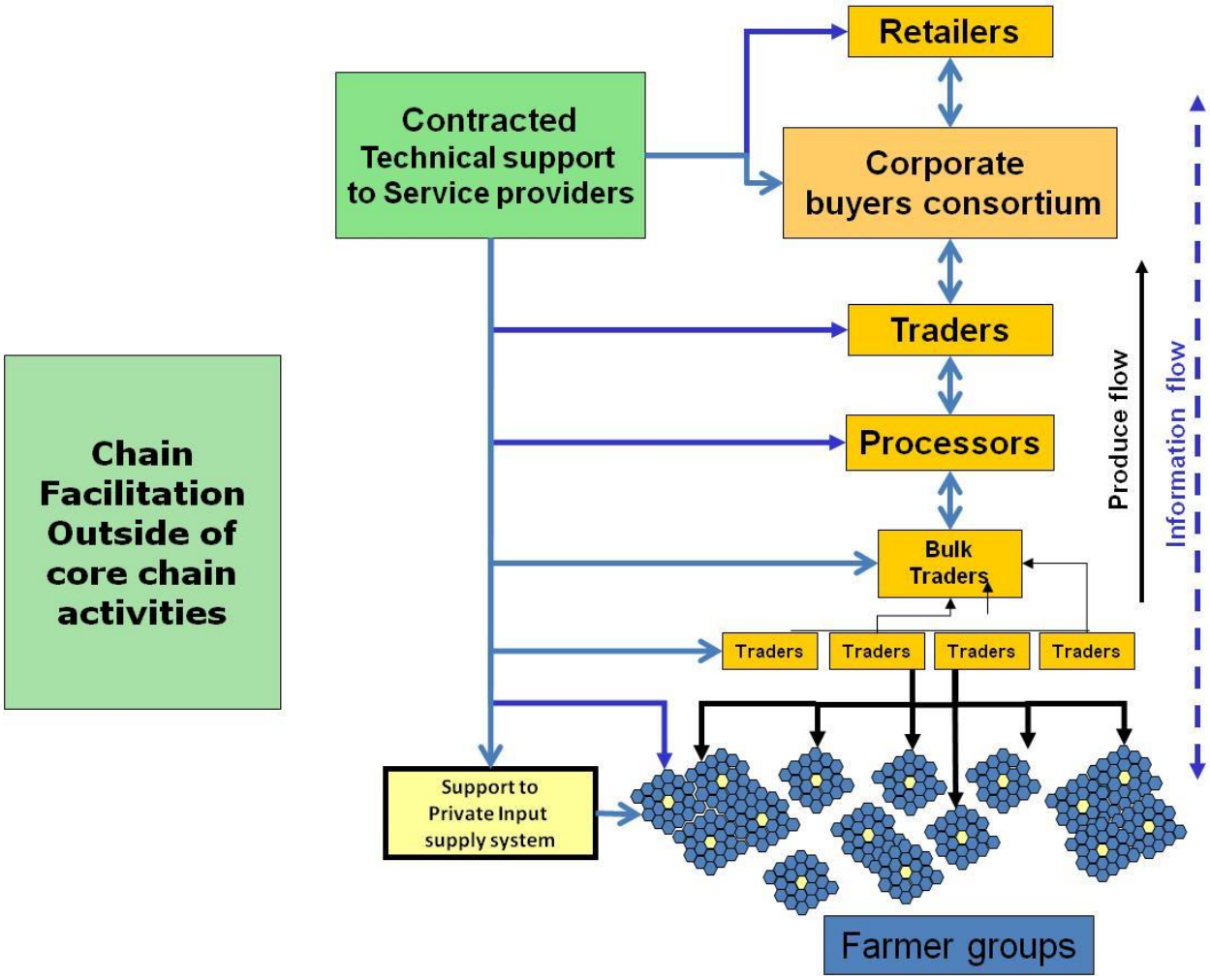

Figure 11. Extension support to value chain as external facilitator

Source: Authors

Agri-dealer networks

As proposed by the P4P strategy, donors are trying to foster projects that support, rather than manage, market linkage methods. In Zambia, CARE, an international NGO, has been working to strengthen the capability of input suppliers to provide technology to target farming communities, rather than simply giving them the needed inputs.

