Purpose

This brief is intended to support the Agricultural Development Program in understanding and evaluating the current scope and potential development impacts of agribusiness development clusters, special economic zones (SEZs), and agribusiness incubators/accelerators targeting smallholder farmers. The review consists of a summary of the emergence of agribusiness clusters, SEZs and incubators since 1965 (with a focus on smallholder agriculture-based economies in Latin America, Africa, and Asia), followed by a series of brief case studies of example programs with particular relevance for guiding proposed clusters/incubators in the countries of Ethiopia, Tanzania, Nigeria and the Eastern Indian states of Uttar Pradesh, Bihar, and Odisha. Summary conclusions draw upon published reports and primary analysis of case studies to highlight apparent determinants of success and failure in agribusiness investment clusters and incubators, including characteristics of the business environment (markets, policies) and characteristics of the organizational structure (clusters, accelerators) associated with positive smallholder outcomes.

Abstract

The modern conception of agribusiness development clusters emerged in the 1960s around traditional export commodities such as coffee, cotton and cocoa, but the emphasis has shifted over time to non-traditional agricultural exports and
horticulture crops such as fruits, berries, vegetables and cut flowers. Special economic zones (SEZs) are a somewhat older development model, but also gained prominence in the mid-20th century. Agribusiness incubators are a relatively more recent development: the first agribusiness incubators emerged in Latin America in the 1970s and have only begun to gain traction in Sub-Saharan Africa over the past decade. This brief examines the potential for agribusiness development clusters, SEZs and agribusiness incubators to contribute to the growth of smallholder incomes, crop yields, and other development goals.

We first review the published and grey literature on agribusiness investment clusters, special economic zones, and incubators with a focus on smallholder agriculture-based economies in Latin America, Sub-Saharan Africa, and Asia, summarizing regional trends in the scope and scale of cluster and incubator development over time. Then, to evaluate the factors leading to successful agribusiness development and rural livelihood improvements among smallholder-focused agribusiness incubators, we explore the business environment (market characteristics, enabling policies), the structure of agribusiness incubators (funding source, development focus, program design), and available evidence of smallholder impacts among 18 illustrative incubators. Summary conclusions highlight the ways in which agribusiness development clusters, SEZs, and incubators interact with smallholders, and determinants of success in reducing poverty and meeting other development objectives for smallholder and women farmers. Successful pro-poor agribusiness clusters share several common characteristics including strong market connections, managerial competence, and flexibility in the face of risk and changing circumstances, such as consumer preferences, trade opportunities, or technological innovations. Smallholder farmers may benefit from agribusiness incubators when such programs are designed to support small enterprises or add value to farmers’ raw products. Smallholder farmers may also benefit indirectly from general improvements in agribusiness value chains, particularly when incubators exist within established agribusiness clusters, but evidence of direct benefits to smallholders from such general agribusiness development initiatives is lacking. Agribusiness incubators also often face several challenges including crop-related risks, lack of access to long-term financing, and administrative hurdles, which can lead to a lack of assets and business capacity which may be particularly acute in smallholder-dominated sectors. A relatively small literature on agribusiness development suggests a supportive state policy environment combined with access to finance and institutions (e.g. farmer cooperatives) which address such challenges is important for encouraging pro-poor cluster, SEZ and incubator development.

I. Introduction

A growing body of scholarship as well as recent reports suggest the potential for agribusiness investment clusters, special economic zones (SEZs), and incubators to stimulate growth in farmer incomes, foster sustainable increases in crop yields, support market chain expansion, and contribute to other development goals (World Bank, 2012; Gálvez-Nogales, 2010; Reardon et al., 2009; Zeng, 2008). However the evidence base for evaluating the potential for agribusiness-based initiatives to contribute to sustainable, pro-poor, smallholder-oriented economic growth remains limited. This brief reviews the available evidence on a variety of diverse agribusiness development interventions to examine the potential for agribusiness investment clusters, SEZs and incubators to contribute to the growth of smallholder incomes, crop yields, and other development goals.

In theory agribusiness development, or the expansion of private sector investment in agriculture, can play an important role in the agricultural transformation of developing country economies. Staatz (1998) describes agricultural transformation as the process of individual farmers shifting from highly diversified, subsistence crops towards more specialized market-oriented production. This process involves greater value chain integration as well as increased integration of agriculture into other sectors of the economy. Historically agricultural transformation has been argued by many (e.g., Kuznets, 1966; Staatz, 1998; Timmer, 1998) as the first step towards the structural transformation of a developing economy, in which surplus labor is freed from the rural agricultural sector and the economy moves towards a “more developed” state of predominantly urban manufacturing and services provision (World Bank, 2008; de Janvry & Sadoulet, 2010; EPAR Brief No. 121, 2011).

But while this pathway of increasing agricultural productivity and reductions in agricultural labor leading to increases in urban production and incomes was observed in many of the world’s developed countries in the past, in most of Sub-Saharan Africa the share of labor devoted to agriculture has declined since 1960 with little growth in GDP, while similar trends have been observed in Latin America since 1980 (World Bank, 2008). In the face of such trends, more recent scholarship has begun to explore opportunities for improving rural productivity and livelihoods in situ, that is, seeking to improve farmer livelihoods within agricultural systems, rather than seeking to shift farm labor away from agriculture (Hounkonnou, 2012). In this new framework of sustainable agricultural development it has been suggested that agribusiness may still play an important role, by increasing agricultural productivity and incomes for smallholder farmers through the provision of much-
needed finance, reducing smallholders’ input costs, and increasing access to new technologies and market opportunities (World Bank, 2008).

On the other hand, a growing body of scholarship emphasizes the potential for agribusiness development to increase risks for already-marginalized smallholder farmers (World Bank, 2008). Shifts away from producing staple crops to higher value, but higher input, intensive crops such as fruits and vegetables can expose farmers to higher costs and risks, including dependence upon large central processors and the loss of locally adapted seed varieties and food production systems (World Bank, 2008). Moreover globally the agribusiness sector is highly concentrated, with the majority of inputs such as pesticides and seeds being produced by a small number of very large multinational firms. This concentration has contributed to the development of global, regional, and national supply chains with strong “large-firm biases” (infoDev, 2014a; Gálvez-Nogales, 2010) which often bypass the traditional rural and local markets where smallholders are concentrated (World Bank, 2008). Pressures to capture economies of scale by consolidating agricultural lands for commercial production also raises concerns for food security and rural employment, while the high-intensity production systems associated with agribusiness often carry a high environmental burden, particularly in less developed countries where regulatory structures are weak and farmers may thus be exposed to high levels of harmful pesticides, or engage in environmentally unsustainable production practices (World Bank, 2008).

Thus several important questions remain surrounding when and how the growing agribusiness sector might benefit smallholder farmers, and what supporting policies and investment frameworks are needed to catalyze and support pro-poor agribusiness development. To summarize the current evidence on links between agribusiness development and smallholder farmers, this brief reviews the published and grey literature on agribusiness development clusters, SEZs, and incubators over the past 50 years, with a focus on the determinants of success and failure among smallholder-focused cluster- and incubator-based initiatives in the agricultural economies of Latin America, Africa, and Asia.

The structure of the brief is as follows. Section II provides an overview of published research on the emergence, structure, and performance of agribusiness investment clusters, and introduces the primary theories and typologies used to study and measure performance among cluster-based initiatives. This section also summarizes available quantitative data on the emergence of agribusiness clusters/accelerators worldwide since 1965, drawing on published records and reports as well as primary research on the smallholder impacts of past and present agribusiness development efforts in Latin America, Africa, and Asia. Section III examines the literature on Special Economic Zones (SEZs) in agribusiness development, and considers the effects of SEZs alongside agribusiness clusters and related initiatives on smallholder farmers. Section IV provides an overview of the literature on agribusiness incubators, introducing variations in business models and activities, and strategies for smallholder engagement. The section concludes with a summary of findings from 18 brief case studies of selected programs, offering examples of successful versus unsuccessful incubator or accelerator models in various different market and policy contexts, with a specific emphasis on impacts for smallholder farmers. Section V concludes, highlighting lessons from published reports and primary analysis of quantitative data and case studies with implications for how investors, program managers, and policymakers might leverage clusters/SEZs/accelerators to benefit smallholder farmers.

II. Agribusiness Clusters

A cluster is a geographic concentration of firms that work in a related value chain. This section discusses cluster characteristics, how clusters can interact with smallholder farmers, and the emergence and evolution of clusters over time.

Description and Theory

Porter (1990) established the foundations of economic cluster theory, defining a cluster simply as a group of firms engaged in similar economic activities. Krugman (1990) formalized the economic model for clusters and showed that geographic proximity increases returns to capital such that related firms will often end up concentrating in one region. Subsequent research by Porter (1998), Nadvi (1999) and Mytelka (2004) emphasized the importance of shared location, shared supply chains, shared markets and shared relationships with universities or other institutions for facilitating interactions between firms in clusters to promote knowledge exchange, technology spillovers, and stimulate innovation. Summarizing the body of cluster scholarship to date, Gálvez-Nogales (2010) defines clusters as a geographic concentration of industries that create ‘value networks’ that aggregate vertical relationships along value chains with horizontal relationships among producers. This cooperation among a range of actors, in theory, can ignite a virtuous cycle of development by enabling economies of
scale, rapid transmission of information, and adoption of new technologies that enhance long-term competitiveness of industries (Gálvez-Nogales, 2010).

Cluster formation is usually related to natural endowments and proximity to major markets and infrastructure, as well as local skills in trading, design, or production capacity, and local and regional market demand (Zeng, 2008). Clusters can emerge organically, as in the case of the Maharashtra Grape Cluster in India where several spatially-dispersed small farmers formed cooperatives that then created a private company, Mahagrapes, to collectively market their grapes and bargain for fair prices based on quality standards (Roy & Thorat, 2008). Alternatively clusters may also emerge with support from external actors, as with the Bio Bio blueberry cluster in Chile where Fundación Chile facilitated cluster formation by introducing new berry varietals and supporting export market development (Zeng, 2008; McCormick, 1999). Clusters may also either fall within administrative boundaries such as the Cuyo wine cluster in the Cuyo Region of Argentina, or they may cross traditional boundaries such as the Lake Victoria fishing cluster across Kenya, Tanzania, and Uganda. Indeed, recent research suggests that social distance (i.e., degree of interactions between key actors) may be more important to cluster performance than physical distance (INNO, 2010).

Gomes (2006) suggests that growers of perennial crops such as mangoes, grapes or apples may be more likely to act collectively, or in collaboration with the state than those primarily involved in the production of annual crops due to higher costs of upgrades and the complexity of research and development needs (Gomes, 2006).

Characteristics of Agribusiness Clusters

In spite of significant contextual variation all clusters share the following key characteristics:

- **Vertical linkages** between suppliers of raw materials and production inputs, producers, processors, exporters, and retailers. Colocation of actors at multiple parts of the value chain is one of the defining features of agribusiness clusters (Gálvez-Nogales, 2010; INNO, 2010; Zeng, 2008). In many developing countries, actors in different parts of the value chain are dispersed, and many smallholders do not have sufficient access to inputs, post-harvest infrastructure or markets (EPAR Brief No. 28). In such contexts co-location through agribusiness clusters can reduce transaction costs, and increase productivity and innovation (Birthal, Joshi, & Gulati, 2005; McCormick, 1999).

- **Horizontal linkages** between producers (e.g., via grower’s cooperatives or smallholder associations). The lack of economies of scale is commonly cited as a barrier to agricultural development in many developing countries (Holtzman et al., 1997, Reardon & Berdegué, 2002). Creating linkages through producers’ organizations can help increase farmers’ bargaining power, information sharing, and further reduce transaction costs between farmers and buyers (Roy & Thorat, 2008; Birthal, Joshi, & Gulati, 2005; Pingali et al., 2005; McCormick, 1999). Producers’ associations may also stimulate demand for public investment in infrastructure, research and development and extension (Zeng, 2008; Roy & Thorat, 2008).

- **Linkages between supporting service providers** (e.g., public and private sectors, NGOs, research institutes, and universities). Clusters may not emerge on their own, and may need significant public investment to develop and perform effectively (Gálvez-Nogales, 2010; Oyelaran-Oyeyinka & Lal, 2006). A recent review of business clusters in Europe (including but not limited to agribusiness clusters) emphasized the importance of a “cluster sprout”, i.e., the presence of preexisting clusters in an ‘emerging stage’ capable of becoming full-fledged industrial clusters (INNO, 2010). Following the establishment of a cluster, cluster members may benefit from linkages from supporting institutions that provide specialized training, education, information, research and technical support (Porter, 1998). Clusters also often involve private sector financial firms who provide access to financial services and investment (Oyelaran-Oyeyinka & Lal, 2006).

