

# ACCESS TO FINANCE

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## 1 – Introduction

Access to finance is a critical component of any strategy to scale the adoption of agricultural technologies by smallholder farmers. Growth in research, development, production, distribution and adoption of products and services for smallholder farmers are all impacted by the availability of financial services (including savings, credit and insurance services). Farmers need financing options to enable them to purchase new inputs and equipment, make improvements to their land, or expand their operations; they need working capital to bridge the gap between seasonal revenues; and they need insurance services to mitigate the many risks they face. When farmers can access financial services, it opens new opportunities for growing their businesses, and creates a demand for new technologies.

Among small-to-medium enterprises (SMEs), including producers, processors and agro-dealers in the formal system, as well as traders, producers, marketers and other entrepreneurs in the informal system, access to financial services is equally important to scale business growth and market growth, increasing the supply of improved varieties available to smallholder farmers.

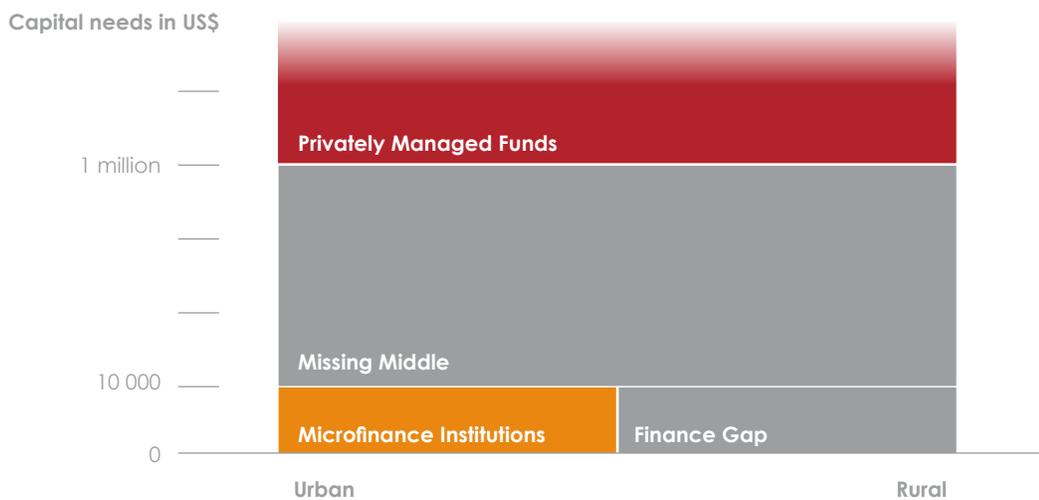
In seed systems in sub-Saharan Africa, demand for financial services is significant along the entire seed value chain, but the supply of financial services to agriculture, and especially to the seed sector, is limiting scale. The balance between public and private sector provision of financial services is especially important in scaling agricultural technologies. Private capital often flows away from agriculture to other, less risky, sectors. Commercial banks, insurance companies, and even micro-finance organizations, for a variety of reasons, tend to under-serve the agricultural sector. Agricultural loans account for less than 10% of the lending portfolio of commercial banks and credit unions in sub-Saharan Africa. This is much less than agriculture's 27% share of the GDP in sub-Saharan Africa, excluding South Africa (Mhlanga, 2010; World Bank, 2013; Livingston, 2011). Commercial lending tends to be largely urban where there is collateral such as machinery and buildings.

Milder (2008) depicted two large gaps in developing country financing where private capital falls short of meeting the demands of the agricultural sector (Figure 1). The 'missing middle' describes a critical constraint to scaling the growth of SMEs, whose financing needs are too large for micro-loans,

but the SMEs are not well-enough established to access more commercial vehicles for debt or equity.

The 'missing middle' for SMEs is a key constraint, but it is only one of many in the landscape of financial services for seed systems. The bottom right in Figure 1 shows a lack of financing for very small loans to rural entrepreneurs, as microcredit programs are often not designed to finance agriculture. Insurance services for smallholder farmers represents a further gap; these are beginning to expand, but demand still far outstrips availability.

The landscape is changing, however. There is an upward trend in commercial lending activities for the agriculture sector (Mhlanga, 2010), as well as investment from non-traditional sources such as privately-managed investment funds, impact investors and grants from bilateral, foundations and NGOs. Microfinance institutions (MFIs) have also expanded their reach into the rural and agricultural sector, although supply is a small fraction of demand (Miller, 2010). Additionally, in some countries mobile banking (m-banking) is shifting accessibility to financial services, including savings.



**Figure 1 – The rural finance gap and the 'missing middle.'**  
Source: Milder (2008)

This *Planning for Scale* brief is organized according to seed chain actors (or market segments), starting with smallholder farmers, and then moving up the chain to agro-dealers and finally seed producers. Each section discusses the same three topics required to understand scaling options. First, *what is the demand for financial services and what services are available?* Second, *what are some promising scaling solutions?* Lastly, *what should we be thinking about in practice, as we seek to implement scaling solutions?* The brief closes with a conclusion that discusses cross-cutting potential solutions for public sector investments that might catalyze greater availability of financial services to support scaling seed systems.

## 2 – Smallholder farmers' access to finance

In keeping with the demand-driven theme of Planning for Scale, we begin with the farmer. For smallholder farmers, lack of access to savings, credit and insurance can impede the adoption of new varieties, as well as other important investments fostering expansion of the farmer's operations. Improving smallholder farmers' access to financial services provides farmers with a broader resource base that allows them the freedom to make different income-optimizing choices in the crops they produce, the seeds and inputs they purchase, and the farming techniques/technologies they apply. Essentially, improving smallholder access to financial services can increase the *market pull* for improved varieties of seed that triggers change throughout the seed chain.

Improving access to finance for smallholder farmers is a tough nut to crack. Despite widespread recognition of the benefits of bringing better financial services to smallholder farmers, progress has been slow for a number of reasons. Smallholder farmers are a highly heterogeneous group with different financial needs as well as diverse assets, income levels and risks profiles. This heterogeneity makes it difficult to create and make available common financial tools that will have widespread impact.

Understanding commonalities among smallholder farmers becomes important for reaching rural populations with financial services and sometimes even a simple exercise in market segmentation can help. Rabo Development, a subsidiary of Rabobank, created a high-level typology for Africa that segments farmers according to the target market to which a farmer sells (see box below). This segmentation provides important distinctions and we note that this section has a focus on access to finance among 'emergent' commercial farmers, with some discussion of subsistence farmers.

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### Market segmentation can help to target financial services

Rabo Development argues that market segmentation is essential to creating sustainable financing solutions targeted to farmers. They describe three categories of African farmers: (1) commercial farmers that largely produce for export (approximately 10%); (2) 'emergent' commercial farmers that produce for household consumption as well as some amount of cash-crops; and (3) purely subsistence farmers. They suggest that the first group already has access to finance, the second group lacks access to finance but has growth potential, and the third group is better served through grants or other non-bank avenues given their limited ability to repay loans.

#### Kloeppinger-Todd and Sharma (2010)

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## Smallholders need diverse financial services

Global demand for smallholder agricultural finance is estimated to be US\$450 billion, much of which is largely unmet (Dalberg, 2012). Farmers demand five primary types of financial services: (1) working capital; (2) fixed capital; (3) consumption capital; (4) savings; and (5) risk reduction tools. However, their access to these services is constrained by a number of factors, including: lack of formal tenure rights (particularly for women), dependence upon rainfall for agricultural production, limited asset ownership for use as collateral, and illiteracy.

Farmers, more so than many business people, have large demands for **working capital** to finance their input purchases, pay for farm labor and generally manage their cash flow needs in the gap between planting and harvest. In agricultural finance, options need to be responsive to the production timeframe of the particular agricultural product being grown, harvested and sold, as well as its marketing potential. Typically, working capital needs are not large amounts and have short durations.

Farmers also need **fixed capital** – longer-term financing for the purchase of equipment such as irrigation, farm machinery, or post-harvest storage and related equipment. Financing options for fixed capital need to account for larger sums of money relative to working capital with longer durations. Equipment leasing finance and asset-based lending are discussed below as examples of financial products that meet these specifications.

Fluctuations in earnings are typical in the agricultural sector. This raises the need for **consumption capital** to finance a range of expenses such as health costs, weddings and funerals. If unmet, the need for consumption credit competes with working capital. Financing options to meet this demand require small sums for short-term duration, which can often be repaid when earnings resume.

The ability to keep money safe through **savings** accounts is an important financial service, particularly for more vulnerable populations. Rural savings services fall into two categories: 'saving up' whereby people accumulate savings in a safe place, such as through a bank, deposit collector, or savings club; and 'saving through' whereby savings are made available at some point in time, such as by an insurance provider or a rotating savings and credit association (Wright and Kaplan, 2001).

Finally, smallholder farmers face a tremendous amount of risk in their farming operations including climate variations, price volatility, pest and disease, and labor shortages resulting from poor health. **Risk-reduction tools** are in dire need at the farmer-level. Financing options to reduce risk for smallholder farmers need to respond to price risks, mitigating yield and income losses,

recovering losses in the event of catastrophe, and providing a financial cushion for small cash needs (i.e. cash to purchase fungicide in the event of disease). Risk-reduction tools for farmers could include crop insurance and leasing for irrigation technologies.