The CARE agri-systems project (see **Figure 12**) worked with both the farmers and input suppliers to demonstrate the value of new technologies and to build relationships to enable farmers to have continued access to improved technologies when the project support ended.

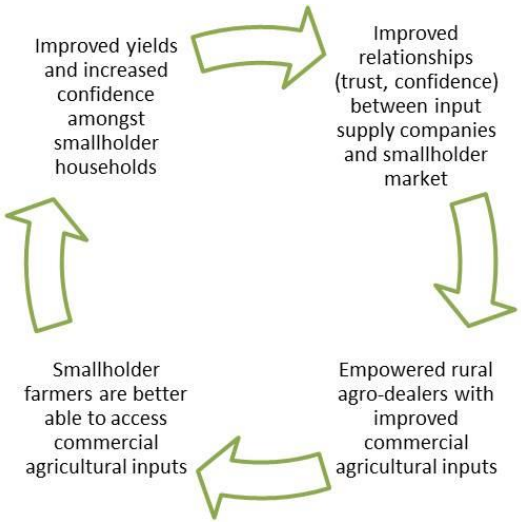

Figure 12. Agri-System project design. Example: CARE ADAPT project, Zambia

Source: Authors

Agent networks

Another USAID funded project in Zambia, managed by CLUSA, developed an agent model to support improved market linkage in their extension work (**Figure 13**).

This model works on the principle that extension staff should facilitate linkages between farmers and input suppliers and support linkages between farmers and buyers. As a project expands, the agent supports a growing portfolio of farmers, and when sales reach a certain point, the agent is paid by both the input suppliers and buyers as their supply chain agent. This model attempts to transition the extension agent from a project-based facilitator to having a paid role in the value chain. Success in this area is based on strong market links and value chains that require inputs on a seasonal basis.

CASE STUDY: AGENT MODEL, ZAMBIA - The agent model was used in a 5-year project that focused on major traded grains, namely maize, wheat, and barley. The approach is highly market-oriented, with farmers across the country being engaged in the market, regardless of farm size. The project relied heavily on the capacity of a support unit of technical specialists who were able to coordinate a number of critical buyers and service providers. Key elements of this process were:

- Linkage to strong formal market buyers; the wheat produce going to millers, barley to brewers, and maize to WFP and other millers;
- WFP's P4P program supported more vulnerable farmers to engage in the markets;
- Farmers with contracts were able to access inputs and loans;
- A strong commercial farming sector that supported many service providers in Zambia.

As a result, the network strengthened the farmers' access essential services to grow crops competitively.