- **Critical mass of actors** (i.e., a sufficient number of cluster participants to realize economies of scale and other scale-related benefits). Andersson et al. (2004) introduced the concept of a “critical mass” of actors, resources and competencies necessary for a cluster to effectively lower transaction costs, facilitate information flows, provide access to specialized factor markets and interact effectively with local and regional consumers (p. 19). Research on industrial clusters in Europe has suggested that in most cases around 50 companies are necessary to reach critical mass (CLOE, 2006), although more recent research has suggested it is not the number of members that matters so much as the level of sustained interaction between them (INNO, 2010). Others have argued critical mass is determined by both the number of firms in the cluster and also other local conditions such as local and regional human capital availability, and the presence of...
supporting services and research institutions (Brenner & Mühlig, 2007). An expansive literature on the evolution and development of clusters in Europe also points to an important role for public policy and government institutional actors in supporting cluster formation and effectiveness: “with the increased involvement of policy making and the expansion of the knowledge-based economy, the active presence of actors from higher education, research organizations and policy is increasingly seen as a decisive factor for cluster development” (INNO, 2010).

The emergence of an apex organization is another distinguishing feature which is frequently cited in the literature on agribusiness clusters (World Bank, 2014; FAO, 2013). Apex organizations serve several functions including the coordination of different parts of the value chain, marketing of the cluster’s product, and mobilization of foreign direct investment (FDI). Apex organizations have taken many shapes including quasi-governmental agencies, private corporations, and extensions of existing producers’ associations.

Smallholder Engagement in Agribusiness Development Clusters

Smallholder farmers represent one often overlooked actor in agribusiness value chains, and yet there are many reasons why smallholders might be important value chain actors. Small farms tend to have lower labor costs and higher productivity for mixed-cropping systems with higher levels of crop diversity (Pingali et al. 2005). As small farmers move into commercial production, they tend to specialize in higher-value crops and productivity decreases (even as incomes grow) as the requirement for inputs increases. Consequently networks of small low-input smallholders may, on average, produce a given quantity of crop at a lower cost than a single, large, high-input farm. Reardon et al. (2009) further argue that spatially disaggregated small farms may also be a less risky sources of crops than concentrated large farms because they are less likely to experience a major shock at the same time. In contrast if a large farm is exposed to a pest, blight, or weather event, the entire crop could be lost.

High transaction costs associated with negotiating contracts and transporting goods, however, often inhibit smallholders from benefitting from local, regional and national commercialization. One response is for smallholders to organize into marketing cooperatives to reduce transaction costs and increase competitiveness at the production stage of crop value chains (Birthal, Joshi, & Gulati, 2005). Agribusiness clusters seek to realize similar goals, but at multiple value chain stages.

Table 1 summarizes the ways that cluster value chains interact with smallholder farmers.

<table>
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<tr>
<th>Table 1. Ways that Cluster Value Chains Interact with Smallholders (adapted from Reardon et al., 2009; Birthal, Joshi, &amp; Gulati, 2005; Pingali et al., 2005; McCormick, 1999)</th>
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<tbody>
<tr>
<td><strong>Input Markets/ Procurement</strong></td>
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<tr>
<td>Cooperatives/bargaining power</td>
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<td>Access to markets/domestic and international</td>
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<td>Shift in production choices</td>
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<tr>
<td><strong>Waged labor</strong></td>
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<td>Seasonal labor</td>
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<tr>
<td><strong>Output Markets/ Prices</strong></td>
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<tr>
<td>Shift in farm gate prices for domestic staple crops</td>
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<td>Shift in input prices</td>
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<td>Quality differentiation</td>
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<td><strong>Risk</strong></td>
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<tr>
<td>Adoption of new technologies</td>
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<td>Credit, insurance and other financial services</td>
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<td><strong>Spillovers</strong></td>
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<td>Shift in tastes and preferences</td>
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<tr>
<td>Evolution from subsistence to commercial production</td>
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</table>
From a smallholder farmer perspective agribusiness clusters may offer a number of potential benefits. As Porter (1998) observes, “a cluster of independent and informally linked companies and institutions represents a robust organizational form that offers advantages in efficiency, effectiveness and flexibility” (Porter 1998: 79). Input costs may be lowered through cluster participation - while individual small-scale farmers may lack economies of scale, groups of farmers can realize ‘collective scale’ to access and invest in infrastructure (e.g., warehouses, equipment, vehicles, etc.) and improved quality standards/certification needed to access industrial channels (Reardon et al., 2009; Birthal, Joshi, & Gulati, 2005; Pingali et al., 2005). More generally, clusters may enable creation of scale economies where smallholder farmers share costs related to training, certification, and technology adoption (Gálvez-Nogales, 2010; Birthal, Joshi, & Gulati, 2005). Firms at other levels of the value chain can further help farmers access credit and inputs, thereby lowering production costs and making contract arrangements financially feasible for firms and farmers alike (Reardon et al., 2009). There is also the possibility for smallholders to realize price premiums through improved quality or improved market access - premiums that ideally compensate for any additional coordination or input costs associated with cluster membership (Reardon et al., 2009).

Finally, cluster membership may also influence farmers’ perceived risk and willingness to innovate: smallholder farmers are typically more risk-averse than large-scale farmers because they have fewer assets and less wealth, decreasing farmer’s willingness to adopt new farming technologies or post-harvest processing standards to sell through industrial value chains (Pingali et al., 2005). But secure contracts and established relationships with output and input markets through agribusiness clusters can lower the relative risk of market participation and increase a farmer’s willingness to engage in new markets and to try out new technologies (Reardon et al., 2009). Over time, cluster membership may also help farmers adapt to changes in value chains and integrate into broader national and regional agri-food systems (Gálvez-Nogales, 2010).

**Typologies of Clusters**

The structure of an agribusiness development cluster may vary across several dimensions including products, market orientation, and presence of an apex organization. Clusters have emerged surrounding a wide array of subsistence and cash crops, including staple crops such as cereals (Mali, India, Burkina Faso, Ghana), domestic or export-oriented fresh fruits and vegetables (Chile, Colombia, Brazil) cash commodities such as cotton (Cote d’Ivoire, Kenya, Togo), coffee (Nicaragua, Guatemala, Kenya, Zambia), and cocoa (Madagascar, Sierra Leone, Belize) as well as fisheries (Chile) and non-timber forest products (Mozambique). Clusters place different levels of emphasis on horizontal and vertical diversification. Some clusters focus on a variety of complementary crops which can all benefit from similar infrastructure development (e.g., coffee and cacao in Cote d’Ivoire benefiting from export-oriented policies that targeted both sectors simultaneously. Others focus on increasing processing capacity to add value to one or two core crops (e.g., fruit value-added processing in Colombia, or the Pune Food Processing cluster in India).

| Table 2. Cluster Dimensions (adapted from Jacobs & De Man (1996), cited in INNO, 2010) |
|---------------------------------------------|----------------------------------|----------------------------------|
| **Dimension** | **Description** | **Policy Measures** |
| Horizontal | Share the same market or product | Organize conferences; create sector initiatives to draw similar firms. |
| Vertical | A part of the same value chain | Facilitate suppliers and contractors to co-develop, co-market goods and services; create quality control and environmental policies geared toward the whole value system. |
| Lateral | Share the same philosophy (sustainability or eco-oriented cluster), or shares the same capability (a media cluster) | Identify technological synergies between sectors. |
| Technological | Share the same technology, usually located near universities or research centers (such as a biotechnology cluster) | Can be the starting point for the creation of a cluster (proximity to a research university). |
| Focal | A central actor drives demand | Facilitate interaction between organizations through a ‘cluster project.’ |

Clusters have aimed to increase production for domestic consumption (lemons in Mexico, cereals in Mali) and to increase export earnings (cut flowers in Colombia or Ecuador, or soybeans in Ghana). Many clusters to date have been oriented toward high-value export-oriented sectors (e.g., the tea cluster in Kenya, or forest products in Mozambique). There are, however, some exceptions, most commonly in the aquaculture, livestock and dairy sectors (Gálvez-Nogales, 2010) such as
the Dong Lieu Root Crop Cluster in Vietnam which produces cassava and canna for starches and uses the bi-product as feed for pigs (Gálvez-Nogales, 2010; Peters et al., 2002).

Other models that are similar to agribusiness development clusters, but have important structural differences are:

- **Agribusiness complexes** predate the modern cluster model, referring to a set of relationships emerging among firms operating within a given sector but not typically including geographic concentration or institutional support (Gálvez-Nogales, 2010).
- **Agro-industrial parks**, also called agro-production or (agri-) food parks, are shared facilities and services (e.g. transport, storage and packaging) built explicitly for the processing of agricultural products to ease the need for capital investments by small and medium sized producers (Gálvez-Nogales, 2010; FAO, 2006c).
- **Agri-export zones** use the idea of a cluster to attempt to enhance the export of agricultural products. Assistance to different elements of the cluster can include fiscal incentives as well as financial assistance for activities such as training, research and development (R&D) and infrastructure development (Gálvez-Nogales, 2010).
- **Export consortia of food and agricultural products** are usually made up of small and medium producers and can be defined as “a voluntary alliance of firms with the objective of promoting the goods and services of its members abroad and facilitating the export of agricultural products through joint actions” (adapted from UNIDO, 2003). They are formal institutions and the firms involved in them are not necessarily geographically proximate (Gálvez-Nogales, 2010).
- **Subnational Innovation Systems (SIS)** are similar to development clusters but are typically based on public administrative boundaries and solely focused on the accelerated spread of innovation (Gálvez-Nogales, 2010.)
- **Growth-Poles and Corridors** are a relatively newer strategy which attempt to spur development in a broad range of rural development sectors including horticultural exports, food crops, livestock, industry, and tourism (Gelb et al., 2015; Midler et al., 2013).

Table 3 provides an overview of the different types of value chain integration, with examples identified through this review.

<table>
<thead>
<tr>
<th>Type of Cluster</th>
<th>Prominent Features</th>
<th>Examples from Cases</th>
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<tbody>
<tr>
<td>Agribusiness Development Cluster</td>
<td>Geographic concentration; Organized around a single product or sector.</td>
<td>Cut flowers in Ecuador, Colombia, Kenya.</td>
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<td></td>
<td></td>
<td>Tree crops in Tanzania, Philippines, Mozambique.</td>
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<td>Cotton in Mali, Uganda, Cote d’Ivoire.</td>
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<tr>
<td>Agribusiness Complexes</td>
<td>Narrower than an agribusiness development cluster, usually includes only businesses (as opposed to other actors, like government and universities).</td>
<td>Cocoa in Colombia, Sao Tome and Princeipe.</td>
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<td></td>
<td></td>
<td>Cameroon Rubber in Sri Lanka.</td>
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<tr>
<td>Agro-Industrial Parks</td>
<td>Agri-food parks; shared facilities and services, such as transport, storage, packaging. Important for SMEs.</td>
<td>Food Processing in India, Ethiopia, Mozambique.</td>
</tr>
<tr>
<td>Agri-Export Zones (or Export Processing Zones)</td>
<td>Usually focuses on exporting a pre-specified crop or value-added product.</td>
<td>Tea, cotton in Kenya, Malawi.</td>
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<tr>
<td></td>
<td></td>
<td>Food processing zones in Seychelles, South Africa, Senegal, Nigeria, Namibia, Mali and DR Congo.</td>
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<tr>
<td>Export Consortia</td>
<td>Voluntary alliance of producers that form associations to export collectively (usually made up of SMEs).</td>
<td>Mango, pineapple, cashew, fish, potato in Guinea.</td>
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<td></td>
<td></td>
<td>United Nation’s UNIDO program in India, Indonesia, Malaysia, Mexico, Nicaragua, Honduras, Jamaica, Bolivia, Madagascar, Morocco, and Tunisia.</td>
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<tr>
<td>Subnational Innovation System</td>
<td>Focus on facilitating innovation (rather than on production of certain crops or products). Both involve a variety of actors but SIS is less product-specific.</td>
<td>Brazil, Uruguay, Argentina after signing the Mercosur trade agreement.</td>
</tr>
<tr>
<td>Growth Poles and Corridors</td>
<td>Focuses on a broad set of rural development sector activities in a defined area. Uses a “cluster of clusters” to maximize benefits from agglomeration.</td>
<td>SAGCOT in Tanzania, Bagre Growth Poles in Burkina Faso.</td>
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</table>
Emergence and Evolution of Agricultural Development Clusters

There have been several efforts to collect and compile information on the number and distribution of clusters worldwide (Gálvez-Nogales, 2010). The Harvard Business School’s Institute for Strategy and Competitiveness has compiled profiles for 833 clusters from 49 countries, but only 15 of these focus on agricultural products. Of that 15, only 8 are in developing countries or areas (3 in India, 2 in the Philippines, and 2 in Palestine) (Gálvez-Nogales, 2010; Van der Linde, 2002). The Cluster Initiative Greenbook (Sölvell et al., 2003) gathered information on 238 cluster initiatives, or efforts to increase growth and competitiveness of existing clusters and value chain actors, through an online survey. Sub-Saharan Africa, Latin America, and Asia are also underrepresented in their sample, with only 1 respondent from Africa (South Africa), 1 from Latin America (Chile), and 5 from Asia if Japan is excluded (this includes 2 from Mongolia, 2 from Turkey, and 1 from Malaysia). A follow-up survey focusing on developing and transition economies was commissioned by USAID in 2005 (http://cluster-research.org/gcis.htm), but limited information is available describing its results (Ketels, Lindqvist, & Sölvell, 2006).