### **Smallholder farmers' financial service needs are under-served**

Smallholder farmers access credit, savings and insurance services, through both formal and informal channels. However, farmers are particularly under-served by the formal financial industry. Consequently, the vast majority of working capital financing for smallholder farmers occurs with personal savings, through networks of family and friends and through informal money-lenders (see Box below). The formal supply of financial services is supplied by microfinance institutions, commercial banks, credit unions and publically-sponsored agricultural banks and programs such as input subsidies. Evidence suggests that the costs and risks of serving rural markets mean that formal financial institutions limit the availability of their financial tools, offering short-term working capital for cash crops but not, for example, larger sums for equipment purchase (Dalberg, 2012 and Fan et al., 2013). Technological advances, however, have begun to extend the reach of formal financial service providers. Finally, small pilot programs for risk mitigation tools such as crop insurance or asset-based lending for irrigation are also available, but on a very limited scale.

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## **Informal sector moneylending**

Lending through informal-sector moneylenders such as landlords, shopkeepers, traders, processors and neighbors is common in developing and emerging market economies. Informal money-lenders are locally-based, which directly addresses the information and collateral constraints faced by commercial banks and MFIs. Borrowers are often linked to the moneylender in some way, for instance, when landlord lends to his tenant, which ensures great visibility to the money-lender, who can easily monitor the borrower's activities and use of funds. Collateral offered by borrowers, such as land, in-kind labor or a portion of the harvest, is acceptable because it is of quantifiable value to the lender. Not surprisingly, informal moneylenders prefer to lend to repeat borrowers because of the relationship and trust they establish over time. Informal money-lenders usually charge higher interest rates than those in the formal sector, and their popularity attests to the importance of access to capital even at high costs.

### **Ray (1998)**

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Seed is a comparably inexpensive input, and it should be one of the technologies beneficial to smallholder farmers even where financing is not available. Unfortunately, this is not true for a number of reasons. First, the value of a seed depends on a range of complementary inputs that can be expensive. Also, studies have shown that the timing of seed sales often corresponds to dips in household income, or the amounts do not correlate to the risk profile of smallholder farmers. Some private seed companies in sub-Saharan Africa have shown their willingness to adapt to the needs of smallholder farmers by creating marketing mechanisms that address their cash constraints and willingness to take risks.

## Potential scaling solutions

For scaling the adoption of agricultural technologies, smallholder farmers need access to savings and working capital to purchase seasonal seeds and complementary inputs, as well as financing options to purchase crop insurance, irrigation and other farm implements, in order to reduce risk and improve the quality and quantity of their product. Financial solutions that meet these needs must address the stark factors that limit the availability of financial services to smallholder farmers, including:

- Lack of 'valued' collateral from smallholders
- Limited reach into rural areas of formal financial institutions
- High transaction costs of serving smallholder farmers
- Perceived risk and lack of understanding of agricultural sector by financial institutions

While there are many possible options for improving access to finance among smallholder farmers, we have prioritized five with the potential to have the largest impact on scaling seed systems. These are: (1) changes in marketing strategies; (2) savings programs; (3) technology-banking credit opportunities; (4) asset-based lending; and (5) weather index crop insurance. Training and technical assistance to smallholder farmers and producer organizations are complementary to expanding these five scaling solutions.

**Changes in marketing strategies.** Selling seed in smaller packs is one example of how marketing strategies can relieve the constraints smallholder farmers face in lacking access to finance. Smaller packs require lower cash outlays. Another marketing solution involves timing. Allowing farmers to pay for inputs during harvest time when they have money (instead of just before planting time) will reduce constraints of lack of access to finance. For example, MRI Agro, a large seed company in Zambia, recently piloted a popular prepaid e-voucher program, in which farmers purchase vouchers at harvest time (when farmers have cash in hand after crop sales) in return for access to inputs and a 10% discount (USAID, 2013). Similarly, evidence from a study conducted in Kenya suggests that small, time-limited reductions in the cost

of purchasing fertilizer at the time of harvest induce substantial increases in fertilizer use (Duflo, 2009).

**Savings programs.** Many smallholder farming households save through informal mechanisms including livestock and other non-financial assets like grains, jewelry and cloth (Aryeetey and Udry, 2000), or they might provide loans to neighbors, knowing that when they are in need, they may be able to call back the favor. However, saving through these informal mechanisms is often risky. Low-risk savings solutions can make a big difference. If safe mechanisms are available for smallholder farmers to accumulate money over time, the impacts that enable scaling can include: improved planning, higher economic productivity (e.g. investing in improved varieties of seed), and reduced vulnerability in times of crisis.

Internal capital or personal savings is a significant source of agricultural financing. Village savings and loan associations (VSLAs) are one example of a cost-effective mechanism to accumulate cash savings. These programs join 10 to 20 individuals together in an agreed savings plan. Once a sufficient amount has been raised, the association lends small amounts to different members for a 10 – 20% monthly interest rate, in some cases generating a 20 – 30% annual return to the group (CIAT et al., 2011). Promoted largely by NGOs as a means to stabilize income for the most vulnerable, VSLAs have spread across the developing world, now comprising 4.6 million members in 54 countries in Africa, Asia and Latin America (Economist, 2011). Training on VSLAs includes the development of simple governance, as well as operational and accounting processes. Similar to VSLAs, credit unions are a formal version of VSLAs. As of 2012, there were over 20,000 credit unions operating in 23 countries in sub-Saharan Africa, with a membership of over 16 million (World Council of Credit Unions, 2013).

With respect to saving services from formal financial institutions, recent evidence suggests that demand for savings services is high. Most savings-related transactions are small and frequent. This raises transaction costs for the bank and is a key reason why formal institutions do not extend services to rural communities (Aryeetey and Udry, 2000). Innovations in the use of mobile technology platforms for savings programs, however, have had promising results. Within the subset of the microfinance industry, there are an estimated seven savings accounts for every loan account (Miller et al., 2010). A recently launched M-pesa savings program enrolled 2.3 million subscribers and received US\$47 million deposits in its first four months (Economist, 2013). Also, in 2010, the Bill and Melinda Gates Foundation launched US\$38 million in grants to focus on savings programs (Gates Foundation, 2010).

**Technology-banking credit opportunities.** The provision of small loans for working capital by microfinance institutions (MFIs), credit unions and commercial banks, is expanding globally, including within the agricultural sector,

but demand still dwarfs supply, with only an estimated 2% of the demand for credit being met (Miller et al., 2010; Mhlanga, 2010; Dalberg, 2012). Formal sector lending tends to focus on cash crops and have high interest rates. However, the institutions offering credit are well-established, have access to capital, and are motivated to expand. Increasing reach into rural areas by harnessing mobile phone technology has proven to be a successful business model that reduces transaction costs for financial institutions as well as consumers overcoming distance and information constraints.

**Asset-based lending.** Asset-based lending and equipment leasing services are a low-cost and longer-term financing option that reduce risk to both the owner of the asset and the one who leases it, as well as providing a way to avoid challenging collateral requirements. They are largely underdeveloped in sub-Saharan Africa (with the exception of Nigeria and South Africa), with an estimated penetration rate of 1–5%. This is in contrast to a global average of 20% (Making Finance Work for Africa, 2013). Asset-based lending mechanisms reduce risk to financial institutions since the financing is directly associated with a clear claim to collateral in the event of default, and they usually require frequent payments made to lenders for the use of the product. We also note that leasing products will likely be adapted first by more sophisticated agribusinesses and sub-sectors, such as those engaging in cash crops and highly tradable commodities.

**Weather-index crop insurance** offering compensation for loss, based on low-cost meteorological measurements, is a risk management product that has been recently piloted for particular use by smallholder farmers in countries such as India, Morocco and Kenya. Weather-index insurance is recommended above traditional crop insurance products because of its wider applicability in the context of smallholder farmers. It is up to the farmer to decide whether to purchase insurance, which is sometimes sold by agro-dealers and available bundled with other inputs. Insurance claims are triggered by weather events of a stated level of severity. Insurance agreements can also parse out weather events according to the seasonality of the crop, for example, a specified shortage of rainfall during certain times of the growing season for groundnuts (Roberts, 2005). Some weather-index micro-insurance schemes have been able to radically limit transaction costs by using weather station data, coupled with automatic payments to a farmer's mobile phone. In effect, weather-index insurance minimizes the moral hazard and adverse selection issues associated with traditional crop insurance products, and also lowers transaction costs associated with marketing, calculating and collecting premiums, farm-specific yield loss assessment and paying claims (Kang, 2007; Roberts, 2005).

However, weather-index insurance also has a high incidence of 'basis risk.' Payouts are determined by weather station readings and the rainfall on a farmer's plot, for example, may be quite different. A farmer could be paid

for a drought that did not hit his land, or could suffer crop loss and not be compensated because of the distance of his plot from the weather station (Bhojwani et al., 2007).

Developing weather-index insurance programs requires finding a weather-service that is reliable and free from tampering (Goslinga, 2011; Kang, 2007), and ensuring sufficient coverage per agro-meteorological zone (Tiwari, 2011). Due to these considerations, start-up costs are relatively high, but once established, administrative and transaction costs are minimal (Tiwari, 2011). Weather-index insurance has the potential to reduce smallholder farmer risk, thereby enabling farmers to have greater choice in their production practices, including the ability to adopt improved seed varieties.

Only an estimated 0.4% of global agricultural production is insured, and this is mainly concentrated in North America and Europe. Africa has the smallest share of crop insurance worldwide at just 2% (Roberts, 2005). However, it is a dynamic field and weather-index insurance is proving to be a promising risk-reduction tool.

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## Seed germination risk

In addition to several other risks, farmers also face the risk of their seed not germinating. In the formal seed system, fake seed can present a high risk of non-germination for farmers, but there are other reasons (for instance damage to the seed in transit or storage) that may prevent germination. To address this risk, some companies guarantee their seed and some offer scratch-card verification systems to ensure that their seed is not fake. A further area of innovation in the insurance space is micro-seed insurance that provides compensation in the event that a farmer's seed does not germinate.