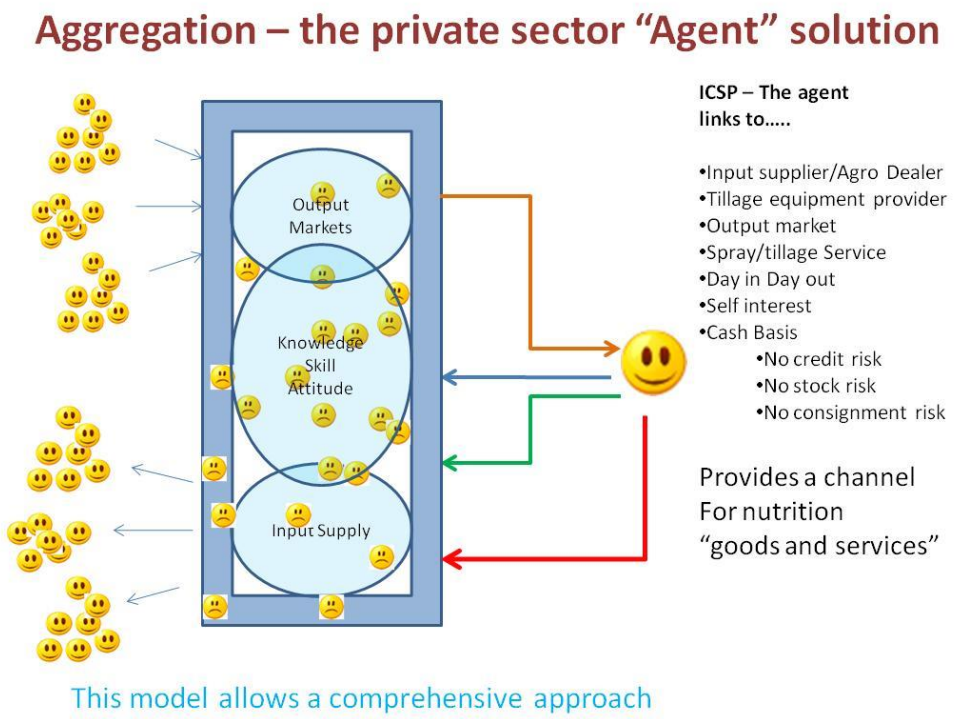

Figure 13. Agri-system project designed by Mark Wood

Source: Mark Wood

Community fee-based service providers

There are a number of models being developed to establish fee-based service delivery systems due to the scarcity of development resources to support extension.

Semi-subsidized services: In Uganda, the World Bank funded the development of the National Agricultural Advisory Services (NAADS). The aim of this approach is to establish a set of district level advisory boards that farmers can approach to identify extension agents who are skilled in a specific area. The focus is on a market-oriented system, in which the best agents from the government extension system would transition to becoming subsidized agents — funded through NAADS — and then later to extension agents paid by the private sector.

The results from the NAADS project have been mixed, largely due to mixed policy signals and actions of the Ugandan government that decided to retain both systems. This doubled the costs of extension and led to parallel services in many districts where the most experienced field agents had no funds to work, and the least experienced NAADS agents were trying to solve farmers' problems in the field.

NAADS has been successful in some locations where support from the districts led to extension responding to farmer demand. This resulted in new growth sectors such as a large orange production zone that provided farmers with a growing market option in a higher value product.

Micro-finance service providers: Agencies, such as CRS, are working to develop a cadre of microfinance-based service providers from the private sector. These field agents are trained for two years within a project helping to set up 30 to 40 savings and internal loan groups. At the end of the two-year cycle, the

field agent is tested and certified to set up other savings and loan groups for a fee. The aim is to train the savings agent as an agro-enterprise business advisor.

The savings-led approach to agro-enterprise and market linkage has proved successful for poorer farming communities, and for farmers who are not organized or have limited land. As the savings groups mature and gain through their new financial skills, they generally want to invest more of their savings in business opportunities. In rural areas, most of these business options will be agricultural and can be served by a fee-based agro-enterprise business advisor.

Measuring success in value chains and realistic targeting

Few standard metrics are widely used across projects and agencies to routinely measure the market performance of smallholder farmers. Where such methods are used, the main measures include production per area, sales prices multiplied by units of produce sold, cost of production, and gross margin. At the project level, it has been difficult to use these indicators to reliably capture market performance. It is assumed that this is because most project level analysis is done by enumerators with limited financial knowledge and little understanding of the farming system.

To address this problem, economists from agencies like the World Bank and FAO analyze farming systems through large-scale survey methods, such as the World Bank's Living Standards Measurement Survey. These surveys generally focus on data on household expenditures as a proxy to estimate income. Universities have done more detailed studies to establish better field-level data, but this type of information has been more readily available in the academic press.