Sample Selection

Drawing on published records and reports as well as on past and present agribusiness development efforts by major donors we developed a catalog of 286 potential clusters and related initiatives in developing countries from internet searches, reviews of literature retrieved from academic and other electronic databases, and reviews of websites and data portals of major international development agencies such as the World Bank and USAID. 62 cases were excluded for being outside of the relevant geography of Sub-Saharan Africa, Asia and the Pacific, and Latin America. Of the remaining 224, 121 cases were excluded for lack of relevance to the research question (i.e., not having many of the salient features of a cluster as described above).

Of the 103 identified developing country clusters, an additional 13 cases were excluded for having a non-agricultural focus (this included clusters who primarily produced fish or non-timber forest products, as well as non-food commodities). The remaining 90 clusters were coded for basic descriptive information about the facilitating agency, apex organizations, date of emergence, geography, size and crop focus. Table 4 provides descriptive characteristics of the sample, and a full list of clusters and supporting documents is available in Appendix I.

Summary Characteristics of Developing Country Clusters

The majority of developing country clusters (69 out of 90) are involved in the production of crops for export including non-traditional agricultural exports and high-value crops such as fruits, berries and vegetables (45), or commodity crops such as cocoa (14), cotton (13) and coffee (11). Only 14 clusters in the sample are concentrated on the production of cereals, of which 6 are concentrated on the production of maize, and 6 on the production of rice. All of the clusters engaged in cereal production in our sample are located in Sub-Saharan Africa, reflecting a relatively recent and intentional use of clustering as a strategy to increase cereals production in the region. Our sample also includes 8 clusters involving other staple crops for either export or domestic consumption such as legumes (3), and root-crops such as cassava (3), and potato (1), and taro (1). These clusters are more evenly distributed across Sub-Saharan Africa (2), in Latin America (1) and Asia (2).
Early examples of developing country agribusiness clusters in our sample are heavily focused on export commodities, including the Kenya Coffee Cluster, the Kenya Tea Cluster as well as several wine clusters in South Africa, Bolivia, Chile, Argentina and Brazil. Notable exceptions to the pattern of export-orientation of clusters are the Maharashtra Grape Cluster, which can be considered to have begun with the formation of the Maharashtra Grape Growers Association in 1961 and was originally targeted toward the domestic market¹; the Dong-Lieu Root Crop Cluster (Tuan & Cuna, 2005) which is involved in starch processing and livestock rearing in Vietnam; and the Bogota Cut Flower Cluster in Colombia, which is the first non-traditional agricultural export cluster to emerge in our sample (Arbeláez et al., 2012).

As shown in Figures 1 and 2 the population of agribusiness clusters in developing countries remained relatively stable until the mid-1980s. During this period the World Bank made several investments to rehabilitate and privatize commodity sectors in the developing world. The 1980s also saw the emergence of Value Chain Incubators such as Fundación Chile (see case study in Appendix II) which helped introduce new crops and varieties across Latin America (infoDev, 2013c). This led to the establishment of non-traditional agricultural export clusters such as the Bio Bio and Maule Berry Clusters in Chile (Gálvez-Nogales, 2010; infoDev, 2013c), and the Matto Grosso Soy Cluster in Brazil (Context, 2015). These trends continued through the late 1990s when renewed interest in agricultural development spurred interest in cluster promotion activities. Clusters focused on the production of non-traditional agricultural exports such as fresh vegetables, fruits, and nuts expanded during the early 2000s, followed soon after by cluster promotion projects focused on cereals and other staples. Good Agriculture Practices (GAP) clusters also emerged during this period to help producers meet the phyto-sanitary, environmental, and labor certifications required to access western markets in the post-liberalization period (Gálvez-Nogales, 2010; GTZ, 2008; Webber, 2007; Korpraditskul, 2005; UNDP, 2004).

¹ In 1991 Mahagrapes, a marketing cooperative, was formed to promote the export of grapes produced by 16 cooperatives in Maharashtra State (Roy & Thorat, 2008).
New approaches to cluster promotion appeared around 2010, including the development of growth pole and corridor projects which focused on stimulating broader rural development through the agglomeration of agriculture, livestock, forestry, industrial development and tourism clusters in a defined area. Growth corridors, such as the Southern Agricultural Growth Corridor of Tanzania or the Bagre Growth Pole Project in Burkina Faso represent examples of this approach (Gelb et al., 2015; Midler et al., 2013).

Today, agribusiness development clusters in developing countries vary in size from as little as USD $300,000 for the Western GAP Cluster to as much as $1.5 billion for the Cuyo Wine Cluster. Farmer participation also varies widely, from as few as
100 producers in the Rio Grande de Norte Melon Cluster to over 1.3 million farmers on nearly 6.2 million hectares of land in the Cote d'Ivoire Agriculture Sector Support Project.

The level of smallholder engagement also varies - and at times the number of smallholder beneficiaries of cluster activities is difficult to determine. For example, the following projects all have, on average, less than one hectare of land per farmer-participant: the Jamaica Sugar Industry, the Cotton Sector Development Project (Togo), the Afghanistan Horticulture Export Cluster and Livestock Productivity Project, the Agricultural Rehabilitation and Development Project (Mozambique), the Bolivia Wine Cluster, the Kenya Coffee Cluster, the Kenya Tea Development Agency, the Mid Yangtze Agricultural Development Project (China), and the Pichincha Cut Flower Cluster (Ecuador). However some of these projects have seen consolidation of landholdings (such as the Kenya Coffee Cluster), while others involve large amounts of labor on intensive plots of land that might not normally be considered smallholdings (such as the Pichincha Cut Flower Cluster).

Determinants of Economically Viable and Pro-Poor Clusters

A large part of the agribusiness cluster literature focuses on the determinants of the economic viability of clusters and cluster members. In a report based on the European experience with clusters INNO-Germany (2010) breaks down hypothesized success factors into three different levels: necessary, contributing, and complementary. Though the INNO review did not have an explicitly pro-poor focus, they include a list of recommended policies and measures/benchmarks associated with cluster survival and economic performance (See Table 5).

| Table 5. Success factors for cluster development (adapted from INNO, 2010) |
|-----------------|-----------------|-----------------|-----------------|
| Level           | Factor          | Policy          | Measures                    |
| Necessary Factors | Network Partnership | Financial support to cluster initiatives | Collective strategic plan; cluster brand or name; degree of institutionalization; partnership agreements among members |
|                  | Innovative Technology | R&D tax credits; funding for basic/applied research; technology transfer schemes; link research institutes to firms; develop specialized research facilities | R&D expenditures, patents/copyrights; number of new products or services |
|                  | Human Capital   | Support higher education; vocational training; promote specific areas of education; encourage companies to collaborate on recruiting and training | New graduates hired in clusters; enrollment in training programs |
| Contributing Factors | Physical Infrastructure | Invest in business incubators; technology parks; communication infrastructure | Presence of business incubators; technology parks; cluster-specific infrastructure |
|                  | Presence of Large Firms | Inward investment activities; regional marketing; initiate supply-chain management projects | Leadership in technology and market share |
|                  | Enterprise Entrepreneurialism | - | Number of new start-ups; number of companies entering cluster |
|                  | Access to Finance | Regional development funds target clusters; innovation funds; business angel networks; 'fit for funding' training measures | Value of venture capital and loans; participation of financiers |
| Complementary Factors | Specialist Services | Supportive policy environment to access business support services | Number of consultants or other professionals (patent attorneys) relevant to the cluster |
|                  | Access to Markets | Support institutionalization of companies; support joint branding; provide information about markets | Sales/export growth |
In a recent review Gálvez-Nogales (2010) found that successful agribusiness clusters, which allow small scale farmers and agribusinesses to raise productivity, and engage in more market-oriented value added production share several common characteristics, including strong market connections, managerial competence, and flexibility in the face of changing circumstances, such as consumer preferences, trade opportunities, or technological innovations. Gálvez-Nogales (2010) further observed that a sustained level of ‘co-opetition’ (a combination of inter-firm rivalry and collaboration) is a key predictor of economically successful clusters. Other success factors noted in their review include:

- **Geographic proximity** as an enabling factor. Krugman (1990) and Schmitz (1995) highlight the importance of geographic proximity as a driver of cluster development and consolidation. In a study of a variety of agribusiness firms in the Limari Valley of Chile, however, Geldes et al. (2015) found that geographic proximity and institutional proximity were statistically unrelated to inter-firm marketing cooperation, with the only significant predictor of cooperative behavior being social proximity (a measure of inter-firm trust and relationships).

- **Market orientation**, affecting profitability and vulnerability. Export-oriented markets increase cluster vulnerability to external shocks such as price and currency fluctuations and are also subject to tariff and other trade barriers and international regulatory standards such as phyto-sanitary requirements, however many agencies promoting clusters have focused on clusters on high-value agricultural products because they are believed to earn the highest trade value in export markets. Export-orientation is argued to create dynamism within the cluster because of higher demand for the product and incentives to for producers, processors, and marketers to cooperate to reduce risk and manage the costs associated with export market quality and safety standards (Gálvez-Nogales, 2010).

- **A supportive national policy context**, with policies supporting the diffusion of innovation (both technical and organizational) and policies supporting smallholder farmers to obtain higher productivity and higher value-added production. (Gálvez-Nogales, 2010).

- **Infrastructure and incentives for producers, processors, and service providers** that promote efficiency. Incentives can include tax incentives for large firms, access to financing and credit services for smallholder farmers, and investment in training to facilitate human capital and managerial capacity development. Infrastructure can include upgrading roads and ports and other access points, irrigation systems, cargo services, and internet access (Gálvez-Nogales, 2010).

- **An enabling environment** that favors agribusiness investment and growth (McCormick, 1999). Part of the enabling environment includes attracting foreign direct investment and private sector support. Yet, FDI and support from research institutions can also lead to large-firm bias and the exclusion of smallholder farmers (Gálvez-Nogales, 2010).

**Barriers to Pro-Poor Cluster Development**

A number of hypothesized factors contributing to cluster failure in poor and rural communities have also been described in the literature, including a lack of rural infrastructure (e.g., irrigation, distribution and storage systems, roads, transport, power and telecommunications, markets, banking and finance, and research and extension services) (Gálvez-Nogales, 2010). Other generally unfavorable conditions for clusters (whether agribusiness or more general industrial clusters) include weak linkages and informal organization among actors, specialization in lower-value niche industries, and difficulties reaching financial sustainability in an increasingly competitive global environment (Zeng, 2008).

Sölvell (2008) argue the primary reasons for cluster decline are excessive concentration on primary goods, heavy government involvement protecting failing companies (reducing benefits of cluster membership), radical technological shifts or shifts in demand originating from other locations, and finally war and other extreme circumstances. In some cases over-domination by smaller-scale firms has also been cited as a problem for agribusiness development clusters (Gálvez-Nogales, 2010), with many failed clusters appearing to be missing the ‘critical mass’ of larger or well-connected firms required to confer learning externalities and catalyze cluster development.

There is also evidence to suggest possible disadvantages of clusters for smallholder farmers. For example Gálvez-Nogales (2010) note that many agribusiness clusters in developed countries are dominated by large firms with low smallholder participation. The authors further observe that “[agribusiness clusters] need increases in scale to cut costs and to offer financial scope for investments for sustainability, implying that small-size farmers and firms are clearly at a disadvantage” (Gálvez-Nogales, 2010). In some of the cases we examined, the percentage of smallholders involved in production decreased over the life of the cluster, suggesting that farms were consolidated. Gomes (2006) reported that smallholders’
(measured as producing less than 1,000 tons annually) share of production decreased from 48% to 30% of apple production in the Santa Catarina Apple Cluster between 1985 and 1997.

Commodity crops and horticultural crops for export or sale in high value markets may be particularly vulnerable to price fluctuations (with such risks often passed along to producers by upstream processors (World Bank, 2008)), and are often targets for new non-tariff trade barriers such as phyto-sanitary or labelling requirements (further increasing the costs of smallholder-based production relative to larger-scale farming).

Altogether these examples and the available literature suggest that agribusiness development clusters which have been successful in remaining economically viable and engaging smallholders to date share some common features (also cited as important in the general business cluster literature) including strong market connections, managerial competence, and flexibility in the face of changing circumstances, such as consumer preferences, trade opportunities, or technological innovations. Gálvez-Nogales (2010) further observed that a sustained level of ‘co-opetition’ (a combination of inter-firm rivalry and collaboration) is a key predictor of economically successful clusters - although there is no empirical evidence to suggest an ideal number of firms or an ideal mix of cooperation and competition needed for cluster success.

Evidence of Smallholder Engagement

Of the 90 clusters in the sample, just over half (46) provided some evidence (quality not reviewed) of smallholder participation and/or smallholder impacts. As shown in Figure 3, these clusters were geographically dispersed across Asia and the Pacific (ASO - 9), Latin America and the Caribbean (LAC - 16) and Sub-Saharan Africa (SSA - 21). Of these smallholder-related clusters, 23 were involved in the production of commodities, 19 in the production of non-traditional agricultural exports (NTAEs) or horticultural crops, 5 in livestock/dairy, 7 in cereals, and 3 in other staples. Figure 4 shows the proportion of projects reporting on smallholder engagement. Half of all World Bank and USAID funded projects reported either a smallholder focus or had at least some smallholder beneficiaries. Similarly 6 out of 11 clusters promoted by local organizations reported smallholder impacts, and 5 out of 6 clusters supported by universities also reported smallholder ties. Only 5 out of 13 clusters promoted by national government emphasized smallholder benefits.