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**Provision of training and technical assistance** to farmers and financial institutions is an important component to reducing real and perceived risk for financial institutions serving smallholder farmers.

Farmers need financial literacy training in addition to business planning and farm management skills. Financial literacy programs include budgeting, saving, debt management, negotiating financial transactions and introduction to financial products such as loans and insurance. Financial literacy programs have resulted in improved savings, better financial decisions, and less vulnerability (Cohen and Nelson, 2011). Producers' organizations also benefit from training in business, finance and organizational management. Rabo Development suggests that professionalizing farmers and strengthening relationships and communication among forward and backward actors

in the value-chain will have a positive effect on reducing transaction costs throughout the value-chain, including the cost of providing financial services (Kloeppinger-Todd and Sharma, 2010). The World Food Program's Purchase for Progress program has now provided training to 832 farmers' organizations with a total membership of over one million farmers (World Food Program, 2013). Training curriculum topics include agribusiness management, credit and finance, institutional capacity building, production and productivity techniques, post-harvest handling, storage techniques and quality control and gender empowerment.

**Input subsidies** substantially reduce the cost of inputs to farmers, but are unsustainable by nature. Evidence also suggests they are not cost-effective, given their impact, and they are almost invariably poorly targeted. Empirical evidence from rigorous impact evaluations and in-depth performance reviews in Nigeria, Malawi and Zambia found that input vouchers raised agricultural productivity substantially (Chibwana et al., 2010; Mason and Ricker-Gilbert, 2012; Awotide et al., 2012). However, subsidy programs have been documented as displacing sales of commercially sold maize seed. This was partially attributed to poor targeting of beneficiaries, whereby vouchers were disproportionately provided to farmers with larger landholdings who would likely buy inputs voluntarily at market prices (Mason and Ricker-Gilbert, 2012); Baltzer and Hansen, 2012; Dorward et al., 2008). Implications for sustainable impact upon termination of voucher programs were equally discouraging. Evidence from Malawi, for example, suggests that vouchers have not directly affected the accumulation of assets over time. The poorest voucher recipients have not accumulated sufficient financial and productive assets to ensure their ability to purchase seed and fertilizer inputs after the program ends, without additional assistance (Ricker-Gilbert and Jayne, 2010).

## Implementing scaling solutions

When the solutions in the section above are integrated into scaling strategies, there are important *implementation* issues to consider. This section looks at what we might need to be thinking about when put scaling solutions *into practice*.

**Segment the market.** Farmers are so diverse in their financial needs, their financial literacy and many other factors. In this brief, as noted above, the solutions discussed are neither for wholly subsistence farmers, nor do they accurately reflect the financial needs and opportunities for of farmers with larger commercial operations. Here, the 'emergent' farmer, growing a mix of commercial crops and crops for household consumption, is the focus. These farmers present an important growth opportunity for the seed sector in sub-Saharan Africa and they are critical to the food security goals of the *Planning for Scale* work. Even within the group identified as 'emergent'

farmers, however, there is a high degree of heterogeneity. Financial tools need to be designed with particular market segments in mind.

Reaching market segments may require targeted financial literacy campaigns, but will also require better market research to inform the creation of appropriate financial services. We know enough about the defining characteristics of farmers' needs and their financial literacy to do a good job of market segmentation. For example, the Bill and Melinda Gates Foundation funded a geo-spatial analysis, which involved overlaying population density with distance to financial services (Gates Foundation, 2013).

Segmenting the market can get expensive, though. It works as a tool for scaling because it improves adoption of services, but it also might require that resources are spent developing, implementing and marketing multiple types of services. As elsewhere, producer organizations offer important cost-reducing leverage for accessing larger numbers of smallholder farmers. Producer organizations have other roles, too, besides being instruments for reaching larger numbers of farmers with less cost. The governance mechanisms in producer organizations can serve as a bridge between more formal sources of financial services (larger loans and higher collateral requirements, for example) and smallholder farmers. Further, producer organizations can enable particular lending 'group lending' dynamics that have been shown to change the risk profile for lenders (Armendáriz De Aghion and Morduch, 2000).

**Let the market define the financial service solution.** The heterogeneity of smallholder farmers, even within the segment of 'emergent' farmers, means that scaling up seed systems will require a range of financial services targeted to different communities. In remote areas, for example, informal VSLAs may be an appropriate solution to prioritize for scaling. In this case, very little connection to the formal financial sector is necessary, but rather awareness raising campaigns coupled with a training component (Economist, 2011). In countries where smallholder farmers already use m-banking, investments in additional financial services added on to existing options can have a powerful impact. Where m-banking does not exist, or has not reached rural populations in significant numbers, optimal solutions may include working with on-the-ground MFIs to develop agriculture-specific financial services.

**Anticipate the high risk in working capital crop loans.** Credit for working capital is in short supply because the risk far outweighs the returns for lenders. Risk mitigation tools like collateral do not translate directly into the smallholder farmers' market for financial services. Smallholder farmers have little collateral, and the collateral that they do have is often mobile and/or difficult to seize (such as land). Furthermore, financial institutions may also face political risk of a government decree of loan repayment waivers in the agricultural sector. The implementation of any scaling solution seeking to address the

need for more working capital needs to find ways to reduce strategic default opportunities for smallholder farmers and spread risk for lenders.

A model that has worked in India is coupling agricultural credit with basic extension services. Basix, an MFI in India, has developed this business model as a means to build loyalty among borrowers and reduce default risk. A trained agent provides basic extension services to a set of 300 to 500 farmers (Tata, 2013). Developing an approach that builds trust and loyalty between farmers and financial institutions may be an important factor that distinguishes success versus failure in extending formal credit to smallholder farmers.

**Use information and communication technologies.** In this day and age, harnessing the benefits of mobile phone technology should always factor in the decision-making process with respect to developing cost-effective solutions to expanding the reach of financial services. Technology can significantly reduce costs for financial institutions as well as consumers by overcoming distance and information constraints. Furthermore, there are emerging opportunities to use mobile data to assess farmer creditworthiness and lower interest rates for creditworthy farmers. For example, companies such as First Access, Experian, Cignifi, AFB and InVenture offer a credit scoring system that uses mobile subscriber records to develop credit scores. This helps financial institutions to develop a better understanding of rural customers and expand their services to rural farmers (Mobile for Development, 2013).

Research conducted by the Bill and Melinda Gates Foundation concludes: 'the most effective way to significantly expand poor people's access to formal financial services is through digital means. In addition to cost savings, digital financial services offer a wide array of benefits:

- They connect poor people to the formal financial sector and enable them to become customers and suppliers within the wider economy.
- Financial flows can be accurately tracked, resulting in safer and speedier transactions and less corruption and theft.
- Providers can use financial histories to develop products that are better suited to customers' needs, cash flow, and risk profiles, including fee-for-service offerings and smaller-unit transactions.
- Direct deposits (including wages and government assistance) allow money to 'bypass' the home, helping users save rather than spend and often giving women more financial authority within the family.
- Automatic reminders, positive default options, and other choices offered via mobile phone menus offer convenience and save time' (Gates Foundation, 2013).

Two technologies, in particular, hold great promise for extending financial services to smallholder farmers. The first is harnessing the widespread use of mobile phones to transfer money, pay bills, repay loans, and use other

banking services, which is already happening in Africa with great enthusiasm. M-pesa, for example, enrolled 1 million clients in its first year of operation in Kenya (2007) and now has 16 million clients in Kenya (as of January 2013). The M-pesa platform is also expanding into savings and loan products in partnership with the Commercial Bank of Africa (Economist, 2013). In only its first four months of operations, the services enrolled 2.3 million subscribers (and US\$47 million in deposits), of which one third applied for small loans. The second, biometric technology, can assist with loan repayment monitoring. The biometric monitoring of loan repayments in rural Malawi, for example, increased repayment rates by 40% for borrowers in the 'high default risk' category. The repayment gains outweighed the cost of implementing the new technology (Kloeppinger-Todd and Sharma, 2010).

**Apply best practices when leasing equipment.** Equipment finance is most successful when it is actively facilitated by the vendor who coordinates closely with banks and financial institutions to facilitate financing to the customer. Educating a customer about eligibility and paperwork requirements to get a loan are important steps to making leasing products accessible. While the lender can work in close partnership with the equipment vendor, it is important that the lender (rather than the vendor) make the decision on whether or not to extend credit to the farmer (Tata, 2013).

**Watch out for unintended consequences in government-supported crop insurance.** Government assistance for crop insurance schemes is permissible within the World Trade Organization framework (Kang, 2007). Few crop insurance products that serve smallholder farmers, in fact, have reached commercial profitability. At least for the immediate future, some government or foundation funding is necessary for the sustainable delivery of services. However, long-term government involvement in subsidized crop insurance has been documented as having unintended consequences, including:

- High loss ratios emanating from the adverse selection of high-risk crops or high-risk regions. Weather index insurance mitigates the adverse selection risk, but basis risk can be problematic.
- Expansion of cropping to environmentally fragile lands, including pasture and marginal areas.
- Over-production that could exceed demand levels and therefore reduce prices for all producers.
- Potential to increase land values, which can increase the cost of production and create entry barriers to new farmers (Kang, 2007).

Governments and development practitioners responsible for designing and supporting crop insurance programs need to account for these adverse effects, monitor impacts of the programs and make mid-term adjustments accordingly.

## 3 – Access to finance for agro-dealers

Agro-dealers are a critical link in seed systems that serve smallholder farmers. They provide distribution networks for seed but also enable access to complementary inputs and knowledge that fundamentally changes the value of the seed for the farmer. Agro-dealers also create an important bridge in the opposite direction, conveying information about farmers and the market back to seed producers. Growth in existing agro-dealers' businesses and getting new agro-dealers to enter the market depend on access to finance. This section discusses the financing needs of agro-dealers and the various factors that impact the availability of, and access to, financial services for agro-dealers.