Working with the private sector, the Committee on Sustainable Agriculture (COSA) has made progress in gathering income information and has integrated economic, environmental, and social sustainability measurements as well. Accurately measuring the market performance of farmers is essential if extension teams are to move beyond production-based advisory services into the critical roles of supporting and advising on-farm enterprises.

There is also a need for modern extension systems to consider programs and targets that provide plausible development pathways for specific types of farmer segments. As shown in **Figure 14**, the ability of a target farming community to respond to value chain support depends on their starting point profile (assets, skills and existing market access).

CASE STUDY: COSA is working with private companies and their farmer producer groups to create a standard set of indicators that focus on the performance of smallholder farmers within three areas:

- Economic
- Environmental
- Social sustainability

The COSA team is developing a data management system so data can be collected and analyzed with an online system. COSA is also encouraging programs that use their platform to publish their data via a public access database for use by a broader set of analysts (COSA, 2013).

In one or two seasons, value chain support can catalyze rapid and robust improvements in market performance for farmers who lack market access, but who are organized and have the assets and skills needed to increase production. However, the market linkage process may take 10 to 20 years to build independent marketing groups if the entry point to the value chain work includes significant natural resource rehabilitation or in situations where farmers are land-constrained and lacking in the skills needed to use productive technologies (**Table 5**).

Not only will some groups take longer to acquire more durable market linkages, but the level of market performance, in terms of income gains, will also be considerably higher for more endowed farmers.

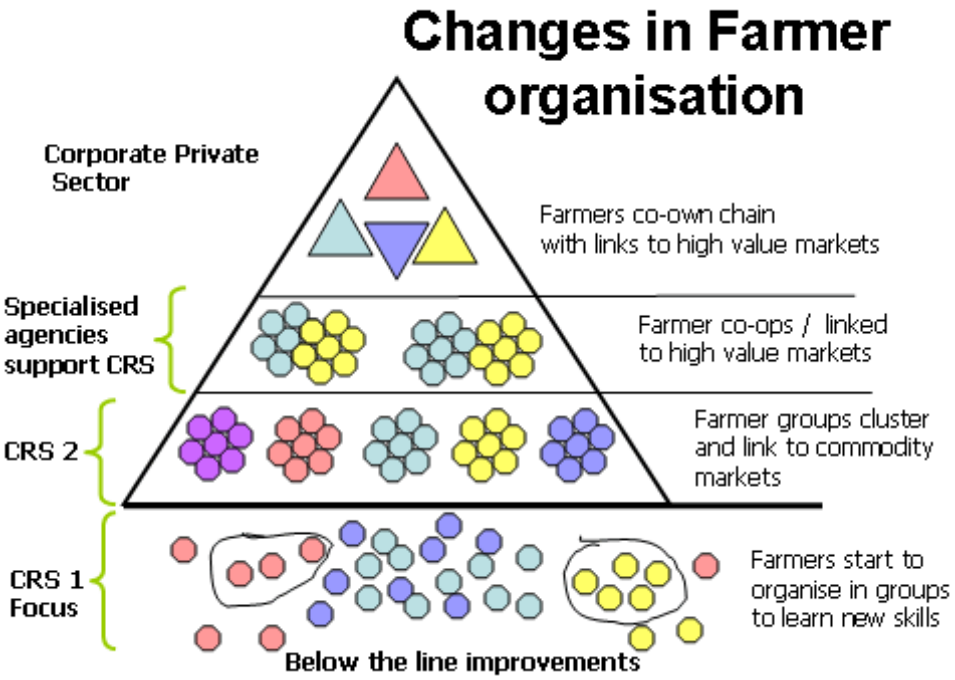

Figure 14. Progression of farmer organizations

Source: Authors

Framing marketing expectations is important and requires clear policy decisions. Targets set for building market options for poor women are different from targets for mature farmer groups who have access to irrigated plots year round.