Types of benefits to smallholders reported in the documents reviewed include increased yields, incomes, and increased access to credit, training and extension services. A survey of smallholder farmers participating in the USAID-funded Production, Finance and Improved Technology (PROFIT) program in Zambia found that maize production increased by 14 percentage points for farmers who participated in the program compared to those who did not; participants also saw average maize sales increase by 161%, compared to only 56% for non-participants (USAID, 2010). In Ghana, smallholders participating in IFDC’s 1000+ Cluster Promotion saw profits for Tamale Pepper Cluster members increase by eight-fold in a period of four years due to a tripling of production and a doubling in price. And farmers in soy clusters in Ghana saw average margins per acre increase from a loss of 35 Ghana Cedis per acre to a gain of 165 Ghana Cedis between 2007 and 2009 (IFDC, 2010). Finally, in the Kenya Tea Cluster adoption of sustainable practices such as agronomic practices, crop diversification, agro-forestry, soil conservation and water management has allowed farmers to increase yields by 36% on average and in some cases to receive premiums for buyers for being Rainforest Alliance Certified (IFC, 2014).

Earlier smallholder-oriented clusters tended to focus on the production of one or two primary commodities, where more recent cluster and cluster development initiatives have tended to focus on a more diversified set of crops including commodities, NTAEs, cereals and other staples. This may be due to past poor experiences with clusters that depended solely on the production of primary goods: in an early World Bank project to revitalize the Cameroonian cocoa sector between 1988 and 1995, for example, the cluster suffered from a lack of interest in the crop following sharp price drops, increasing difficulties in obtaining inputs, lack of support services, inadequate feeder road construction and maintenance,
and the growing age of cocoa trees and of the planters themselves. Similarly, in Ecuador in the 1990s external shocks led several companies in the Ecuadorian Cut Flower cluster to go bankrupt, largely as a result of collapsing flower exports following a financial crisis in Russia (Korovkin, 2003). (As an counterpoint, the success of the Maule Rasberry cluster in Chile was due in part to international instability: conflicts in the Balkans in the 1990s halted most fruit exports from the former Yugoslavia, thereby creating an opportunity for Chilean exporters to consolidate a larger market share of frozen berry exports to Europe.)

Consolidation of power in crop value chains also appears to be problematic in clusters solely producing one or two commodities. In the Kenya Coffee Cluster, which hit peak production in 1987, there has been a steady consolidation of ownership, and by 2000, four companies controlled 40 percent of exports. This market power was reflected in the share of the final retail price received by coffee growers: in 1975 growers captured 30 percent, in 2000 they captured only 10 percent (Muturi 2014; Monroy et al., 2013; Condliffe et al., 2008). Likewise, Gálvez-Nogales (2010) estimated that large, intensive-productive firms in the Nicaraguan Coffee Cluster representing one percent of the workforce controlled 36 percent of production, and that power in the value chain was concentrated among 5 buyers who purchased 45% of all coffee exports. Brazil’s Pertolina Juazeiro Fruit Cluster is also characterized by significant consolidation of market power - in this case, the cluster was established after the tomato paste industry collapsed in the 1980s, by which time many small growers had already abandoned their farms and been replaced by medium size growers who could afford the investments needed to diversify to fruit production (Gomes, 2006).

Two other possible determinants of clusters’ successful engagement with smallholder farmers are strong support from government (a factor in several prominent smallholder-oriented clusters, usually in an effort to address a perceived market failure) and the presence of (or creation of) well-organized cooperatives or other farmer organizations to increase smallholders’ bargaining positions and lower transactions costs in disaggregated farming systems.

At the government level, policy changes such as exchange rate devaluation, import liberalization, export promotion, tax reform, and fertilizer subsidies have been associated with increases in smallholder production and exports. Early World Bank projects often focused on creating an enabling environment for private sector development through such policy reforms.

Other clusters have emerged through more direct government support. The South African wine cluster, for example, developed under strict government control. KWV, a large state-sponsored cooperative of winemakers was formed in 1918, and given legislative control over the industry. Prices and production remained heavily regulated until 1993. The government still provides research support through the Nietvoorbij Institute for Viticulture and Oenology of the Agricultural Research Council. (Gálvez-Nogales 2010). Other more recent projects have benefited from similar direct government intervention. In the Michoacán avocado cluster, the Mexican Ministry of Agriculture established regional committees and local phyto-sanitary boards composed of small-farmers to implement and monitor their own phyto-sanitary policies (Aguirre and Medina, 2006). And in Brazil’s Santa Catarina Apple Cluster, the state Agricultural and Research Agency identified apples as an alternative to wheat production (which was shifting towards other parts of the country) and established technical extension offices in areas that were well suited to growing apples. The state government’s Programa de Fruticultura de Clima Temperado further established supportive policies to connect smallholders with credit, marketing, training, and extension and established two Research Centers to provide long term research and development (Gomes, 2006).
Still other clusters have achieved success through a combination of public sector investment and efforts by farmer cooperatives. Perhaps most prominently, the Kenya Tea Development Authority was originally established as a parastatal organization in the 1960s, but became a private enterprise owned by smallholders in 2000 (Ochieng 2010). In the Minas Gerais Fruit Cluster Goncalves (2001) notes that the creation of farmer cooperatives has been key to achieving marketing scale and incorporating small farmers. And in Mahagrapes, one of the most successful cooperative-based clusters (and an apex organization representing cooperatives across the Maharashtra Grape Cluster), participation in the organization has been associated with higher yields, profits, and access to inputs. Roy & Thorat (2008) found average operating profit per acre for Mahagrapes small farmers was 135 thousand rupees/year versus 78 thousand rupees per year for non-Mahagrapes small farmers, and access to infrastructure at the village level was better on average for Mahagrapes farmers on average as well. The authors hypothesized that this is because the cooperative provides farmers with a platform for collective bargaining, allows economies of scale in branding and information, and increases access to global markets by providing extensive quality control mechanisms (Roy & Thorat, 2008).

However cooperatives are not always associated with positive cluster performance. In the World Bank’s Vietnam Agriculture Competitiveness Project, evaluators found that smaller or newly formed farmers’ organizations tended to be poor partners for agribusiness companies, and that support for management skills and governance should precede formal linkages with downstream value chain actors. The Implementation and Completion Report reports that farmers’ organizations with strong leadership, high literacy/numeracy rates and a long-term strategic perspective provided balance in terms of negotiating prices and other terms; and provided for a more efficient implementation of project-related activities, including communications, training, and procurement. However they also noted that farmers’ organizations that are relatively more established than the agribusiness are likely to seek better alternatives (World Bank, 2014).

Other prominent challenges to smallholder engagement include continued preferences from private sector enterprises to deal with larger producers. Internal project evaluations of the Colombia Productive Partnerships project, for example, found that the private sector prefers to deal with larger producers to keep transaction costs low and reduce risks but do participate in smallholder producer schemes for social responsibility, to gain preferential access to primary produce, or to diversify sources (World Bank, 2009). In Zambia, a World Bank project to raise rural incomes through investment in the coffee sector, found that small-holders did not benefit to the extent expected, in part because commercial banks deemed them un-creditworthy, preferring to lend to commercial scale farmers until incentives were provided late in the project (P003194).

Summary characteristics of the clusters providing at least some empirical evidence of smallholder benefits are provided in Table 6.

### Table 6. Clusters Providing Evidence of Smallholder Impact

<table>
<thead>
<tr>
<th>Cluster Name</th>
<th>Apex Organization</th>
<th>Country</th>
<th>Year</th>
<th>Crops</th>
<th># of Producers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenya Coffee Cluster</td>
<td>Coffee Research Foundation, Ministry of Agriculture, research universities, farmer cooperatives</td>
<td>Kenya</td>
<td>1944</td>
<td>Coffee</td>
<td>700000</td>
</tr>
<tr>
<td>Dong Lieu Root Crop Cluster</td>
<td>Urban Harvest (formerly SIUPA)</td>
<td>Vietnam</td>
<td>1960</td>
<td>Cassava, Canna, Pigs</td>
<td>1460</td>
</tr>
<tr>
<td>Bolivia Wine Cluster</td>
<td>--</td>
<td>Bolivia</td>
<td>1960</td>
<td>Wine</td>
<td>11000</td>
</tr>
<tr>
<td>Cuyo Wine Cluster</td>
<td>University of Cuyo</td>
<td>Argentina</td>
<td>1960</td>
<td>Wine</td>
<td>16000</td>
</tr>
<tr>
<td>Michoacan Avocado Cluster</td>
<td>Michoacán Avocado Producers and Exporters Association (APEAM),</td>
<td>Mexico</td>
<td>1960</td>
<td>Avocado</td>
<td>12000</td>
</tr>
<tr>
<td>Kenya Tea Development Agency</td>
<td>Tea Board of Kenya, farmer cooperatives</td>
<td>Kenya</td>
<td>1960</td>
<td>Tea</td>
<td>565000</td>
</tr>
<tr>
<td>Maharashtra Grape Cluster</td>
<td>Maharashtra State Agricultural Marketing Board (MSAMB); National Cooperative Development Corporation (NCDC); National Horticultural Board</td>
<td>India</td>
<td>1962</td>
<td>Grapes (Table &amp; wine)</td>
<td>38739</td>
</tr>
<tr>
<td>Bogota Cut Flower Cluster</td>
<td>Asocolflores - Cooperative</td>
<td>Colombia</td>
<td>1962</td>
<td>Cut Flowers</td>
<td>600</td>
</tr>
<tr>
<td>Maule Rasberry Cluster</td>
<td>Mesa Regional de Berries</td>
<td>Chile</td>
<td>1980</td>
<td>Raspberries, Berries</td>
<td>7085</td>
</tr>
<tr>
<td>Project Name</td>
<td>Implementing Organization</td>
<td>Country</td>
<td>Year</td>
<td>Sector(s)</td>
<td>Value(s)</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>----------</td>
<td>-------</td>
<td>----------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Pichincha Cut Flower Cluster</td>
<td>Association of Flower Producers and Exporters of Ecuador</td>
<td>Ecuador</td>
<td>1984</td>
<td>Cut Flowers</td>
<td>76800</td>
</tr>
<tr>
<td>Atlantic Agricultural Development</td>
<td>-</td>
<td>Costa Rica</td>
<td>1986</td>
<td>Cocoa, Coconut</td>
<td>168</td>
</tr>
<tr>
<td>Cotton Sector Development Project</td>
<td>-</td>
<td>Togo</td>
<td>1988</td>
<td>Cotton</td>
<td>200000</td>
</tr>
<tr>
<td>Cocoa Rehabilitation Project</td>
<td>SODECAO</td>
<td>Cameroon</td>
<td>1988</td>
<td>Cocoa</td>
<td>300000</td>
</tr>
<tr>
<td>Cashew &amp; Coconut Trees Project</td>
<td>-</td>
<td>Tanzania</td>
<td>1989</td>
<td>Cashews, Coconut</td>
<td>280000</td>
</tr>
<tr>
<td>Agricultural Rehabilitation and Development Project</td>
<td>Government of Mozambique</td>
<td>Mozambique</td>
<td>1990</td>
<td>Cashews, Cotton</td>
<td>50000</td>
</tr>
<tr>
<td>Agricultural Sector Adjustment Credit Project</td>
<td>Government of Uganda</td>
<td>Uganda</td>
<td>1990</td>
<td>Coffee</td>
<td>--</td>
</tr>
<tr>
<td>Agricultural Sector Adjustment Program Project</td>
<td>-</td>
<td>Malawi</td>
<td>1990</td>
<td>Maize, Tobacco</td>
<td>5000</td>
</tr>
<tr>
<td>Agricultural Sector Project</td>
<td>-</td>
<td>Mali</td>
<td>1990</td>
<td>Cotton, Cereals</td>
<td>--</td>
</tr>
<tr>
<td>Small Coconut Farms Development Project</td>
<td>-</td>
<td>Philippines</td>
<td>1990</td>
<td>Coconut</td>
<td>--</td>
</tr>
<tr>
<td>Agriculture Sector Adjustment Credit Project</td>
<td>-</td>
<td>Kenya</td>
<td>1991</td>
<td>Maize</td>
<td>--</td>
</tr>
<tr>
<td>Agricultural Privatization and Smallholder Development Project</td>
<td>SODEAP and SAC Su Sao Tome and Principe</td>
<td>Sao Tome and Principe</td>
<td>1991</td>
<td>Cocoa, Banana, Taro</td>
<td>8526</td>
</tr>
<tr>
<td>Santa Catarina Apple Cluster</td>
<td>Sao Paulo-based agricultural cooperative, COTIA Association (ABPM)</td>
<td>Brazil</td>
<td>1992</td>
<td>Apples</td>
<td>700</td>
</tr>
<tr>
<td>Rio Grande de Norte Melon Cluster</td>
<td>-</td>
<td>Brazil</td>
<td>1992</td>
<td>Melons</td>
<td>100</td>
</tr>
<tr>
<td>Pertolina Juazeiro Fruit Cluster</td>
<td>-</td>
<td>Brazil</td>
<td>1992</td>
<td>Mangos and Grapes</td>
<td>550</td>
</tr>
<tr>
<td>Cotton Subsector Development Project</td>
<td>Government of Uganda</td>
<td>Uganda</td>
<td>1994</td>
<td>Cotton</td>
<td>--</td>
</tr>
<tr>
<td>Agricultural Sector Adjustment Project</td>
<td>Government of Senegal</td>
<td>Senegal</td>
<td>1995</td>
<td>Rice, Groundnut, Cotton</td>
<td>--</td>
</tr>
<tr>
<td>Agricultural Sector Adjustment Credit Project</td>
<td>Government of Cote d'Ivoire</td>
<td>Cote d'Ivoire</td>
<td>1995</td>
<td>Coffee, Cocoa</td>
<td>600000</td>
</tr>
<tr>
<td>Diversified Agricultural Support Project (DASP)</td>
<td>-</td>
<td>India</td>
<td>1998</td>
<td>General Agricultural Sector Support</td>
<td>263,000</td>
</tr>
<tr>
<td>Colombia Productive Partnerships Support Project</td>
<td>-</td>
<td>Colombia</td>
<td>2002</td>
<td>Cocoa, Berries, Dairy, Natural Fibers, Plantain, Chili, Coffee, Palm Oil, Fish, Other</td>
<td>11714</td>
</tr>
<tr>
<td>Nicaragua Coffee Cluster</td>
<td>-</td>
<td>Nicaragua</td>
<td>2002</td>
<td>Coffee</td>
<td>30000</td>
</tr>
<tr>
<td>Advantaged Area Livestock Program</td>
<td>Ministry of Agriculture</td>
<td>China</td>
<td>2003</td>
<td>Livestock</td>
<td>--</td>
</tr>
<tr>
<td>Zambia Production, Finance and Improved Technology Program</td>
<td>-</td>
<td>Zambia</td>
<td>2005</td>
<td>Maize, Beef, Cotton</td>
<td>100000</td>
</tr>
</tbody>
</table>
Evidence of Economic Outcomes