We note an important caveat here. This section and the next begin to consider private seed enterprises that are more in the formal end of the seed system (see *Planning for Scale Brief #3: Integrating Seed Systems* for an in-depth consideration of the spectrum of enterprises that make up the formal and informal seed systems serving smallholder farmers). Currently in sub-Saharan Africa, formal seed enterprises largely concentrate their business on commercial crops such as maize (particularly hybrid maize), sorghum, cash crops and horticultural crops. We explicitly recognize the wide range of food crop seed varieties important for food security among smallholder farmers that move through informal channels. We note that agro-dealers are not homogeneous and many play a role in the distribution of varieties from producers other than seed companies, and that constraints due to limitations in access to finance remain central to scaling strategies, across both formal and informal enterprises in seed systems.

### Agro-dealer financing needs and current access

While recognizing the heterogeneity of agro-dealers, we clarify the discussions in this section with a simplification of dividing agro-dealers into two categories: (1) small agro-dealers, or 'stockists', present in the rural production areas with direct access to farmers; and (2) large input distributors who work with input importers and seed suppliers. The latter group may have sufficient access to credit and are, therefore, not as central to this discussion. To furnish the supply of seed and corresponding inputs demanded by farmers, agro-dealers need access to working capital to purchase seasonal inventory and inventory storage space. They may also need to purchase vehicles and cover related maintenance costs. Vehicle purchases might benefit from scaling solutions focused on asset-based lending and equipment leasing. Most agro-dealer financing needs, however, are similar to typical business needs for financing, without some of the unique attributes of access to finance for farmers and seed production enterprises. Although most seed and fertilizer inventories are typically sold within a few months, agro-dealers can also face inventory risks in forecasting the demand for the seeds they stock.

Small agro-dealers fall into the 'missing middle' financing gap, as well as the 'rural financing' gap, facing difficulty in acquiring credit. Their credit needs are often too large for micro-finance, but do not have sufficient collateral to qualify for commercial loans. Very few rigorous studies have been conducted on agro-dealers' access to finance, but their lack of financing is often cited in agricultural development literature as a constraint to growth. A recent study of 300 agro-dealers in Nigeria confirms this notion and suggests that personal savings, membership of trading associations, volume of turnover (i.e. sales), gender, and regional access are all linked to participation in loan markets (Olomola, 2013).

Another factor to consider when examining the financing needs of agro-dealers is the business management capacity of SME agro-dealers. An income stabilization strategy typical of agro-dealers is the diversification of products offered. This might involve, for example, stocking livestock treatments and a diverse array of crop offerings, especially for cash crops, or engaging as commodity traders. Business management capacity skills vary greatly among agro-dealers, but evidence suggests that many could benefit from technical education with respect to seed, fertilizer and pesticide products which would grow sales and improve creditworthiness of agro-dealers (Maina, 2013). Also lacking in many agro-dealers is the ability to gauge demand for seed purchases. Improved forecasting, where possible, would help improve the forecasting of capital needs and, subsequently, cash flow management.

## Potential scaling solutions

**Create links between agro-dealers and formal financial institutions.** Agro-dealers need financing to grow their businesses and therefore scale up the availability of seed to smallholder farmers. Furthermore, access to finance influences whether existing agro-dealers can stay in the market and survive through lean periods. Agro-dealers primarily require working capital to purchase seasonal inventory, as well as longer-term capital to purchase vehicles and warehouse space. Making the connection between agro-dealers and financial institutions is a very helpful contribution that could be (and has been) undertaken by the public sector. Establishing such relationships requires providing training and technical assistance to improve the business management, financial literacy, and technical skills of agro-dealers in an effort to make them more attractive to lenders. It also entails closing the rural-urban divide since agro-dealers are typically located in rural areas that do not have readily accessible financial institutions. Where possible, the use of mobile banking technology should be employed to reduce transaction costs and facilitate quicker response times.

**Facilitate access to finance for newly established agro-dealers.** Access to finance plays a role in the market entry of new agro-dealers. An absolute

increase in the number of agro-dealers that provide smallholder farmers with access to seed and complementary inputs is another pathway toward scaling agricultural technologies. There are agricultural areas underserved by agro-dealers, making distance a constraint to accessing improved seed varieties. Similar to the solution above, though perhaps even more pronounced, there is a need to establish relationships between new agro-dealers and financial institutions, and provide them with training and technical assistance. Loan sizes for new agro-dealers are relatively smaller than established agro-dealers and may qualify for micro-finance loans.

**Leverage the role of agro-dealers as providers of financial services for farmers.** Once established, agro-dealers can also be a source of financing for smallholders, providing inputs on credit, or they may provide seed insurance or other financial products. Agro-dealers and smallholder farmers alike can benefit from specialized local knowledge and established relationships in assessing credit worthiness. These arrangements further incentivize agro-dealers to provide technical advice to farmers to ensure repayment in cash or in-kind.

Pairing access to finance with training and technical assistance seems to be a winning combination (Malinke, 2013; Mania, 2013). One approach taken by the Agro-Dealer Development Program (ADP) was to establish an 'accreditation' training program for stockists, developed jointly with ministries in a few countries such as Tanzania. The accreditation allowed the stockists to access credit from banks that had a partial loan guarantee from Alliance for the Green Revolution in Africa (AGRA). ADP has reported an average repayment rate of 80%, with some areas reporting a 95% repayment rate. Pairing the accreditation program with the loan guarantee has been effective in introducing agro-dealers to banking services for the first time, and reducing the perceived risk of lending to these types of enterprises for the participating banks (Makinde, 2013).

## 4 – Access to finance for seed producers

Seed production enterprises are pivotal to achieving scale through expanding the supply and increasing the diversity of improved varieties of seed available to smallholder farmers. Though in more developed seed systems, separate companies specialize in seed processing and distribution, in sub-Saharan Africa, seed production companies generally process, package and distribute seed, in addition to coordinating the production (oftentimes through outgrowers). Seed producing enterprises tend to be small-to-medium in size (SMEs). They have distinctive business cycles and specialized needs for working capital and fixed/investment capital, especially if they want to move past a certain threshold in the scale of their operations. Seed producers have special needs for medium- and longer-term working capital, as opposed to shorter-term loans that are more easily repaid. The absence

of reliable working capital for these enterprises is especially damaging to formal seed sector growth, causing quality issues and contracting issues that affect the core of seed production viability. Growing seed production requires specialized financial tools and a great deal of technical assistance.

This section discusses the financing needs of SME seed producers and the various factors that impact the availability of, and access to, financial services. Drawing from the current landscape, we prioritize financial tools that meet the demand from SME seed producer for financial services, and discuss implementation issues for public sector investment to bring the prioritized financial tools to scale.

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## Key negative impacts of the lack of access to working capital

Lack of access to working capital among seed companies has multiple impacts. It may mean that outgrowers are not paid on time, perhaps causing them to side-sell, even when they have used the seed company's inputs. Outgrowers who face the challenges of non-payment may then be unlikely to grow for the company the following year, forcing the company to constantly seek, and run the risk of using, untried contract growers. Lack of working capital for seed companies can also cause seed companies to cut corners on production (e.g. by not paying for labor to weed). This, in turn, lowers their seed yield and creates supply uncertainty that plays out with agro-dealer and customer relationships. Customers can be lost when supply uncertainty causes farmers to turn to saved seed or other brands/varieties. Uncertainty in supply also can create opportunities for the purveyors of fake seed, filling the gaps in supply. All of these negative impacts, and more, can be consequences of a shortage of working capital.

**O'Connor (2013)**

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### Demand for financial services by SME seed producers

Seed production enterprises require medium-term financing (5–7 years) to ease cash-flow constraints that emanate from the lumpy nature of expenditures (i.e. input purchases and labor). This differs from the timing of a seed producer's revenue streams (i.e. seed sales), and longer-term investment capital to strategically grow operations to meet rising seed demand such as purchasing land, warehousing, vehicles, processing equipment, machinery, driers and cold storage.

Working capital is by far the greatest financing need for all SME seed companies, especially for growing companies. Working capital is used to pur-

chase raw materials, inputs and pay for labor and overheads. Large sums of money must be spent to produce seed, but sales and collections do not occur until the following planting season, at the earliest. Working capital needs can start around US\$10,000 and go up to around US\$50,000 if successful. These businesses have both the highest need for capital and oftentimes great potential for growth. However, SME financing needs are too big to benefit from microfinance, and often the companies are not well enough established to access more commercial vehicles for debt or equity. Many have noted that this is a gap in the landscape of organizations supplying finance – thus giving the space the nickname 'the missing middle'.

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## Seed production profitability – the rule of thumb

Seed production enterprises achieve sustainable profitability when production reaches 1,500 metric tons or more (with some variability, depending on market and sophistication of companies, access to land and operating costs).

### O'Connor (2013)

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Seed company growth also requires investment capital for the purchase of land, equipment, machinery, vehicles and quality control devices. Conventional wisdom suggests that a seed company that operates at or below the 300–500 metric ton level can operate with mostly manual labor (i.e. without processing equipment), whereas growth beyond this tipping point requires mechanization (O'Connor, 2013). Van Mele, et al. (2011) concluded that medium-sized African seed companies may own some land, but largely make use of outgrowers (often smallholders) to produce seed. However, impact investors have provided investment capital for land purchases, perhaps suggestive of strategies to enable greater control and stability in the seed production supply chain.