Table 5. Rethinking targets and timeframes based on assets, skills, gender and location

Time frames	Measurable goals	
Short term 1- 3 years	Services delivered	Assets Training Technical assistance Public works
Medium term 3-8 years	Output levels	Number of farmers engaged in enterprise process Business planning cycles in place Reduced transaction costs Increased sales prices Increased sales volume
Longer term 8-20 years	Impact and sustainable market linkages	Acquisition of new skills Application of new skills Integration of skills to support dynamic engagement in long-term processes

Source: Authors

Scaling up business oriented extension services

One of the key questions asked of modern extension services is how they will scale their operations to meet the enormous need that exists. Traditionally, field agents visit farmers to diagnose and solve problems and are assigned specific areas to manage. But how do modern extension services plan to manage support to hundreds of field agents?

One answer to addressing the challenge is through the new institutional arrangements discussed in the section above. Another option is to reduce costs and scale by using Information and Communication Technologies, (ICT), George et al, 2011.

ICT based service providers

Following the rapid spread of the mobile phone throughout the developing world, there has been an increase in the number of ICT based service providers offering a range of services to governments, NGOs, the private sector, and the farming community (see **Table 6)**. ICT services are provided to extension at a cost. ICT based services are mainly used as a complement to face-to-face extension, but there are a growing number of service providers that see direct services to farmers as a business opportunity.

Table 6. ICT-based extension enhancers

ICT enhanced service	Examples of ICT based extension service providers
Radio	Mali community radio, Farm Radio International
Call centers	KenCall, Ghana Call, Mali Shambani
Websites linked to innovation	Google Farmer's Friend, FAO
Videos to share ideas	Digital Green, Purdue phone videos
Distance learning	Brainhoney, Moodle, Lingos, Udemy
Digital forms	IFormBuilder, Do Forms
Mapping	ESRI, Google Earth, Poi mapper
Financial services	MPESA, Opportunity bank
Performance monitoring	Kimetrica, COSA
Market information	Reuters Lite, Esoko, KIT-Uganda, RATIN
Marketing links	E-Choupals
Farmer group business tools	Farmbook, icow, Farmforce
Community agents	Grameen – Community Knowledge Worker

Source: Authors

Strengthening linkages to financial support

One of the least supported areas in agricultural projects is between farmers and financial services. Lack of rural finance prevents scale and accelerated change.

Poor farmers want financial support with the following attributes:

- An entry point that offers them savings, insurance, and credit
- Low cost
- Local
- Secure
- Transparent
- Simple
- Ownership over profits

These features are not available from traditional micro-finance institutions. Several NGOs are developing self-help or "savings and internal lending communities" (SILC's) as a first step in building their financial skills and to provide access to small amounts of investment funds.

Field agents should place emphasis on helping farmer groups establish savings groups as a means to build financial skills in market-led extension programming. Extension should be prepared for the possibility that it may take up to one year to complete a savings and loans training program and that such programs require trained staff. Another option for extension is Savings and Credit Cooperatives (SACCOs). SACCOs attract more members and typically manage larger sums of money to finance production loans.

Extension can connect the more successful commercial farmer organizations with formal banking options, such as banks that offer non-collateral credit for the poor using the peer culpability of the group as a testimony of faith.

Modern extension services would do well to engage mobile banks. Mobile banks and mobile money transfers offer new opportunities to overcome part of the transaction cost barriers to accessing finance. Farmers may get access to mobile money if extension agents help create profiles for them on digital registers that are available to loan providers.

ICT based performance management

In addition to providing basic services and enhancing the reach of existing extension services to farmers, ICT systems will play a transformational role in helping to manage information in modern services. In the past, management of extension services was done through manual processes that worked through weekly and monthly meetings. It was difficult to monitor where field agents were operating and it was virtually impossible to establish a feedback loop with the farmers. Also, a lack of data from the field has hampered impact studies in development. There is very little systematic assessment on the positive outcomes and impacts of value chain initiatives, which makes the efficacy of this pro-poor approach hard to verify (Humphrey, J. and Navas-Aleman, L., 2009).