Economic outcomes (including increases in the value of exports, changes in yield and productivity, and changes in employment) were reported in 52 cases, 29 of which were World Bank funded projects. Positive or mixed economic outcomes were reported by 92% of clusters involved in producing commodities, 96% of clusters producing NTAEs, 80% of clusters producing other staples, and all clusters producing cereal, livestock & dairy products. Only the Kenya Coffee Cluster, which has declined in size since 1987, reported negative economic outcomes.

25 cases, including 18 World Bank projects, reported positive economic outcomes and provided estimates of the amount of public investment which supported the project or helped establish the cluster. Figure 6 shows the number of cases reporting positive economic outcomes by size of investment and region. There does not appear to be a correlation between the size of investment and positive economic outcomes. Though a higher number of Asia and Pacific region (ASO) and Sub-Saharan African clusters have positive impacts for investments larger than USD 80 million, the sample is relatively small, and the type and quality of reported evidence varies, limiting any conclusions.

III. Special Economic Zones

Description and Theory

Special Economic Zones (SEZs) are generally defined as geographically delimited areas administered by a single body, offering certain incentives (duty-free importing and streamlined customs procedures, for instance) to businesses that physically locate within the zone (EPAR Brief
The term may be used to describe several types of economic zones including Export Processing Zones (EPZs), Free Ports, Enterprise Zones, and Financial Service Zones.

In theory, SEZs represent mutually beneficial relationships between host countries and investing firms where the former gains jobs and export earnings, and the latter gains access to relatively low cost labor, raw materials, subsidized infrastructure and other inputs (EPAR Brief #19, 2009). Here we briefly discuss the emergence and characteristics of economically viable and pro-poor SEZs, but do not expand further on this topic since more detailed reviews, including EPAR Brief #19, have already treated this topic in some detail.

Characteristics of SEZs

SEZs have a long history, beginning as early as 1704 in Gibraltar and 1819 in Singapore (World Bank, 2008; Rohne, 2013), but did not gain global prominence until the 1980s (ILO, 1988). The modern conception of an export processing zone (EPZ) began with the establishment of the Shannon Free Zone in the late 1950s (Aggarwal, 2010; Bolin, 2004; Boyenge, 2007; Farole, 2011; Kinunda-Rutashobya, 2003, Madani, 1999; Rohne, 2013), which located a “growth pole” in the economically distressed southern part of Ireland to aid in the region’s revitalization and to enhance trade efficiency and manufacturing competitiveness (World Bank, 2008).

Though the terms SEZs and EPZs are used interchangeably, the main difference is that SEZs are fully integrated townships while EPZs are only industrial enclaves (EPAR Brief #19, 2009; Aggarwal, 2005).

Modern SEZs generally export labor-intensive, assembly-oriented activities like apparel, textiles, and electrical goods (EPAR Brief #19, 2009). In Sub-Saharan Africa, SEZs are more likely to be involved in the production of primary exports such as food than in manufacturing goods (EPAR Brief #19, 2009; World Bank, 2008).

Smallholder Engagement in SEZs

SEZs interact with smallholders through many of the same mechanisms as agribusiness development clusters. Processors in an SEZ may build relationships with farmers or producers’ organizations through production and marketing contracts or by directly providing farmers with resources needed to meet quality standards and maintain supplies. Contracts have been used in Peru, Taiwan, Ecuador, Ghana and other counties to ensure the quantity and quality of raw materials over many seasons, by detailing technical rules for production (Abbott, 1994; EPAR Brief #19, 2009).

SEZs may also have particularly significant impacts for women: female workers account for 60-70% of zone workforces, a proportion that has remained stable since the emergence of SEZs (World Bank, 2008).

However, as with agribusiness development clusters, there are potential risks to smallholder farmers participating in or being excluded from SEZ value chains. Contracts designed to reduce transaction costs and improve product quality may, intentionally or unintentionally, be formulated in ways that exclude smallholders, such as through requirements that farmers have relatively large levels of start-up capital in the form of land, irrigation, human capital and managerial capacity (EPAR Brief #19, 2009).

Over time, smallholders may also become dependent on SEZ processors as their primary market, and as a result get lower prices for their crop (EPAR Brief #19, 2009; Abbot 1994). Evidence of agro-industrialization resulting from the development of SEZs benefiting smallholders is mixed and seemingly dependent on the nature of contracts, the level of assistance provided to producers, and the labor-intensiveness of crops (EPAR Brief #19, 2009).

Emergence and Evolution of SEZs

A 1988 report from the International Labor Organization suggests that Export Processing Zones grew dramatically between the 1970s and 1980s. The authors found that in 1970 EPZs could be found in fewer than 10 countries, but by 1986 they could be found in more than 53 countries or areas (ILO, 1988).

Determinants of Economically Viable and Pro-Poor SEZs
Elements of success for SEZs include the presence of low cost labor with high productivity, an attractive policy for foreign investment using tax and customs schemes, and trade preferences by major import markets such as the EU and United States (EPAR Brief #19, 2009). Another common thread in high-performing SEZs is that the host country government played an active role in seeking private start-up capital and developing relationships with potential foreign investors, often aided by cultural and historical connections (EPAR Brief #19, 2009).

In terms of implementation, while either government or private actors may manage an SEZ, privately operated zones tend to offer better facilities and support services, attract “higher end activities” like high-tech, petrochemical, and software, among others, and command higher prices from tenants (World Bank, 2008). The World Bank (2008) found that there has been a rapid increase of SEZs under private ownership over the past 15 years, up to 62% when it took stock in 2008, compared to the 1980s when less than 25% of zones were in private hands, though it also notes that few studies have evaluated the economic performance and impact of privately owned SEZs. The key factor behind the rise of privately owned SEZs is the realization by both developers and governments that such zones can be operated profitably for firms and can reduce the burden on government resources (World Bank, 2008).

Barriers to Pro-Poor SEZs

SEZs can fail when they are not cost effective, labor standards decrease, wages are low, and poor environmental standards exist (EPAR Brief #19, 2009). Mismanagement can also result in firm departure (Watson, 2001). SEZs in less developed countries may fail to attract firms due to their inability to compete with the incentives offered by more developed countries. In addition, less developed countries may face time and cost challenges when making infrastructure improvements and resulting delays can contribute to SEZ failure (EPAR Brief #19, 2009).

Since processors rely on a constant supply of raw materials to achieve efficiency and scale (Abbott, 1994), supply disruptions caused by infrastructure or low yields can threaten firms and SEZs.

These barriers are summarized in Table 7.

<table>
<thead>
<tr>
<th>Successes</th>
<th>Failures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term foreign investment</td>
<td>Reliance on extractive industries</td>
</tr>
<tr>
<td>Government support</td>
<td>Questionable long-term production ability</td>
</tr>
<tr>
<td>Focus on manufacturing of apparel or textiles</td>
<td>Excessive bureaucracy in zone administration</td>
</tr>
<tr>
<td>Infrastructure development</td>
<td>Unrealistic goals - # of jobs created, etc.</td>
</tr>
<tr>
<td>Streamlined bureaucracy</td>
<td>Rigid labor regulations</td>
</tr>
<tr>
<td>Privately developed and operated</td>
<td>Poor zone location</td>
</tr>
<tr>
<td>Host country has open trade policy</td>
<td>Poor coordination between government regulators and</td>
</tr>
<tr>
<td></td>
<td>private investors</td>
</tr>
<tr>
<td></td>
<td>Reliance on tax holidays as primary incentive</td>
</tr>
</tbody>
</table>

IV. Agribusiness Accelerators & Incubators

The World Bank defines agribusiness incubation as “a process which focuses on nurturing innovative early-stage agro-based enterprises that have high growth potential to become competitive businesses” (infoDev, 2013b). This section reviews the limited published literature on accelerator/incubator models in agricultural development, and summarizes the findings from an analysis of 18 cases of agribusiness incubators in developing countries. We analyzed a sample of 18 agribusiness incubators that were selected from a total population of 62 incubators in Sub-Saharan Africa (24), Latin America (11) Asia (22), and multiple regions (5) based on the availability of information on outcomes for both enterprises and producers.

Description and Theory

The goal of the accelerator or incubator approach is to encourage growth of sustainable agribusiness small and medium enterprises (SMEs) by providing market access, building capacity, risk management, and networking. This process increases the overall competitiveness of enterprises and opens new entry points for actors in agricultural value chains. Services like shared facilities and equipment, business development training, technology, finance, mentoring, and networking can be used to promote these nascent businesses (infoDev, 2013b).
The small amount of literature on agribusiness incubation theory is largely derived from case study observations. We apply one such framework developed by infoDev (2013b) to present our case study findings below. Since these results, challenges, and good practices were inductively derived, they may not apply in every context or environment. Our case studies do, however, represent a wide range of business models, strategies, and enabling environments.

Characteristics of Agribusiness Incubators

Agribusiness incubators can be classified into three basic models:

1. **Value chain incubators** aim to develop entire agribusiness sectors by filling gaps in the value chain and adding value to raw products. For example, Corpotunía provides business training and credit to small and medium-scale farmers in a variety of value chains, including bananas, poultry, cassava, and flowers (UNDP, 2012). The Ethiopia Sustainable Agribusiness Incubator (ESAI) focuses on value-added processing in the honey, sesame, and dairy value chains (Assefa & Bekele, 2014). Other examples include 2SCALE, Fundación Chile, One Acre Fund, Timbali, Technoserve Mozambique, and WB Argentina (see Appendix II).

2. **Research and technology incubators** facilitate the diffusion of technological innovations from universities and research centers to the market. CenTev was formed by the Federal University of Vicosa in Brazil, which provides the majority of the funding as well as access to current research, with a mandate to provide students and university researchers, as well as outside entrepreneurs, the opportunity to apply for the incubation program to commercialize their academic research into technological enterprises (infoDev, 2014b). Villgro in India, on the other hand, not only incubates new technologies and products but also adapts and transfers new products into the rural areas (InfoDev 2014g). The organization believes that rural entrepreneurs understand the rural context and have the comparative advantage in catering to that market. Therefore, Villgro seeks to transfer technology from the innovator to the entrepreneur in order to attain maximum impact. Other examples include the Agribusiness Incubator at ICRISAT (ABI-ICRISAT) in India, the Uganda Industrial Research Institute (UIRI), and UniBRAIN in Ghana.

3. **Finance incubators** provide some business training but focus primarily on financial support and lending through an adaptation of venture capital models. Root Capital, for example, offers loans to businesses and cooperatives that are too large for microfinance but too small for traditional bank loans (Root Capital, 2013). These businesses also receive training in financial management. Kenya’s Feed the Future Innovation Engine also provides financial and technical assistance to agricultural enterprises, selecting applicants through a competitive process similar to a venture capital fund. Other examples include Aavishkaar India Micro Venture Capital Fund (AIMVCF) and BOMA’s Rural Entrepreneur Access Project (BOMA-REAP).

Smallholder Engagement with Agribusiness Accelerators/Incubators

Smallholder farmers are sometimes the direct beneficiaries of incubation services when they are encouraged to establish small enterprises or add value to their raw products. For example, 2SCALE offers business training to farmer cooperatives (2SCALE, 2013), while One Acre Fund supports smallholder producers as enterprises with financing and training (One Acre Fund, 2014).