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## Seed multiplication, production, and processing financing needs

**Working capital for long business cycles:** input purchases such as foundation seed, fertilizers and other chemicals, irrigation, land preparation, labor for planting, weeding, fertilizing, roguing, detasseling, harvesting, etc., seed treatment, processing, quality control, bags/packaging; and working capital for outgrowers including inputs, labor, and timely payment for harvest/seed

**Equipment:** production machinery, irrigation, driers, processing machinery, vehicles, quality control instruments such as moisture testers, germination bags, and temperature probes

**Facilities/land:** land, warehouse space, cold storage

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Seed production companies face the same climate and pest risks as small-holder farmers, but also face acute quality risk. They must play close attention to agronomic management practices (i.e. soil fertility, pollination, weeding, irrigation), isolation distances to reduce the possibility of contamination, quality control procedures and post-harvest seed handling practices (cleaning, drying, treating, packaging, cooling). Climate and pest risk is somewhat mitigated through contract farming spread across different geographies. Da Silva (2005) suggests that contract farming can also be beneficial in generating good quality product through the 'micromanaging' efficiencies of smaller farm operations (see Box 9). Quality risk is also mitigated through complying with rigorous technical protocols and retaining qualified staff. Technical assistance, provided either through corporate buyer oversight or through donor-supported programs, aimed at improving business management, contract management, and staff retention can help to mitigate these risks.

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*»» Contractual relationships will only be sustainable  
if partners perceive  
that they are better off by engaging in it. ««*

*Da Silva (2005)*

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## Contract Farming

Contract farming is a system of producing and supplying agricultural products using forward contracts. The contracts may govern the quantity, quality, price and time. In the Planning for Scale briefs we also note the use of contract production of seed as well as other agricultural products. Contract farming has been critical to the development of agriculture in developed economies, with a particularly strong emergence in the 1950s and 1960s. Contract farming is practiced around the world by private companies, governments and parastatals (Singh, 2006). In the modern era of our global food system, contract farming provides a means to meet increasingly strict market specifications, expand supply chains, and reduce risk.

Contract farming plays two roles in our consideration of scale. First, its use among seed producers has the potential to expand the volume of improved varieties delivered to smallholder farmers. Second, its use in downstream as a means of engaging more smallholder farmers in the production of agricultural products can influence the demand for improved varieties of seed. There are a few differences between the two uses of contract farming. For example, the identification of outgrowers in seed production is more selective, owing to the isolation distances, technical rigor and quality control processes required in seed production. Though not tailored to it entirely, much of this discussion is directly applicable to seed production contract farming.

There are many variations in the specific contents of contracts, but most can be categorized in one of the following three ways (Da Silva, 2005):

**Market specification**, which is an agreement based on the specific product and quality attributes to be produced, and on timing, location and price of sale.

**Resource providing**, which includes the provisions of market specification contracts, but also provides for inputs to farmers whereby the cost is recovered upon delivery of product. This category is especially important as a financing mechanism for smallholder farmers.

**Production management**, which agrees to specific procedures for managing production (e.g. organically certified).

The transaction costs of contracting out to many smallholder farmers can be high, especially when taking into account other factors such as proximity to paved roads, access to irrigation, and literacy (Fan et al., 2013). With these conditions, individual smallholder farmers may be limited to participating in market specification contracts whereby the buyer only purchases the product that meets its quality specifications. In many countries, contract farming with smallholders depends on a lack of availability of larger farmers in a particular area, a government directive or externally mandated incentives for producers to contract with smallholder farmers. Singh (2006) cites the diversity of contracts engaging smallholder farmers as being so great that it somewhat defies generalizations. He does note that most of these contracts are oral and unwritten, leading some authors to consider the relationships in socio-economic and cultural contexts rather than to focus on the stipulations of a contractual agreement.

Many experts note that the development and strengthening of producer organizations can address a number of the disadvantages of contracting with smallholder farmers by effectively reducing risk for both parties, improving negotiating power for producers, reducing transaction costs for buyers and providing opportunities for the inclusion of smallholder farmers (Fan et al., 2013; Da Silva, 2005; FAO, 2012).

Side-selling by the farmer is often cited as a major constraint to engaging more smallholder farmers in contract farming operations. Side-selling occurs when the farmer can earn a higher price in the market place and therefore does not honor a pre-arranged commitment to sell to the contract buyer. On the farmer side, mechanisms to mitigate the risk of side-selling need exploration. Currently used solutions, include: (1) requiring contract growers to harvest their product with the buyer's equipment; and (2) working through producer organizations, which has the advantage of peer pressure to adhere to contract terms for the benefit of the group (Fan et al., 2013; Van Mele, 2011; Da Silva, 2005).

Secondly, contract farming has the potential to skew risk dynamics in such a way that farmers assume a disproportionate share of risk. This becomes an advantage to buyers but a potential disadvantage to farmers. Once again, improving bargaining power through producer organizations is noted as a coping mechanism to negotiate a more balanced risk structure. Production insurance is another possible solution, to be included as a condition of the contract, for fluctuations in climate or pest infestations (Da Silva, 2005).

Much commercial seed production is already carried out through contracted seed growers, implying that contracting is a necessary method to scale seed availability. Given the paramount importance of seed quality, resource-providing contracts have advantages in many contexts. This, of course, raises working capital issues for the seed company (buyer).

For further reading, Da Silva (2005) and Singh (2006) provide excellent discussions of the potential advantages and disadvantages of contract farming.

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Diversification is also an important risk mitigation mechanism for seed production enterprises. Successful enterprises involved in seed production in sub-Saharan Africa tend to reduce their risk and stabilize revenue streams through engaging in other business activities such as seed production for other crops, livestock activities, and commercial production (Van Mele, 2011). Given the sunk costs inherent in fixed assets (e.g. warehouses, equipment), businesses benefit from increasing the utilization of these assets through the production of other seeds, or the rental of warehouse space or equipment to other nearby businesses.

Finally, many seed company managers come from non-business, mostly scientific backgrounds. Their skills are often critical to starting a business, where the focus is on the technical side, but as the business grows there is a

need to bring in further management expertise (O'Connor, 2013). A related issue is that many seed companies have trouble attracting and keeping qualified financial staff, and experiencing regular turnover in the most senior finance position (O'Connor, 2013). Technical assistance in business management is needed, particularly in managing growth and expansion.

### **Financial services available to SME seed producers**

Despite the strategic importance that seed production enterprises play in agricultural sector growth, seed companies in sub-Saharan Africa face even greater constraints to accessing finance than other agribusinesses. The prospects of securing financing for early-stage seed producers are practically non-existent. This is partially due to their needs falling into the 'missing middle' financing void, but also to perceptions of risk. Seed companies are generally misperceived as having greater risk than commercial agricultural production due to the high quality control requirements for seed production, higher production costs requiring greater cash flow (i.e. irrigation, inputs, storage, packaging), and more complicated demand forecasting, land and outgrower management. Some seed, such as hybrid maize, actually maintains stable demand with little price fluctuation, but these nuances are not well understood by financial institutions.

The few sources of financing for these entities are: commercial banks, privately-managed investment funds, equipment leasing entities, and occasionally donor grants such as those from AGRA. Commercial loans are generally unattractive due to high collateral requirements and high interest rates. Privately-managed investment funds have developed the most innovative financial products tailored to SME seed producers, but their scale has been limited, and, as discussed previously, equipment leasing has a very small footprint in sub-Saharan Africa.

### **Potential scaling solutions**

SME seed producers SMEs have specialized business models whose financing needs don't fit squarely into conventional debt or equity financial tools. Doubling production requires greater amounts of medium-term working capital for labor and input purchases, and oftentimes fixed capital investments for equipment purchases to mechanize planting, harvesting, processing, storage and distribution. These require longer-term duration; lower interest rates; payment and enforcement mechanisms that work around limited collateral; 'exit' options that account for unsophisticated financial sectors and business interest; and risk reduction mechanisms.

There are currently few financial tools readily available to finance these needs, but tools currently being piloted in sub-Saharan Africa, and more widely used in developing countries, could be replicated to meet seed

company needs. A few financial tools that may be well-suited to seed company business models are:

**Customized, royalty-based debt instruments.** Debt instrument innovations from private investment funds that pair longer-term, lower-interest debt with royalty payments from sales revenues. This model circumnavigates high collateral requirements and allows for longer-term financing while also generating immediate returns to investors thereby lowering risk.

**Convertible debt-to-equity financing.** This quasi-equity solution involves convertible debt, which over time turns into equity in the company. This solution can work when there are sufficient conditions for 'exit'.

**Asset-based finance.** This tool provides much-needed equipment and other tangible assets to businesses at a low-cost over a longer period of time. Despite the need, mobility, and healthy secondary market, seed production equipment is not often readily available in many countries – requiring importation (and usually high taxes).

The first two financial tools are most commonly provided by privately-managed investment funds. As Africa has gained the attention of global capital markets for being the next big area of economic growth in the world, it has attracted a lot of investors and money. Privately-managed investment funds with investors from both the public (government and development financial institutions) and private sectors have been emerging since 2005 – now comprising over 53 investment funds that either exclusively or partially invest in the agricultural sector in sub-Saharan Africa (Silici and Locke, 2013). Twenty-one funds dedicated to the agribusiness sector aimed at raising US\$5.88 billion for future investments (between 2005 and 2012). However, such funds are only marginally invested in seed enterprises and, when they are, they tend to focus on hybrid maize production in just a few countries. The exception is the African Seed Investment Fund (ASIF), which invests explicitly in seed companies that provide certified seed to small-holder farmers in East Africa. Managed by Pearl Capital, the fund has committed more than US\$8 million to 11 seed businesses (African Assets, 2013).