Many of these data and information management issues can be addressed through routine data collection systems, along with more systematic communications and tracking methods. This will enable extension services from various agencies to set up online information management programs, linked to programs that are accessible to field staff as they deliver services to the farming community. With support from mobile devices, field agents can register farmers for an online data system, collect baseline status data, and monitor progress of a farmer group throughout the farming season. New tools will enable farmers to work with field agents to prepare business plans and monitor their market performance in specific value chains.

Based on the farmer profile data, field agents will be able to help link farmers to other mobile services (such as market information, loans, and input supply sources) or they can help find options for linking farmers to buyers, or transportation options for delivering goods. Using combinations of new services, field agents will have a number of new tools to support farmers.

Conclusions

Millions of smallholder farmers are seeking ways to improve the productivity of their farms and to improve their market performance. Modernizing extension services is one of the ways that can accelerate these processes. However, extension has limitations and it cannot address many of the micro and macro-economic challenges that affect smallholders. Key issues include local governance structures, outdated land tenure systems, high internal transport costs, poor access to inputs, inefficient local

administration, and uncoordinated trade policies at the domestic and global levels—all of which require other supportive strategies.

Long-term improvements require stable governments, effective policy reform, and an engaged private sector. Resolving these broader issues will also require higher levels of internal and foreign direct investment to improve the local business environment and upgrade infrastructure, as well as to improve communications and access to services, and strengthen demand through more stable trading frameworks.

Modernizing extension and improving market linkage can play a vital role in improving the opportunities of millions of farmers. These areas include:

- **Realizing new institutional arrangements:** Governments and donors can assist in building more pluralistic extension arrangements that help coordinate the efforts of the many disparate existing services. Processes that support greater engagement around common planning frameworks may improve coordination. Governments should develop extension approaches that are more inclusive, including options to integrate, or outsource, more of their extension operations with other civil society, research, and private sector actors. This process may help increase investment in common goals and foster closer links between researchers, farmers, the private sector, and markets.
- **Building farmer agency:** For farmers to realize their potential, they must possess basic skills. While there is increasing interest from the private sector to work with the smallholder farmer community, most firms are unable to provide the years of support and capacity building required to develop robust farmer organizations. Farmers require minimum skills and assets to become reliable suppliers of quality goods and this is a multiyear investment. CRS, along with many other development agencies, has identified a cluster of core skills (group management, financial management, marketing, production, and innovation) that is the basis for successful market engagement.
- **Identifying the right market and calibrating expectations:** The value chain approach is becoming a standard for upgrading the ability of smallholder farmers to link with markets. This approach has the advantage of providing a focus on market demand and promoting a discipline for working with the full range of market actors to achieve a favorable business outcome. There are, however, limitations to the approach. Investors and donors should be aware that returns on farmers' investments might be highly variable. For those farmers who have the land and water assets needed to diversify their business options, and who are located near appropriate markets, the gains from value chain support can be considerable. However, for millions of farmers, particularly those with limited land holdings, incomes are constrained by the productive capacity of their land. The income from farm produce is critical and it is widely known that increasing staple food production can improve food security and stabilize incomes, but it is unlikely to result in major income growth. However, these farmers can still be highly successful in managing their income options, developing effective coping strategies to adapt to extreme weather, and in affording school and medical fees to empower future generations who may choose to work outside of agriculture.
- **Sector support programs:** As outlined by the Council of Rural Research and Development Chairs (2010) in Australia, there is considerable merit in developing organizations comprised of government agencies, farmer organizations, private sector actors, and investors to work with civil society organizations to establish value chain development committees. These committees would develop chain-wide upgrading programs and engage in the management of competitive funding mechanisms to target investments in research, market development, and extension services. Rural development committees have been shown to attract more investments for particular chains and foster stronger market-based relationships between farmers, researchers, and industrial buyers.