Incubator activities also raise awareness of entrepreneurship and attract new farmer agropreneurs (World Bank, 2012). Entrepreneurs are more likely to invest in other types of SMEs than agriculture because of the higher risks associated with agribusinesses and agribusiness markets (infoDev, 2013b). Most agribusinesses continue to function in a “low equilibrium” trap (in which low incomes, savings rates, and investment rates result in low economic growth) (Nelson, 1956) due to inefficient markets, incomplete market information, and lack of public policies conducive to growth of SMEs. These conditions increase the risks for “agropreneurs” (infoDev, 2013b), including perishability of the product, unpredictable output prices, small profit margins, and the most skilled and profitable producers diversifying or moving into high value added markets to benefit from stable prices (infoDev, 2013b). Due to these factors, traditional farm organizations can also be relatively rigid and resistant to change or innovation - accelerator and incubators can thus change both the incentives (helping manage risk) and the actors (attracting new agricultural entrepreneurs) in rural agribusiness value chains.
Smallholder farmers may also benefit indirectly from improvements in the value chain, particularly when incubators are established within existing agribusiness clusters (providing instantaneous access to expertise, networking opportunities, and markets). Two incubators, 2SCALE (in Sub-Saharan Africa) and Timbali (in South Africa), function within such clusters. The 2SCALE incubator is one component of the larger 2SCALE cluster development program which focuses on the supply chain as a whole - connecting farmers with buyers, intermediaries, input suppliers, financial services, and other actors in the cluster. The main focus is on bringing cluster actors together in order to create new businesses and cooperatives and support existing ones (2SCALE, 2013). The Timbali incubator serves 30 clusters of farmers who also operate small business franchises. The resulting clusters of small and medium enterprises benefit entrepreneurs through economies of scale, bulk buying of inputs, and collective marketing and branding.

Emergence and Evolution of Incubators and Accelerators

The majority of these incubators were established in the 2000s and 2010s, with the exception of some Latin American incubators formed in the 1970s (e.g., Fundación Chile) and 1980s (e.g., Corpotunía). In general, the African incubators were the most recently developed, ranging from the late 1990s to the current year.

Incubator models also vary substantially across regions and contexts based on the goals, circumstances, and developmental stages of the incubator. Major trends emerging from the case studies are summarized below.

Business Models

The scale of incubators differs drastically. For example, starting capital ranges from USD $10,000 to $50 million (infoDev, 2013b). While base capital is usually provided by a donor, the private sector, or the government, most incubators later operate on a revenue-generation model charging fees for services like consulting or infrastructure rental (infoDev, 2013b), or by charging a share of client revenue (World Bank, 2012). The ability of an incubator to collect revenue typically improves over time as it proves its ability to develop sustainable enterprises (InfoDev, 2013b). Most incubators only have a small number of staff and partner with other organizations based on their strengths and specialties (InfoDev, 2013b).

Funding sources for our sample of incubators include service fees, government grants, and private endowments. 2SCALE has a 100% co-investment model in which all public funds from DGIS-Netherlands are matched by private enterprises in cash or in kind (2SCALE, 2013). Some government-funded incubators face financial uncertainty due to fluctuating public budgets and high competition with other organizations for funding. For example, since the majority of the Timbali incubator’s funding comes from one government source (SEDA), Timbali faces competition with other similar organizations and thus uncertainty about future funding (infoDev, 2014e).

Partnerships and Affiliations

Forming public-private partnerships can make it easier to operate when funds are limited. Such partnerships may spring from a parent-offspring relationship (in which one organization forms another) or a symbiotic relationship (where two organizations work together toward a common goal) (infoDev, 2013b). ABI-ICRISAT is an example of a parent-offspring partnership because a “parent” (the research organization) created an “offspring organization” (the incubator). The Malaysian Life Sciences Capital Fund, on the other hand, formed a symbiotic relationship with Burrill and Co. - both partners worked together to transfer biotechnologies into Malaysia. All the incubators have linkages with universities, industries, entrepreneurs, government, or trade groups (infoDev, 2013b). Incubators can either be “capitalized incubators” that have secured long-term funding with independent policy-making options, or “budgeted incubators” that only have short-term funding (usually through program-specific grants) and limited decision-making authority.

Budgeted incubators like UIRI and Timbali often suffer from uncertainty about future funding, whereas capitalized incubators like Fundación Chile benefit from large endowments (infoDev, 2013b; infoDev, 2014e; infoDev, 2014f). Most incubators, however, fall between these two extremes with less capital than Fundación Chile but more diversified funding than UIRI and Timbali (infoDev, 2013b).

Activities
Incubators can use a range of instruments to drive change in agribusiness networks, from simply establishing healthy relationships with farmers to facilitating grants, providing loans, or even investing in the companies they support. Since incubators typically target specific agribusiness clusters, regions, and/or sectors, incubator managers must calibrate their activities depending on the development of the sector, new entrants, and changes in the business environment (infoDev, 2013b).

Incubators can adopt high-tech agribusiness support that uses advanced biotechnology and science (like CenTev and ICRISAT), medium technologies that provide incremental improvements in production (like the One Acre Fund), or indigenous technologies that are locally manufactured or modified (like Villgro and ESAI). As such, the incubator can bridge urban and rural commercial cultures and business processes which allow for the creation of wage earners and foster second and third order effects within local economies (infoDev, 2013a). Though policy reform is not usually the primary mission of agribusiness incubators, the network created among entrepreneurs and the overall business sector may result in policies that are transparent and pro-competition (infoDev, 2013b). Technoserve, for example expanded its activities to include policy analysis and advocacy regarding market policies and trade regulations (infoDev, 2014d).

In order to reach potential entrepreneurs in more rural areas, some incubators have established “virtual incubation” programs that operate remotely as opposed to through a central facility. Facing competition with other business incubators in urban areas, the Uganda Industrial Research Institute (UIRI) established four rural virtual incubation centers specializing in peanut, potato, fruit, and mushroom processing. This effort aims to reach remote areas where farmers most need value-added processing facilities and is a unique model in Sub-Saharan Africa (infoDev, 2014f). In South Africa Timbali also offers off-site incubation services, which now represent 72% of total clients. Since there is limited space and capacity at the main site, off-site incubation is currently Timbali’s only option for expanding their services (infoDev, 2014e). And in Brazil, CenTev established virtual pre-incubation in order to allow a greater number of entrepreneurs to be guided through the preliminary stages of agribusiness development including preparing a business plan and developing prototypes (infoDev, 2014b).

Performance Measurement and Metrics

Agribusiness incubators employ different metrics to measure progress. Some of the simple measures used to gauge the success of the incubator include: number of graduated clients3 (AIMVCF, CenTev), number of competitive agribusinesses developed (ABI-ICRISAT, CenTev, BOMA-REAP, ESAI), and total sales revenue of the clients compared to the amount invested (CenTev, Fundación Chile, Timbali) (infoDev, 2013b). However, some incubators use different measures depending on the objective. Technology incubators like ABI-ICRISAT, for example, often measure the number of agro-technologies commercialized and number of entrepreneurs trained (ICRISAT, 2013). Incubators that target farmer entrepreneurs often measure the effects in terms of number of farmers reached, either directly or indirectly (2SCALE, Timbali, One Acre Fund).

AIMVCF measures the total beneficiaries of the incubator, including producers, employees of new businesses, and consumers of the new products (Aavishkaar, 2015). BOMA-REAP measures a range of indirect impacts including wealth indicators, nutritional consumption, and educational outcomes of clients (BOMA, 2012).

Determinants of Economically Viable and Pro-Poor Incubators

Smallholder entrepreneurs (and sometimes farmers) are often the population segment that agribusiness incubators target, but these groups often have limited competencies and resources (infoDev, 2013b). Without scale economies, small agribusinesses may have limited assets and be without access to farmer organizations with business knowledge (infoDev, 2013b). Small farmer entrepreneurs are also often faced with financial difficulties with low cash flow and long time periods required to break even (infoDev, 2013b). It is also difficult to build assets as access to both input and output markets is limited.

Agribusiness incubation in rural developing country contexts can also be seen as a high-risk activity (Kang & Mahajan, 2006; Miller, 2008; Fuksaku, 2007). The high risks associated with both agriculture and agribusiness contribute to limited affordable credit opportunities (infoDev, 2013b; Ferrari, 2008; Prahalad & Hammond, 2002). This credit deficit is exacerbated by low customer density in rural areas that may not warrant banks or other financial institutions operating (Ferrari, 2008). The impact is believed worse for women entrepreneurs as they may lack collateral or access to other

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3 Enterprises that go from “stage-zero” to “stage-one” which includes having market-ready products and already having generated some revenue (infoDev, 2011).
financial resources (Dellien & Lynch, 2008). Similarly, a thin market base may result in insufficient retail outlets (infoDev, 2013b).

However, agribusiness incubators have adopted several methods in order to deal with these challenges. Most importantly, incubators can manage risk in a variety of ways. ABI-ICRISAT uses technology-based solutions like high-yielding seed varieties to increase productivity, Timbali uses institution-based solutions like franchising to safeguard markets and ensure stability in price, and Villgro uses network-based solutions like facilitating access to finance and help in procuring licenses (Poulton et al. 2010; infoDev, 2014a; infoDev, 2014e; infoDev, 2014g). However, there are still other types of risks, particularly management risks arising from limited business experience that can lead to the failure of the incubator. In some cases the incubator team is simply not capable of making a start-up business successful (World Bank, 2012).

Partnerships with community organizations, other nonprofits and well established businesses that understand local dynamics and can provide complementary services can also help reduce the risk associated with business development (Prahalad & Hammond, 2002). The Ethiopia Sustainable Agribusiness Incubator (ESAI), for example, facilitates linkages with technology suppliers, potential buyers, and investors, as well as creating an intra-incubator business network that fosters business relationships between the incubated enterprises (Assefa & Bekele, 2014).

V. Conclusion

Agribusiness development clusters, SEZs and incubators are believed to bring benefits to smallholders by providing access to lower-cost inputs, expanded technical assistance and research support, and broader and more lucrative market opportunities. All of these tools may also interact directly with smallholders in several ways. Farmers may be supported to organize into cooperatives, producers’ associations, or marketing groups in order to manage risk or increase bargaining power over prices and contracting. Connection to high value markets (either domestic or export-oriented), and access to infrastructure may also raise farmer incomes by garnering better prices and providing opportunities to add value to primary goods.

Although evidence is mixed, there are some clusters which have deliberately targeted smallholder development, and which have been able to lower transaction costs and encouraging resource- and information-sharing between different actors within crop value chains (often with strong state support, further bolstered by the presence of well-organized farmer cooperatives). Evidence on SEZs’ impacts on smallholder farmers is extremely limited - although in theory processors in SEZs may build relationships with farmers or producers’ organizations through production and marketing contracts or by directly providing farmers with resources needed to meet standards and maintain supplies, this potential does not appear to have been the subject of research or impact evaluations to date. Similarly evidence of incubator’s impacts on smallholders remains thin, in part because incubator/accelerator models as applied to agribusiness in developing countries remains a relatively new practice. Some incubators reviewed in this study have provided much-needed access to start-up finance and human and physical capital allowing developing agribusiness sectors to attract and nurture agropreneurial activity - but the longer term impacts and ultimate sustainability of such approaches remains unknown.