'Social impact investing' is a catch-all term describing investors who are willing to earn lower returns and have longer time horizons in exchange for measured social and environmental impacts from their investments. This group has invested in agriculture, but has offered limited support so far to seed companies. Technical assistance often complements social impact investments in agribusiness, acknowledging that capacity-building is essential to generate the desired financial and social returns. One investment fund described technical assistance as part of their 'value proposition' to the SMEs as well as their investors. Some refer to these funds as 'private

equity', though those funds that invest in seed enterprises differ significantly from traditional private equity (PE) funds (see Figure 2).

Characteristics	Traditional private equity	Developing country investment funds
Investors	Combination of institutional investors (banks, mutual funds, pension funds, hedge funds and private equity funds) and retail investors (high net worth individuals, family offices and private companies).	Private funds (institutional investors and private companies) often backed by development finance institutions (DFIs); almost 50% of PE funds investing in Africa have, or have had, DFIs among their investors.
Portfolio companies	Mature businesses with experienced management. Note: Venture capital is a subset of private equity that targets early-stage, high potential start-up companies, thereby assuming a higher investment risk compared to PE.	Growing businesses, mostly SMEs.
Size of investments	US\$10 – US\$50 million for 'middle market' private equity, but could be smaller if they purchase minority stakes – there are many variations.	US\$1 million - US\$10 million.
Structure of financing	Short to medium-term finance provided in return for an equity stake in potentially high growth investments; and leveraged buyouts, where large amounts of debt are issued (along with the capital raised) to fund a large purchase.	Innovative approaches that reduce risk, such as quasi-equity debt instruments, whereby debt is repaid to the investor in installments based on cash flow plus interest, and/or debt is converted into equity over time, and equipment leasing.
Desired returns	20 % + plus management fee.	30–40 %+ for conventional PE funds (to accommodate high perceived risk). Around 10% of impact investors seek double or triple bottom lines, i.e. they seek to realize social and/or environmental returns along with financial returns.
Degree of involvement	Actively involved in managing the companies.	Actively involved in managing the companies; technical assistance is often provided.
Exit	Floating the company on a public stock exchange through an initial public offering (IPO), a subsequent buyout (whereby the portfolio company is sold to another private equity firm), or a trade sale (i.e. the sale of company shares to industrial investors).	'Soft exits' through sales of equity stakes to other impact investors or through repayment of debt.

**Figure 2 – Differences in private equity in developing countries.** Source: Silici and Locke (2013); adapted by author.

Despite private equity's flexibility in developing financing terms that meet the needs of growing seed production SMEs, many African entrepreneurs, are highly reluctant to take on outside equity investors. Issues with equity investing include (O'Connor, 2013):

- Many equity investors are eager to fund a company to increase land holdings, warehouse space, mechanization and/or irrigation. However, often they underestimate the parallel need for working capital financing to support company growth.
- Exit requirements and strategies for investors are often not compatible with seed company needs. In addition, early stage seed companies need smaller amounts of money, and investors want to capitalize on investment economies of scale and lend larger amounts than seed companies can realistically absorb or pay back at their current stage of growth.
- Generally, the exit opportunities for pure equity investments are few and far between, particularly in smaller and lower-income countries. There is often not sufficient interest from strategic buyers or secondary markets to purchase SME seed companies and they are simply too small for initial public offerings (IPOs).
- Equity investors generally want a proper Board of Directors in place, and this requirement runs counter to sole proprietorship or closely held partnership desires. Very often, the company's largest shareholder is also the general manager, which makes it difficult to advance the practice of having a Board of Directors assume responsibility for maximizing the value of the company.
- Some countries have repatriation rules in place that make it difficult for investors to pull their money out once the investment has been made, such as in Ethiopia and Malawi.
- Some countries have limitations on the amount of foreign funding that can go toward working capital loans, as this falls under bank regulations.

Finally, there is growing interest among multinational seed companies in acquiring African seed companies as they look to expand into Africa, particularly for hybrid maize and other cash crops.

**Royalty-based (or sales-based) financing** is a promising financial tool that could be more widely adopted by commercial banks. Traditional commercial loans have steep collateral requirements. Property, plant and equipment (PP&E) are the most commonly used collateral in Africa (O'Connor, 2013). The viability of these depends on secondary markets for the PP&E in the event of default, as well as registry systems that assign ownership, and credit bureaus that ensure the same PP&E are not used as collateral for other financial instruments. Not only are these systems not well-developed in Africa (particularly in rural areas where seed enterprises are often located), but SMEs possess limited PP&E. Furthermore, commercial loans are typically expensive – requiring high interest rates ranging anywhere from 18 to 22%,

and the loans are sometimes not structured to synchronize with the sales and production cycles, with large penalties for late payments. Alternatively, royalty-based loan products could provide medium- to long-term loans whose repayments are tied to a percentage (0.5 to 5%) of gross sales in addition to a low-interest rate. This financial tool reduces the dependency on collateral as well as risk to the lender by ensuring regular payments against debt, but timed to align with revenue streams.

Once again, **asset-based financing**, including equipment leasing, is well-suited to assisting with seed production needs, but very little is offered in sub-Saharan Africa. At the SME level, the leasing of vehicles and/or seed processing equipment is an attractive financial tool that requires little or no collateral. In addition, leasing requires lower down payments than traditional loans (Kloeppinger-Todd and Sharma, 2010).

Finally, **capacity building** of SME seed producers is an important activity underlying the effective use of growth financing, as well as of financial institutions themselves. Providing training and technical assistance to these enterprises is needed, either in conjunction with extending financing, or independent of financing. Seed production companies would benefit from demand forecasting, business planning, cash flow management and management of staff and contract farmers (Langyintuo et al., 2008). They would also benefit from improving marketing approaches that improve brand loyalty and meet the needs of smallholder farmers, such as small packs and timed discounts, as well as marketing approaches that provide greater incentives for distributors to carry their particular brand of seed. Capacity building of seed producers can be provided through direct consultancy, training, peer-to-peer counseling and mentoring, and through professional networks. Financial institutions, too, require technical assistance to develop new financial tools, such as royalty-based loans and asset-based financing.

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## Longer term SME seed producers financing solutions

The seed industry in developed countries use **transaction-based solutions** to generate working capital, such as receivables-backed financing and inventory-based financing (described below). Such financial solutions are not very common in Africa, particularly within the seed industry. In sub-Saharan Africa, they are most often used for highly tradable and exportable commodities with larger buyers that instill greater security in the system. The sub-Saharan African seed industry is not yet developed enough to take advantage of these financial tools, but the potential is there.

**Receivables-backed financing** – This tool converts sales made on credit into immediate cash flow. Financing is typically provided by a bank and is predicated upon a stable history of sales and timing of payments. For seed systems, this mechanism could ease the cash flow between

the seller of foundation seed to a seed multiplier, or a seed multiplier to a seed buyer (i.e. distributor or seed aggregator/company). The latter example is most needed in the African context whereby loans of approximately US\$5000 to US\$10,000 are needed. The lending determination is heavily weighed by the strength of the buyer, not the seller. In these instances, a bank may lend up to 70% of the amount of the receivables to the company to tide it over until the funds are collected.

**Inventory-based financing** – Similar to the concept behind warehouse receipts, inventory-based financing could also apply to seed companies who have high quality inventory for which there is a secondary, wholesale market (i.e. the material is also licensed by other companies who could theoretically opt to purchase a company's excess inventory). In these instances, it is possible for a bank to lend against up to 50% of the wholesale value of the seed.

Structured financial products such as receivables-backed and inventory-based financing are already provided for larger companies in Africa by commercial banks, but are not yet available to seed enterprises. Expanding receivables-backed and inventory-based financing would require loan officers to develop a better understanding of seed enterprise business models, and establish greater certainty in sales contracts and, correspondingly, their enforcement.

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## Implementing scaling solutions

The following are key considerations to be incorporated when designing public sector assistance programs that aim to extend access to financial services for SME seed producers.

**Establishing and maintaining high quality seed is a cornerstone of growing seed systems.** Building and maintaining trust in a brand of seed is an important building block for scaling the demand for seed. Efforts that promote greater trust in the system and ensure quality can be built into programs that work with SME seed producers such as product germination guarantees, scratch card systems, transparent packaging, and seed insurance.

**Scaling through contract farming requires careful management.** Given the prevalence of contract seed grower (or outgrower) arrangements in the seed production industry, a careful look at the dynamics of contract farming is recommended to ensure a sound foundation for seed production growth. Contract farming dynamics of interest include: the timing of production, harvest and quality control procedures; the financial exchange; the underlying incentive structure; and the surrounding policy environment.

**Incentives may be needed to scale up production of OPV and vegetatively propagated seed.** Private seed enterprises focus mainly on commercial crops such as maize, sorghum, cash crops and horticultural crops. Seed for many open-pollinated variety (OPV) crops and vegetatively propagated

crops (VPCs) are not being produced by commercially-oriented seed production companies. There are examples throughout sub-Saharan Africa of seed producers who pair hybrid maize seed production activities with a relatively small portion of OPV seed. Exploring the regional and local production dynamics of smallholder farmers may illuminate opportunities to add other highly relevant seed production to commercial activities. Certain pairings could also be complementary to soil fertility, and could maximize the productivity of land assets such as pairing grains with legumes. One example of an incentive structure is to place conditions on seed producers to produce OPV and VPC seed as part of large governmental or NGO purchasing programs such as the World Food Program. Such uses of market power can create unanticipated consequence in the system, however.

## 5 – How to achieve scale through financial services

Readers are now familiar with the fact that our definition of scale includes, front and center, the idea of sustainability. In the context of this brief, sustainability needs some translation. Sustainable solutions in scaling access to finance involve, over the long-run, exploring how to increase private capital investment in agriculture. In the short-term, however, there is a need for catalytic initiatives by the public sector to establish new financial tools and prove the concept that producer organizations and seed companies are 'bankable' entities. Sustainable solutions require working in partnership with the private sector and eliminating conflicts that displace or limit private sector activity. We generally discourage the use of overt subsidies unless they are used to catalyze innovation and investment and are implemented in partnership with the private sector with clearly defined exit strategies.