- **Territorial programming:** In addition to national value chain support, upgrading approaches should also take into account territorial extension models so local government can engage with research and farmer organizations to support target value chains within a district or region. This approach may lead to more tailored and effective programming, especially in countries where decentralization is occurring. Successful municipalities are working to integrate their investments with other players so the farming community in a defined "territory" can improve their market access and, over time, contribute to the local tax base. These market options may include the range of formal, informal, and public procurement market opportunities.
- **Focus on market outcomes:** In many countries, extension strategies and staffing profiles remain focused on production issues. This legacy thinking is a critical issue to overcome if extension is to be relevant. Although it is important to improve the means of sustainable production and raise productivity levels, farmers need to commit to ways they can improve their returns on investments. Extension agencies must find practical ways of re-orienting their efforts to programs that support market linkage and good business management. This is an area where a pluralistic approach will yield the most rapid results at the lowest cost to the host government.
- **Business services and market linkage:** Improving market linkage will require that extension services either offer, or outsource, options that provide farmers with basic business advisory services, such as business planning, loan management, and collective marketing, for target value chains. Given the more commercial nature of these services, they should be provided for a fee in order to move away from the traditional ideas of extension as a free service, which has crippled state extension budgets and their effectiveness.
- **Combining value chain thinking with financial services:** A critical gap in extension services is the lack of financial services. While civil society has made significant advances in providing value chain support, most of this has avoided the link to financial services. Making this link is critical for farmers to enter or expand their agro-enterprise options. Appropriate types of financial services must be integrated into all value chain work. This may begin with a focus on savings and internal loan groups to help poorer smallholders gain social capital and start organizing their financial management options. This work also requires additional financial education so farmers can organize their household and enterprise finances. However, as farmers require larger sums for investments that are more commercial, savings and loans will require new services, such as access to credit through micro-finance and formal banking operations.
- **Managing risk**: In addition to aligning production with demand, farmers in countries with emerging economies will need to balance investment credit with some form of insurance scheme. This is particularly important if rainfed-reliant smallholders are to consistently invest in expanding their production and engage in value addition such as basic crop conditioning. The rise of mobile banking will reduce transaction costs for money transfers, but these farmers will have to be connected to improved data sharing systems to enable informed decision-making. Doing so will also give credit agencies a better understanding of the production systems involved and would inform their investments as well as their payouts, should disaster occur.
- **Scaled information systems:** Extension agencies must embrace ICT in order to scale information services and extension operations to meet the needs of millions of smallholders. Part of the new extension approach must involve close cooperation among field agents, managers, and ICT service providers. The systems will require that farmers register with the e-systems and pay at least a part of the costs for information. They will also have to work with extension teams to gather routine

data (e.g. weather, soil conditions), monitor pest and disease situations, and report information on costs and access to key inputs and services.