The Appendices included at the end of this document further summarize the currently available information on agribusiness clusters in developing countries (Appendix I) as well as selected case studies of smallholder-oriented agribusiness accelerators in developing countries (Appendix II).
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### APPENDIX I: Catalog of Agribusiness Development Clusters

<table>
<thead>
<tr>
<th>Cluster Name</th>
<th>Country</th>
<th>Active From</th>
<th>Sub-Classification</th>
<th>Crops</th>
<th>Supporting Documents*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan Horticulture Export Cluster and Livestock Productivity Project</td>
<td>Afghanistan</td>
<td>2006</td>
<td>Agribusiness Development Cluster</td>
<td>Almonds, Grape, Apricot, Pomegranate</td>
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<td>Project)</td>
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<td>Alderete &amp; Bacic, 2012</td>
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<tr>
<td>Belize Agricultural Credit and Export Development Project</td>
<td>Belize</td>
<td>1988</td>
<td>Agribusiness Development Cluster</td>
<td>Cocoa, Banana, Citrus, Fish</td>
<td>WB P006097 Project Documentation</td>
</tr>
<tr>
<td>Southern Brazil Wine Cluster</td>
<td>Brazil</td>
<td>1960</td>
<td>Agribusiness Development Cluster</td>
<td>Wine</td>
<td>Gálvez-Nogales, 2010; Vargas, 2001; Oliveira, 2003;</td>
</tr>
<tr>
<td>Santa Catarina Apple Cluster</td>
<td>Brazil</td>
<td>1992</td>
<td>Agribusiness Development Cluster</td>
<td>Apples</td>
<td>Gálvez-Nogales, 2010; Guaiapatin, 2004; Gomes, 2000</td>
</tr>
<tr>
<td>Pertolina Juazeiro Fruit Cluster</td>
<td>Brazil</td>
<td>1992</td>
<td>Agribusiness Development Cluster</td>
<td>Mangos and Grapes</td>
<td>Gálvez-Nogales, 2010; Guaiapatin, 2004; Damiani, 1999</td>
</tr>
<tr>
<td>Minas Gerais Fruit Cluster</td>
<td>Brazil</td>
<td>1999</td>
<td>Agribusiness Development Cluster</td>
<td>Fruits</td>
<td>Pietrobelli &amp; Miele, 2007</td>
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<tr>
<td>Ceara Rural Sustainable Development and Competitiveness</td>
<td>Brazil</td>
<td>2013</td>
<td>Agribusiness Complexes</td>
<td>Milk, Meat, Fruits, Vegetables</td>
<td>WB P121167 Project Documentation</td>
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<tr>
<td>Bahia Sustainable Rural Development Project</td>
<td>Brazil</td>
<td>2014</td>
<td>Agribusiness Complexes</td>
<td>Cassava, Dairy, Sheep/Goats, Apiculture,</td>
<td>WB P147157 Project Documentation</td>
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<td>Sao Paulo Orange Juice Cluster</td>
<td>Brazil</td>
<td>-</td>
<td>Agribusiness Development Cluster</td>
<td>Orange Juice Concentrate</td>
<td>Van der linde, 2002</td>
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<td>Agricultural Diversification and Market Development Project</td>
<td>Burkina Faso</td>
<td>2006</td>
<td>Agribusiness Development Cluster</td>
<td>Mango, Onion, Beef, Poultry</td>
<td>WB P081567, P147978 Project Documentation</td>
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<td>Burkina Faso - Bagre Growth Pole Project</td>
<td>Burkina Faso</td>
<td>2011</td>
<td>Agribusiness Development Cluster</td>
<td>Rice, Maize, Beans, Fruit, Vegetables</td>
<td>WB P119662 Project Documentation</td>
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<td>Cocoa Rehabilitation</td>
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<td>1988</td>
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<td>Chilean Wine Cluster</td>
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<td>O'Higgins Fruit Cluster</td>
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<td>Valparaiso Avocado Cluster</td>
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<td>Bio Bio Blueberry Cluster</td>
<td>Berries</td>
<td>Gálvez-Nogales, 2010</td>
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<td>Mid Yangtze Agricultural Development Project</td>
<td>Fruit</td>
<td>WB P003541 Project Documentation</td>
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<td>Advantaged Area Livestock Program</td>
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<td>Gálvez-Nogales, 2010; Brown et al. (2007)</td>
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<td>Bogota Cut Flower Cluster</td>
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<td>Ghana Cocoa Cluster</td>
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*Note: World Bank Projects are supported by project documentation including Project Appraisal Documents, Project Information Documents and Implementation and Completion Reports. Documents were retrieved from: http://www.worldbank.org/projects.*
### APPENDIX II: Incubator Case Studies

#### 2SCALE

| Location: | Benin, Burkina Faso, Ethiopia, Ghana, Kenya, Mali, Mozambique, Niger, Nigeria, South Sudan, Togo, Uganda |
| Areas Served: | Benin, Burkina Faso, Ethiopia, Ghana, Kenya, Mali, Mozambique, Niger, Nigeria, South Sudan, Togo, Uganda |
| Years Active: | 2012-2017 |
| Amount of Investment: | USD 1.45 million (initial investment, 2012 dollars) |
| Major Subsequent Funds: | N/A |
| Current Resources: | N/A |
| Crops/Products: | Vegetables, fruit, dairy, poultry, rice, maize, and others |
| Website: | http://2scale.org |

#### Key Findings:
- Cluster-based incubation: all incubated enterprises exist in agribusiness clusters that are also being served by 2SCALE. The business support services are also offered to farmer cooperatives and organizations within the clusters.
- 100% co-investment between DGIS-Netherlands and the private sector: All public funds are matched by private enterprises in cash or in kind.

#### Background:
2SCALE was launched in 2012 with funding from the Directorate-General for International Cooperation of the Netherlands. It has become the largest agribusiness incubator in Africa with activities spanning 12 countries. The incubator is one component of the larger 2SCALE cluster development program which is scheduled to be completed in 2017. The project focuses on the supply chain as a whole - connecting farmers with buyers, intermediaries, input suppliers, financial services, and other actors in the cluster. As a result, business proposals can come from many different actors including traders, farmer cooperatives, and enterprises or entrepreneurs (2SCALE, 2013).

#### Enabling Environment:
2SCALE is an association of three partner organizations: the International Fertilizer Development Center (IFDC), the International Centre for Development-Oriented Research in Agriculture (ICRA), and BoP Innovation Center (BoPInc). The IFDC focuses on field implementation and agribusiness development, the ICRA on building local capacity, and BoPInc on linkages with Dutch companies (2SCALE, 2013). 2SCALE has a 100% co-investment policy, in which all donor funding is matched by private sector funding from companies, farmers, and local entrepreneurs in cash or in kind.

Since the project has such a wide reach, the enabling environments and partner organizations differ from country to country. Depending on the location, 2SCALE partners with both public and private groups for support. In Ethiopia, incubation activities are led by existing cooperatives and an established extension network. 2SCALE works with the cooperatives and unions to provide business support services (2SCALE, 2015). In Niger, 2SCALE clusters and incubators have been enveloped into a government initiative. In Mali, on the other hand, 2SCALE ended the program in high-risk regions due to security concerns (2SCALE, 2015).

#### Enterprise Development
The actors in each cluster have access to Business Support Services (BSS) through local NGOs and consultants that have been contracted for the project. One BSS may serve multiple clusters in the same region. 2SCALE supports both smallholder farmers and enterprises to improve productivity and competitiveness, adapt to changes in the market, access credit and market information, develop sustainable relationships with larger companies, and compete on national and regional markets (2SCALE, 2013). BSSs are trained in the 2SCALE approach, financial education, partnerships, marketing strategies, and business plans.

The main focus, however, is on bringing cluster actors together in order to create new businesses and support existing ones. 2SCALE uses public-private partnerships built around various cluster members including farmer-based cooperatives, processors, and traders. The partnership begins with applications for business proposals and ideas. The applicants with the
best ideas then participate in a Diagnostic and Design workshop to develop the cluster action plan. In 2013, 2SCALE selected 50 business proposals to support out of 251 total applications from local entrepreneurs in six different countries (2SCALE, 2013).

Producers & Smallholder Impact and Spillovers:
2SCALE states that the goal of the clusters is that farmers and entrepreneurs will grow together (2013). The incubator also serves farmer organizations and farmer cooperatives to increase their competitiveness with business strategies. Farmers are directly involved in the incubation process because the business development is cluster-based - farmer cooperatives are the recipients of the business services, and the innovations and enterprises are designed with farmers’ viewpoints and needs in mind (2SCALE, 2015). It is unclear, however, how many farmers receive business services as opposed to other extension services.

The number of farmers reached by 2SCALE activities by country as of 2014 are (2SCALE, 2015):
- Benin: 34,000 farmers in 25 clusters
- Burkina Faso: 33,000 farmers in 24 clusters
- Ghana: 13,500 farmers in 24 clusters
- Kenya: 9,000 farmers in 23 clusters
- Mali: 12,000 farmers in 11 clusters
- Niger: 4,000 farmers in 15 clusters
- Nigeria: 25,000 farmers in 27 clusters
- Togo: 3,800 farmers in 10 clusters
- Uganda: 11,500 farmers in 10 clusters

Outcomes:
As of December 2013, 192 2SCALE agribusiness clusters were in operation, involving 390,000 farmers and 1,025 private enterprises. Thirty-eight percent of farmers were women (2SCALE, 2013). By 2017, the project aims to reach 800,000 farmers, increase productivity by 100%, and increase net incomes by 30%. Additionally, it aims to reach 4,000 SMEs and increase their sales volume by 50% (2SCALE, 2015).

References
AGRIBUSINESS INCUBATOR AT ICRISAT (ABI-ICRISAT)

**Location:** Andhra Pradesh, India

**Areas Served:** Andhra Pradesh, India but has expanded nationally beyond Andhra Pradesh, and internationally to Africa

**Years Active:** 2002-present

**Amount of Investment:** USD 500,000 (2002 dollars)

**Major Subsequent Funds:** N/A

**Current Resources:** N/A

**Crops/Products:** Technology development and commercialization

**Website:** http://www.aipicrisat.org/agri-business-incubation-abi-program/about/

**Key Findings:**

- ABI-ICRISAT is a public-private partnership between ICRISAT and the Department of Science and Technology (DST) of the Government of India, and aims to promote agri-technologies (World Bank, 2012). ICRISAT’s strong research programs combined with support from the Indian government to bridge the gap between scientists, farmers and the market together played a substantial role in the success of the program (InfoDev, 2013a).

- ABI-ICRISAT has a self-sustaining business model. They began with a revenue-generation model initially (revenue of Rs. 11,972,000 in 2009) which required substantial management support, and now plan to move to a capital-gains business model where revenues will be generated from intellectual property and equity shares in the incubated enterprises (InfoDev, 2014a). This may represent a potential loss of benefits to smallholders and SMEs, as large/mature enterprises and established entrepreneurs would be better suited for the capital gains model, and would require less management support (InfoDev, 2014a).

- Co-business incubation: ABI-ICRISAT serves enterprises through forging institutional partnerships with private and public partners (like Department of Science and Technology (DST), Micro, Small and Medium Enterprises (MSMEs), Technopreneur Promotion Program (TePP), Agricultural Research Institute of Mozambique (IIAM), Agricultural Research and Extension Unit (AREU) Ministry of Agriculture Mauritius, research centers, entrepreneur associations, and agribusiness consortiums) to provide better support in different aspects of development, such as access to facilities and markets, complementing technology in their area of expertise, promoting cross-border enterprises and business development, and enhanced marketability through common branding (InfoDev, 2014a).

- The Indian Council of Agricultural Research (ICAR) runs the National Agricultural Innovation Project (NAIP) that facilitates farmers using new technologies and strategies, and NAIP has entrusted ABI with the responsibility of mentoring ten Business Planning and Development (BDP) units or incubators of ICAR and state agricultural universities (SAUs) (InfoDev, 2014a).

**Background:**

ABI-ICRISAT is an initiative of the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) under the Agribusiness and Innovation Platform (AIP) and the National Science and Technology Entrepreneurship Development Board (NSTEDB) of the Department of Science and Technology (DST) of the Government of India. The organization aims to promote agribusiness ventures and support innovations through public-private partnerships (ICRISAT, 2013; Kavitha et al. 2010). The mission of the initiative, as described on its website, is: “Improving the well-being of the poor through the creation of competitive agri-business enterprises by technology development and commercialization” (ICRISAT, 2015).

ABI-ICRISAT is an agri-technology oriented incubator with a research center affiliation. The initial funding was provided by DST, and ABI-ICRISAT began by seeking entrepreneurs looking to commercialize their agri-based technologies. Over time, the organization has expanded its focus from solely technology-based businesses to seed farmers, Micro, Small and Medium Enterprises (MSMEs) and other companies that have been a part of the government’s development programs (InfoDev, 2014a). Similarly, the scope of work expanded from the initial focus on only ICRISAT-mandated crops for arid regions to a broad spectrum of thematic areas including innovative biotechnology, farm ventures, organic farming endeavors, agri-equipment schemes and biofuel projects (InfoDev, 2014a). Also, Indian Council of Agricultural Research (ICAR) runs the National Agricultural Innovation Project (NAIP) that facilitates farmers using new technologies and strategies, and NAIP has entrusted ABI with the responsibility of mentoring ten Business Planning and Development (BDP) units or incubators of ICAR.

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* Uses public-private partnerships to promote development and commercialization of indigenous technologies
and state agricultural universities (SAUs) (infoDev, 2014a). ABI-ICRISAT currently employs a revenue-generation model charging fees, like rent, loyalties, and others (revenue: INR 11,972,000 in 2009 (approximately USD 239,4405)) but plans to shift to a funding model based on taking equity shares in the incubated enterprises (Bhutani, 2014).

### Enabling Environment:

The geographic focus was originally the Andhra Pradesh (AP) region as ICRISAT is headquartered in AP and the state has contributed to the facilities housing the incubator and other agriculture projects (infoDev, 2014a). The National Science and Technology Board is dedicated to the promotion of incubators under its Technology Business Incubator Scheme, which means that the policy environment is conducive to incubator development. There is also a trend where policymakers and other stakeholders are beginning to view incubation as a means to create sustainable enterprises and jobs (ICRISAT, 2013). Conferences have also been held, like the NIABI conferences since 2011: Global Agri-Business Incubation Conference, where participants, policy makers and funding agencies come together to network and provide policy and financial support (ICRISAT, 2013).

### Enterprise Development

ABI-ICRISAT aims to bridge the gap between research, farmers and markets. Their projects therefore tend to focus on a wide range of activities along the value chain, ranging from seed ventures to improving access to local and international markets (infoDev, 2014a; ICRISAT, 2015). However, as ABI is primarily a technology focused initiative, by default its focus is more on the input than the output side. The services that were offered to incubated entrepreneurs include concept validation, business consulting, technology support, and infrastructural and other management facilitation (infoDev, 2014a).