In recommending the prioritization of financial tools for scaling to smallholder farmers, agro-dealers and SME seed producers, it is important to understand the public sector entry points to catalyzing scale. Developmental institutions (including governments, donors, NGOs, foundations, and impact investors) have an important role to play in improving sustainable access to financial services for seed chain actors. The types of solutions considered here for scaling improved access to financial services fall into four categories:

**Catalyze innovation** and expansion of financial products tailored to the needs of seed chain participants.

**Reduce risk** for both the farmers and SMEs, but also for financial institutions in lending to this clientele.

**Build capacity** of financial institutions, farmers and seed enterprises. Targeted capacity building throughout the seed chain and associated financial institutions is necessary to grow seed-specific financial intermediation.

**Reform policy** to provide incentives and reduce barriers to the creation and expansion of new financial products.

Solutions to any one of the gaps we have identified in access to finance will entail a combination of the above and there is a need for significant innovation overall. The impacts are large, however, in terms of catalyzing scale in seed systems. First, if smallholder farmer risk is reduced, then farmers will have greater choices in their production practices, thereby leading to increased adoption of improved seed varieties and more stable yields. Second, if new financial products tailored to smallholder needs are made available, and both farmers and financial institutions have sufficient knowledge and capacity to use and process these financial products, then there will be greater use of these products, thereby leading to increased adoption of improved seed varieties and more stable yields. Finally, if seed producers and agro-dealer SMEs have knowledge and access to financial services tailored to their business needs, and training in risk reduction strategies, then seed producers and agro-dealer SMEs will expand their operations, thereby increasing the availability of high quality seed.

### **Catalyze innovation**

Catalyzing innovation and expansion of financial products tailored to the needs of seed industry participants is perhaps the most directly impactful activity that could be undertaken by the public sector and development institutions. All activities in this category should be undertaken in close partnership with private players to ensure customization to local conditions, long-term sustainability in the provision of the resulting tool, as well as institutionalized learning. Donors and foundations can provide grant funding for piloting financial tools in new markets and geographies through public-private partnerships. Enhancing knowledge of, and best practices for creating and marketing, financial services that meet the needs of a growth-oriented seed sector is also a value-added contribution.

### **Reduce risk**

Reducing risk for farmers, seed industry SMEs and financial institutions in lending to this clientele is essential for increasing greater access to and availability of financial services by seed sector actors. Risk can be reduced to farmers and seed industry SMEs through the design of financial tools such as savings programs, weather-index crop insurance, and asset-based lending. Reducing risk to financial institutions in lending to the seed sector is an impactful public sector entry point as well. Financial institutions encounter several risks that limit their interest in servicing smallholder farmers, including:

- Business risk/loan repayment risk
- Lower returns/higher transaction costs
- Climate risk
- Collateral risk – lack of collateral in the event of default
- Lack of knowledge in servicing the agricultural sector
- Lack of knowledge/skills of smallholder farmers
- Adverse selection of insurance customers

The public sector can reduce these risks through a number of mechanisms that directly partner with financial institutions, including providing partial loan guarantees, targeting on-lending funds, training in the development of new financial tools, and servicing new market segments. As discussed previously, new financial tools such as asset-based lending, weather index crop insurance, royalty-based loans and mobile financing effectively reduce risk incurred by financial institutions as well. Partial loan guarantees and targeted on-lending are two public sector entry points that have not been discussed in previous sections and are therefore discussed below.

First-loss partial loan guarantees are offered by a guarantor (usually a government or donor) to a private financial institution or fund that agrees to cover a portion of loan repayment in the event of default. The purpose of the guarantee is to encourage financial intermediation to a target group by essentially reducing risk to the financial institution. Guarantees require minimal financial outlays from donors and effectively leverage private funds. The World Bank (2013) suggests that partial credit guarantees have demonstrated great success in reaching SMEs involved in the greater agri-food sector. For example, AGRA has agreed to guarantee part of agricultural loans administered by Standard Bank. It will guarantee 20% of defaults the first year, 15% the second year, and 10% the third through fifth year. The goal is to lend to US\$25 million to at least 5,000 smallholders (World Bank, 2013). The United States Agency for International Development (USAID) uses the Development Credit Authority (DCA) to offset risk, though it typically has more favorable terms – covering up to 50% of loan defaults. USAID also combines training to both borrowers and lenders to maximize the developmental impact of the guarantee program (Mhlanga, 2010). Most partial guarantee programs supported by donors are often directed to agricultural lending at the farm-level and value-added processors, but could easily be amended to focus on a target group(s).

Due to renewed interest in guarantee systems, the FAO (2013) recently published a summary of lessons learned for loan guarantee systems. Of particular interest is the need to mitigate the issue of moral hazard caused by the reduced incentives of a lender to monitor the use of loans, and therefore lower repayment rates when they know they will be partially reimbursed for losses. A suggested mitigation strategy is to only guarantee financial products that would otherwise not be available to the borrower were it not for the guarantee fund. Similarly, the brief suggests requiring risk man-

agement procedures from the financial institutions to ensure proper due diligence has been conducted. Finally, FAO recommended establishing governance structures that minimize political influence in the operations of guarantee systems (FAO, 2013). Zander et al. (2013) also provide a detailed account of guarantees complete with case studies. The authors confirm that guarantees are an effective mechanism to improve access to farmers and small agribusiness to finance, therefore leading to greater ability to adopt improved seed varieties.

Targeted on-lending programs offered by donors such as the Millennium Challenge Corporation, the World Bank and the International Fund for Agricultural Development (IFAD) provide subsidized liquidity to financial institutions tied to the disbursement of loans to the agricultural sector (of which some portion is often dedicated to financing farmers depending on how the program is targeted). Lending through these programs is often administered by financial intermediaries (i.e. banks, credit unions, MFIs) that make decisions using their own lending processes as well as complying with the investment criteria of the donor organizations. Contrary to state-sponsored banks, borrowers often do not realize that the funding originates from donor programs. There is evidence of high repayment rates if portfolios are managed professionally, with adequate monitoring and enforcement mechanisms in place (Crawford, 2013).

### **Build capacity**

Targeted capacity building directed toward smallholder farmers, agro-dealers and SME seed producers, as discussed in their respective sections above, is necessary to create the sufficient knowledge-base of basic financial literacy, cash flow management, business and technical acumen, and risk reduction management techniques. Furthermore, capacity building is needed within financial institutions to extend new products and expand into new client segments, as well as to reduce business risk and raise awareness of financial products to smallholder farmers and SMEs. Financial institutions often lack knowledge of the agricultural sector and seed sub-sector. Training financial institutions to work with and provide new products appropriate for the seed sector, seed sector business models, seasonality and longer-term time horizons, and relaxed collateral requirements, is now needed to extend the private sector's reach to this group.

Strengthening linkages among *value-chain actors* such as seed producers, contract farmers, agro-dealers and smallholders will also yield opportunities for financing between actors at strategic transaction points. Strengthening knowledge of market information, contract negotiation and enforceability, and financial tools that can be structured between actors are needed to facilitate greater access to working capital, increase sales, procure products, reduce risk and improve operating efficiencies. There is also a need

for technical assistance to facilitate linkages that engage smallholder farmers into commercial value-chains and strengthen relationships among actors.

## Reform policy

Policy reform is imperative to enabling the entire system to work better and support the creation and expansion of new financial products. There are significant opportunities to support the recommendations above in the policy space. Policy reforms that are especially impactful to the financial services sector include: (1) securing timely contract enforcement mechanisms; (2) strengthening land tenure rights and exchange regimes; (3) establishing and enforcing the use of credit bureaus; (4) establishing laws and regulations that support leasing services, equipment registries, and relieving taxes associated with importation of equipment; and (5) expanding financing from privately managed investment funds and/or foreign investors, through policies that relax capital repatriation regulations and attract investment through tax incentives. *Planning for Scale Brief #6: Enabling Environment* discusses access to finance policy issues in greater depth.

Figure 3 captures a visual summary of the prioritized financial tools recommended for scaling for each of the three target market segments (smallholder farmers, agro-dealers, and seed producers), as well as the four public sector entry points.

## SEED SECTOR FINANCIAL TOOLS

### SMALLHOLDERS

**Working Capital:** Marketing solutions · Savings · Mobile financing

**Fixed Capital:** Asset-based finance · Savings · Mobile financing

**Risk Reduction Tools:** Savings · Weather-index insurance · Training

### AGRO-DEALERS

**Working Capital:** Mobile financing · Commercial loans

**Fixed Capital:** Mobile financing · Asset-based finance

**Risk Reduction Tools:** Leasing · Training

### SEED PRODUCERS

**Working Capital:** Royalty-based loans · Convertible debt-to-equity financing

**Fixed Capital:** Asset-based finance

**Risk Reduction Tools:** Leasing · Training/Technical assistance

### Expected Results

- Financial institutions provide greater access to financial tools tailored to the needs of seed chain actors
- Increased adoption of improved seed by smallholder farmers
- Seed producer and agro-dealers increase the availability of seed
- Seed chain actors have greater capacity to manage cash flow and business growth

- Pilot new tools or expansion into new markets
- Fund R&D and market studies for new tools
- Expand use of digital technology
- Expand financing of privately managed investment funds

CATALYZE  
INNOVATION AND  
EXPANSION

- Fund targeted partial loan guarantees and on-lending
- Pilot insurance products
- Pilot leasing products
- Fund R&D and market studies for new tools
- Support savings products

REDUCE  
RISK

Provide training and technical assistance to:

- Smallholder farmers
- Producer organizations
- Seed producers
- Agro-dealers
- Financial institutions

BUILD  
CAPACITY

- Political and macroeconomic stability
- Seed policy reform
- Fund basic infrastructure
- Secure contract enforcement
- Strengthen land tenure rights
- Establish and enforce credit bureaus
- Establish laws and regulations that support leasing services
- Relax capital repatriation regulations
- Attract investment through tax incentives

REFORM  
POLICY

## PUBLIC SECTOR ENTRY POINTS

Figure 3 – Seed Sector Financial Tools and Public Sector Entry Points to Scaling Access

## 6 – Conclusions and summary of scaling options

This brief has described the reasons why access to finance for farmers and seed industry SMEs is a critical lever to scaling smallholder access to improved seed varieties. There are many other possible solutions that we did not include in this brief. We sought to prioritize solutions particularly related to scaling seed systems and the adoption of agricultural technologies among smallholder farmers.