- **Farmer segmentation**: To address the heterogeneous world of smallholder agriculture, modern extension services must provide more customized services to the varying types of farmers and their organizations. To manage the differing goals of investors, extension teams must develop business models that allow for flexibility in service provision without compromising the results.
- **Farmer co-investment responsibilities**: As extension services become more inclusive in their approach to service provision, farmers will have to help define their roles and responsibilities. Farmers who had virtually free cradle-to-grave support from "big governments" will have to adjust from a mindset of entitlement to one of co-investment. New social contracts between the farming community and extension will require that farmers co-invest, or pay market prices, for essential support. Farmers should not be subsidized when they can pay for services, but if they are unable to pay the full costs, they should be enrolled in service arrangements that require co-investment at their capacity to pay. Policies on subsidized services and handouts should be arranged with local government and farmer associations so the good works of private support services are not crowded out by organizations that provide free services.
- **Stewardship of subsidies**: There are millions of farmers who remain at a pre-commercial level. Many have insufficient resources and are too far away from high value markets to enable them to achieve real prosperity within a ten to twenty year horizon. Numerous of these farmers are net buyers for their major food crops and may not be able to pay the market costs of extension services. In these circumstances, the use of longer-term subsidies may be justified. However, it is necessary to monitor the production and economic performance of these farmers against targets developed for achieving food security and strengthening their adaptation to more extreme weather patterns and coping strategies. In addition to helping highly vulnerable farmers improve their food and marketing targets, extension staff can also help them by supporting better risk and financial management.
- **Accountability**: To attract more investment, extension services of all types must be more accountable in their delivery of services, such as training and technology transfer. These agencies should provide transparent figures on the results of their work and the services they delivered. The use of technology and new management skills will be required to strengthen the monitoring of such services and to support real-time, and nearly real-time, mapping and tracking of field activities. There should also be an annual audit of the costs of service delivery. This process would benefit from forging stronger links among local government, local universities, and civil society to provide third party verification. A more robust monitoring and evaluation system, held to account at the local level, will encourage trust between institutions while helping to calibrate developmental targets against investments made by service providers, private sector actors, and farmers.
- **Performance incentives**: Extension services, and their field agents, must have new types of performance-based payment to encourage improvement of services. The legacy of free services has led to complacency in service quality and reach. New types of delivery models are required so farmers get what they need, while service providers are compensated in ways that encourage them to provide better, faster, and cheaper services to more clients.

It is important for extension staff at the management and field levels to have the training, technology, and expertise required to enable them to properly identify client types and develop suitable market and intervention plans that meet the diverse situations of their clientele.

Helping farmers improve their market access and performance will require building business relationships in formal and informal markets. While formal markets offer the best returns, they are not open to all comers so these types of linkages should initially focus on the more endowed smallholders—that is, farmers with more than 2 ha of land and the best proximity to the markets. To help farmers with less than 2 ha of land and poor proximity to urban markets, it may be best to focus on strengthening their links in informal markets where product specifications are less stringent and buying arrangements are more flexible.

Linking smallholders of all sizes to structured procurement markets is a growing opportunity that can be a lucrative option for many farmers who are located in areas that have operating procurement markets.

It is also important that service providers consider the wellbeing of the farm family. All support services should provide advice on nutrition and should help families to foster the potential of their children through education and developing farm skills. As competition grows and land tenure systems change, it is likely that millions of children from today's farming families will choose to opt out of farming. This process of transition will require new ways of doing business and, to remain relevant, extension services will have to find new ways of working with the farming community.

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Annex 1. Activities in the Seven Steps of Agro-enterprise Development

	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7
Steps	Organize staff and meet community	Identify products and select groups	Collect information for a business plan	Build business plans and implementation schedules	Marketing as a group	Reviewing agro-enterprise performance	Scaling up
Sub-steps	Hire staff Train staff Identify partners Do participatory appraisal Plan with community	Identify target farmers Select products Register groups Develop work plans Plan training	Survey market Select production options Review finance Review business services	Write business plan Work with groups on implementation plans to produce crops or livestock	Store product Grade product Negotiate with buyers Bulk product Sell collectively	Analyze profit Check volume and sales Check group work	Re-invest Choose products for next cycle Draw up new business plan Form new groups Recruit new field agents
Field Work	Rapid participatory appraisals to learn about location, businesses, and community	Wealth ranking Product selection Registration	Production data Market surveys Financial analysis Service analysis	Production of crop or livestock products Natural resource management activities	Planning sales Identifying buyer	Review sales by group and farmer	Plan for next season or next year
Key Decisions	Process and entry point agreed	Products selected Groups organized	Collect, analyze, and compile data	Business plans made Implementation schedules lead in to production cycle	Agree on sales Agree on where to sell Agree on who to sell to Agree on price Sell goods	Evaluate agro-enterprise performance	Select new market option Scale activities
Timeframe	From 2-3 weeks up to 2-3 months	2-3 weeks	Depending on # of products 3–4 weeks	1–2 weeks	1–2 weeks Or more if stored	1-2 days	1-2 weeks

Source: Authors