We suggest that by supporting a complementary package of activities in the four development areas (catalyzing innovation and expansion of new financial products, reducing risk, building capacity along the seed chain and within financial institutions, and reforming policy accordingly), changes will occur in the seed system leading to greater adoption of improved varieties and to scaling up the availability of high quality seed.

Extending the reach of financial tools that meet the needs of seed chain actors requires a great deal more catalytic effort by governments, donors, NGOs, foundations, impact investors, financial institutions and businesses to draw more investment into the seed sector. Governments in particular are well-positioned to coordinate actions of strategic players in the seed sector – ensuring complementarity of programs, maximization of limited resources and learning. Governments are also pivotal in championing policy reforms to improve the overall enabling environment. Similarly, any of these actors could also play instrumental roles in brokering partnerships to address specific constraints.

Diverse financial solutions are needed to meet the financing and risk-reduction needs of our target groups (smallholder farmers, agro-dealers and seed producers). Figure 4 provides a summary of scaling goals that address specific seed chain needs, and outlines how the public sector can support potential solutions. Varying combinations of the scaling solutions suggested in this brief, tailored to country-specific needs, will be necessary to create true change that will achieve the desired outcomes of greater use of improved seed varieties and greater availability of high quality seed. The specific interventions will depend on local conditions and the willingness of different actors to work collectively toward common objectives.

Figure 4 –  
Summary of  
scaling tools.

## IMPROVING ACCESS TO FINANCE FOR SMALLHOLDER FARMERS

### SCALING GOAL

Improve the availability of working capital for smallholder farmers to enable adoption of improved seed varieties.

### HOW TO DO IT

- Provide training to seed producers and agro-dealers in developing marketing solutions to smallholder farmers (including small packs and aligning timing of sales with the cash flow of smallholder farmers).
- Establish village-level informal savings and micro-credit programs, such as village savings and loan associations (VSLAs).
- Partner with formal financial institutions (such as MFIs, credit unions and commercial banks) to develop savings and micro-credit products using mobile platforms. Funding for R&D, market studies, training of financial institutions, raising awareness of the service, and piloting of the product is necessary. Complementary efforts to reduce risk to financial institutions in lending to this market segment may be necessary – such as supporting partial loan guarantees or targeted on-lending programs.

### SCALING GOAL

Improve availability of capital for farmers to invest in equipment and facilities

### HOW TO DO IT

- Partner with private entities (vendors and financial institutions) to pilot equipment leasing (e.g. irrigation, processing equipment) and/or fund R&D and market studies on such financing tools.
- Establish village-level informal savings and micro-credit programs, such as VSLAs.
- Partner with formal financial institutions (such as MFIs, credit unions and commercial banks) to develop savings and micro-credit products using mobile platforms. Funding for R&D, market studies, training of financial institutions, raising awareness of the service, and piloting of the product is necessary.
- Complementary efforts to reduce risk to financial institutions in lending to this market segment may be necessary – such as supporting partial loan guarantees or targeted on-lending programs.

### SCALING GOAL

Reduce risk to smallholder farmers to enable them to make better production choices (including seed and other inputs) and increase adoption of improved seed

### HOW TO DO IT

- Establish village-level informal savings and micro-credit programs such as VSLAs.
- Partner with formal financial institutions (such as MFIs, credit unions and commercial banks) to develop savings products using mobile platforms. Funding for R&D, market studies, training of financial institutions, raising awareness of the service, and piloting of the product is necessary.

- Complementary efforts to reduce risk to financial institutions in lending to this market segment may be necessary – such as supporting partial loan guarantees or targeted on-lending programs.
- Partner with formal financial institutions such as insurance providers or banks to pilot weather-index crop insurance products. Funding for R&D, market studies, training of financial institutions, raising awareness of the service, and piloting of the product is necessary.
- Partner with seed companies and financial institutions to pilot seed insurance and/or seed germination guarantees. Funding for R&D, market studies, training of financial institutions, raising awareness of the service, and piloting of the product is necessary.
- Provide training to smallholder farmers in financial literacy, production technologies and marketing options.

## IMPROVING ACCESS TO FINANCE FOR AGRO-DEALERS

### SCALING GOAL

**Improve the availability of working capital for agro-dealers to enable input purchases, thereby increasing the availability of seed**

### HOW TO DO IT

- Partner with commercial banks to develop mobile platforms and extend their reach into rural areas by targeting agro-dealers (among others) and their working capital needs. Funding for R&D, market studies, training of financial institutions, raising awareness of the service, and piloting of the product is necessary.
- Foster relationships between agro-dealers and commercial banks to access short-term loans. Complementary efforts to reduce risk to financial institutions in lending to this market segment may be necessary – such as supporting partial loan guarantees or targeted on-lending programs.

### SCALING GOAL

**Improve availability of capital for agro-dealers to invest in equipment and warehousing facilities to support expanding availability of seed**

### HOW TO DO IT

- Partner with commercial banks to develop mobile platforms and extend their reach into rural areas by targeting agro-dealers (among others) and their needs for capital to invest in equipment and warehousing facilities. Funding for R&D, market studies, training of financial institutions, raising awareness of the service, and piloting of the product is necessary.
- Partner with private entities (vendors and financial institutions) to pilot equipment-leasing products (e.g. vehicles, storage equipment) and/or fund R&D and market studies for such financing tools.

## SCALING GOAL

Reduce risk to agro-dealers to enable them to improve business and cash management to support expanding availability of seed

## HOW TO DO IT

- Partner with private entities (vendors and financial institutions) to pilot equipment-leasing products (e.g. vehicles, storage equipment) and/or fund R&D and market studies for such financing tools.
- Provide training to agro-dealers in business management skills, marketing mechanisms, and agricultural extension.

## IMPROVING ACCESS TO FINANCE FOR SME SEED PRODUCERS

## SCALING GOAL

Improve the availability of working capital for SME seed producers to expand the availability of seed

## HOW TO DO IT

- Partner with commercial banks to develop royalty-based loan products with a particular focus on seed production SMEs (among others). Funding for R&D, market studies, training of financial institutions, raising awareness of the financial instrument, and piloting of the product is necessary. Complementary efforts to reduce risk to financial institutions in lending to this market segment may be necessary – such as supporting partial loan guarantees or targeted on-lending programs.
- Partner with privately managed investment funds to expand investment in SME seed producers, encouraging the use of innovative financial tools, such as royalty-based debt and convertible debt-to-equity arrangements. Direct funding through these vehicles is one option. Providing some assistance in understanding the seed production business model, and evaluating the financial viability of seed producer SME growth may also be necessary.

## SCALING GOAL

Improve availability of capital for SME seed producers to invest in equipment and warehousing facilities to support expanding availability of seed

## HOW TO DO IT

- Partner with private entities to pilot equipment-leasing products (e.g. irrigation, processing equipment, vehicles) and/or fund R&D and market studies for such financing tools.

## SCALING GOAL

Reduce risk to SME seed producers to enable them to improve business and cash management to support expanding availability of seed

## HOW TO DO IT

- Partner with private entities to pilot equipment-leasing products (e.g. irrigation, processing equipment, vehicles) and/or fund R&D and market studies for such financing tools.
- Provide training and technical assistance to SME seed producers in demand forecasting, marketing approaches, business planning, cash flow management, and management of staff and contract farmers.

## REDUCING RISK TO FINANCIAL INSTITUTIONS IN SERVICING NEW MARKET SEGMENTS

### SCALING GOAL

Reduce risk of financial institutions in providing new products tailored to the needs of seed chain actors and servicing new market segments

### HOW TO DO IT

- Partner with financial institutions to pilot new tools and/or expand into new markets. Fund R&D, market studies, training of financial institutions, raising awareness of the financial instrument, and piloting of products is necessary.
- Partner with financial institutions to expand the use of digital technology, to extend financial services to rural areas and reduce transaction costs for both the financial institution and the consumer.
- Reduce risk to financial institutions lending to new market segments and/or using new financial tools, by supporting partial loan guarantees or targeted on-lending programs.
- Provide training and technical assistance to financial institutions in new products appropriate for the seed sector, seed sector business models, seasonality and longer-term time horizons, relaxed collateral requirements, and effective marketing approaches.
- Support policy reform efforts that enable the entire system to work better and promote the creation and expansion of new financial products. Policy reforms that directly impact the financial services sector include: (1) securing timely contract enforcement mechanisms; (2) strengthening land tenure rights and exchange regimes; (3) establishing and enforcing the use of credit bureaus; (4) establishing laws and regulations that support leasing services, equipment registries, and relieving taxes associated with importation of equipment; and (5) expanding financing from privately managed investment funds and/or foreign investors, through policies that relax capital repatriation regulations and attract investment through tax incentives.

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