According to the organization website (ICRISAT, 2015), ABI-ICRISAT services are provided with support from local and international institutional partners, under co-business incubation, and other private and public partners like DST, NSTEBD, Technopreneur Promotion Program (TePP), the Indian Council of Agricultural Research (ICAR), Forum for Agricultural Research (FARA), the Association of Lady Entrepreneurs of Andhra Pradesh (ALEAP), MSME, Small Farmers’ Agribusiness Consortium (SFAC), and Commercial Agriculture Alliance (CAA). The different thematic areas of the process target different market failures. For instance, the Seed Business Incubation (SBI) service is a response to the non-availability of good quality seeds of improved cultivars, due to lack of private investment (ICRISAT, 2013).

### Producers & Smallholder Impact and Spillovers:

ABI-ICRISAT has an inclusive, market-oriented strategy that aims to use incubation to improve farmers’ livelihoods. ABI-ICRISAT uses a vertical and a horizontal approach to benefit the farmers and entrepreneurs (World Bank, 2012). The vertical approach is a service strategy that focuses development on the seed, biofuel, innovative, farm and agribiotech ventures as per ICRISAT and partner mandates (World Bank, 2012). The horizontal approach is the outreach strategy in which ABI-ICRISAT works with organizations worldwide in business incubation (co-business incubation) that helps provide improved variety of services and support to the enterprises, including wider market and access to inputs, and complementary business and technology development (World Bank, 2012). However, the literature does not make a distinction between small, medium and large farmers and entrepreneurs in this regard.

The farmers are perceived as the end users of the technologies developed by the incubated enterprises. One of the main goals of the initiative is to support agri-business innovations to enter into the market for a fast and large-scale impact (ICRISAT, 2013). For instance, to resolve the issue of the demand and supply gap of good quality seeds of pulses, one of the enterprises developed a seed business model through farmer entrepreneurs, and is believed to have benefited more than 500,000 farmers in Andhra Pradesh, Maharashtra, Madhya Pradesh, Karnataka and Tamil Nadu (Karuppanchetty et al., 2014).

Interactive meetings are also held where scientists introduce the farmers to the new technology, for instance, a farmer-scientists meeting was held in 2007, with 110 farmers participating, to discuss improved groundnut and chickpea varieties and garner farmer feedback (ICRISAT, 2013).

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5 Using exchange rate of INR 50 = USD 1
With the support from MSME, ABI-ICRISAT has identified a large number of entrepreneurs, including women entrepreneurs, to support incubation and nurture their ventures into small-scale viable businesses that can commercialize their products within a year (ICRISAT, 2013). ABI also works with the Small Farmers’ Agribusiness Consortium (SFAC) in SFAC’s venture capital scheme for agri-business development, under which they considered around 15-20 proposals in 2012 (ICRISAT, 2013).

Outcomes:
The impact of ABI-ICRISAT has been described as follows (ICRISAT, 2013):
- 64 agro-products provided market access
- More than 200 agribusiness ventures incubated so far
- Facilitated funding to 23 ventures worth USD18 million
- More than 2300 entrepreneurs trained
- 194 agro-technologies commercialized

References
ICRISAT. (2013). A Decade of ABI Happenings Agri-Business Incubation (ABI) program @ ICRISAT is an Innovative Institutional System that enhances Public Private Partnership, 2003-2013. Andhra Pradesh, India: ICRISAT.
**Agricultural Services and Institutional Development & Enterprise Export Development Project - Argentina/World Bank**

**Location:** Argentina

**Areas Served:** Buenos Aires, La Pampa, Cordoba, Santa Fe, Entre Rios, Rio Negro, Mendoza

**Years Active:** 1991-1999

**Amount of Investment:**
- USD 82,700,000 Total Project Cost (Part 1)
- USD 78,200,000 Total Project Cost (Part 2)

**Major Subsequent Funds:** N/A

**Current Resources:** N/A

**Crops/Products:** Not specified - a variety


**Key Findings:**
- By 1996, the Agricultural Services program supported 150 ‘non-traditional’ export promotion projects, 100 training seminars, and contributed to USD 220 million of export contracts for 336 firms (World Bank, 2006).
- From 1990 to 1998, agricultural and agro-industrial exports rose in absolute terms from USD 7.9 billion to USD 11.9 billion though the share relative to other sectors shrank from 65% to 60% (World Bank, 1999).
- The cost-sharing grant scheme (PREX) approved grants for 971 firms for 1090 export projects for a total of USD 25.6 million in matched grants. Of those firms, 83% were SMEs with sales less than USD 5 million, 59% of firms had between 11 and 50 workers, and 31% had never exported prior to exposure to the program (World Bank, 2000).
- A survey that compared firms assisted by the PREX program with non-assisted firms found that 69% of assisted SMEs had exported compared to 42% of non-assisted firms and average exports increased from 26.8% of sales to 32.4% of sales (World Bank, 2000).

**Background:**
In 1991, Argentina, Brazil, Paraguay, and Uruguay signed the Mercosur (Southern Common Market) agreement to liberalize trade and create systems to open local production to export markets. As a result, the Argentine agriculture sector agreed to liberalize to increase trade with these neighboring countries (World Bank, 2006). A World Bank analysis of the Argentine agricultural sector found that expanding agricultural exports would increase foreign exchange earnings and facilitate economy recovery. (Agricultural Sector Review, 1989; Schwartz, 1994). Thereafter, the World Bank initiated the program called, “Agricultural Services and Institutional Development” to increase the capacity of agricultural producers to access export markets, increase institutional research and technical capacity, and eradicate livestock diseases (World Bank, 1995).

Following the completion of the initial export-promotion loan, in 1996 the Argentine government and the World Bank began another program called the “Enterprise Export Development Project,” to increase export activities of small and medium sized enterprises (SMEs). They launched a cost-sharing grant program (PREX) to assist SME business development outside of Buenos Aires.

**Enabling Environment:**
Argentina signed the Mercosur agreement after the international trade negotiations in Doha, Qatar. Leading up to the 1990s, Argentina’s relatively robust agricultural sector helped to generate currency reserves to invest in manufacturing and other non-agricultural industries. In the early 1990s the Argentine government instituted the “Convertibility Plan” that mandated a parity exchange rate with the US dollar. To sustain this exchange rate, Argentina needed to improve export performance. Doha negotiations and Mercosur trade agreement increased market opportunities for Argentine exports. From 1990 to 1998, agricultural and agro-industrial exports rose in absolute terms from USD 7.9 billion to USD 11.9 billion though the share relative to other sectors shrank from 65% to 60% (World Bank, 1999).

However, by 1999, Brazilian currency devaluation and problems with the “Convertibility Plan” decreased macroeconomic stability and caused a financial crisis that led to an economic recession. Exports decreased and industrial manufacturing declined. The World Bank completion report indicated that all Bank funds for PREX were successfully disbursed to the Secretariat for Small and Medium Sized Enterprises (SEPYME) despite larger macro-economic problems (World Bank, 2000).
### Enterprise Development

The primary project activities of the Agricultural Services program was to (World Bank, 2000):

1. Improve technical services for producers
2. Diversify agricultural export products through marketing, export promotion, research and technical services
3. Strengthen public sector management and policy-making

The primary goal of the Enterprise Export program was to

1. Assist SMEs to export internationally
2. Improve the performance of government agencies that promote exports

They implemented a cost-sharing program (PREX) in order to facilitate SMEs to access export markets.

### Producers & Smallholder Impact and Spillovers:

This project does not focus on smallholders, but some SMEs benefited. The cost-sharing grant scheme (PREX) approved grants for 971 firms for 1090 export projects for a total of USD 25.6 million in matched grants. However, macroeconomic circumstances (specifically devaluation of the Brazilian currency) reduced interest in exporting and only 67% of the approved amount was dispersed. Some SMEs decided not to implement their export plans and cancelled their participation in the program after Argentine exports decreased in value. Of those firms, 83% were SMEs with sales less than USD 5 million, 59% of firms had between 11 and 50 workers, and 31% had never exported prior to exposure to the program (World Bank, 1995).

### Outcomes:

By 1996, the Agricultural Services program had supported 150 ‘non-traditional’ export promotion projects, 100 training seminars, and contributed to USD 220 million of export contracts for 336 firms (World Bank, 2006). Other primary outcomes reported but not quantified included increasing animal health, seed certification, plant testing, and wool testing, and reaching self-financing facilities (World Bank, 1991).

Government officers were charged with organizing farmers into groups and connecting them to private-sector service providers to meet export standards. The World Bank report observed that farmers groups that were more organized, had clear expectations, and helped define the export activities in coordination with the private sector actors were more successful than groups where private sector participation was less formal.

The Enterprise Export Development Project increased the competitiveness of SMEs. In a survey of 50 participating firms, 30% reported that the program helped them increase export activities, and 40% indicated that they would not have begun exporting without the cost-sharing support of the program. In a follow-up survey of that compared 100 firms assisted by the program to 100 control firms, an independent consultant found that supported SMEs were more likely to have better export-performance that those that did not receive support. The comparison revealed that 69% of assisted SMEs had exported compared to 42% of non-assisted firms. For assisted firms, average exports increased from 26.8% of sales to 32.4% of sales. Assisted firms were also more likely to diversify their export channels (59% of assisted firms compared to 26% of control firms), offer staff trainings (78% compared to 44%), adopt quality control programs (61% compared to 36%) and reduce their overall costs (54% compared to 46%) (World Bank, 2000).

### References


### AIMVCF (Aavishkaar India Micro Venture Capital Fund)

**Location:** Mumbai, India  
**Areas Served:** 26 Indian states  
**Years Active:** 2001-present  
**Amount of Investment:** USD 1 million (2001 dollars)  
**Major Subsequent Funds:** N/A  
**Current Resources:** USD156 million

**Crops/Products:** Micro venture capital fund  
**Website:** [http://www.aavishkaar.in/](http://www.aavishkaar.in/)

**Key Findings:**
- Aavishkaar’s unique model is an adaptation of the venture capital model to suit the needs of low income populations by supporting scalable ventures. It uses equity instead of debt in its portfolio investments and invests large amounts in relatively established enterprises and entrepreneurs (Sonne, 2012; Amarnani & Amarnani, 2008).
- Aavishkaar manages its portfolio risk by specializing in particular sectors in which it has expertise, increasing the potential of the business by focusing on entrepreneurs rather than inventors, and requiring promoters of the portfolio companies to show commitment to the venture by becoming co-financiers in the enterprise (Sonne, 2012).
- The enterprises aim to benefit the underserved populations in various capacities: providing access to products (ranging from healthcare to internet access) for consumers, increasing employment opportunities for employees, leveraging income and savings for producers/suppliers (Sonne, 2012; Amarnani & Amarnani, 2008).

**Background:**
Aavishkaar is an early-stage venture capital fund that nurtures local enterprises with social goals, in rural and semi-urban areas of India, with financial and non-financial resources to turn them into sustainable businesses (Aavishkaar, 2015; Aavishkaar, 2014; Nageswaran, 2003; Chiodo, 2014). The mission of the organization is stated as: to evolve an approach to investing that nurtures entrepreneurs in building enterprises that can generate commercial returns while serving humanity sustainably (Aavishkaar, 2015).

Rather than focusing on technology innovation, Aavishkaar has shifted the investment risk to innovation in the execution of the products and technology (Aavishkaar, 2014). Aavishkaar invests in socially focused commercial projects that are not able to find funding from traditional sources of funding (like banks and traditional MFIs) (Sonne, 2012; Amarnani and Amarnani, 2008; Mor, 2005).

Over the last ten years, Aavishkaar has established a high-impact portfolio of businesses at various stages of development, with a management budget of over USD 155 million (Aavishkaar, 2015). Enterprises span a wide range of sectors, including agriculture, education, energy, health, water and sanitation, and microfinance (Aavishkaar, 2015). Aavishkaar invests in enterprises with strong business and financial plans, and also focuses on and involves local underserved community members as producers, consumers or owners, all while remaining financially profitable (Aavishkaar, 2015; Sonne, 2012). It emphasizes that commercial viability and achieving social objectives are not mutually exclusive goals.

Initially based in South and West India, Aavishkaar now plans to expand its focus to neighboring developing South and South East Asian economies, including Pakistan, Bangladesh, Indonesia and Sri Lanka (Aavishkaar, 2015; Aavishkaar, 2014; Sonne, 2012).

**Enabling Environment:**
Aavishkaar is headquartered in Mumbai under a Foreign Investment Promotion Board of the Government of India approval and is a for-profit trust registered with the Securities and Exchange Board of India (Sonne, 2012). Given the strict regulations of the government regarding setting up organizations with foreign investors, a holding company was set up in...
Singapore, Aavishkaar International Private Limited (AIPL), to attract investments from international venture capital investors (Sonne, 2012). However, over time, it became possible to invest directly into the India-based Aavishkaar fund (Sonne, 2012). Some of its partners are pension funds, corporations, local institutions, Indian domestic banks, and international funders including Commonwealth Development Corporation (owned by DfID), Deutsche Bank, International Finance Corporate (World Bank Group) and KfW Bankengruppe from Germany (Chiodo, 2014).

Since 2007, an average Aavishkaar investment has been approximately between USD 50,000 - 500,000 (Sonne, 2012; Amarnani and Amarnani, 2008). This is up from USD 20,000 - 100,000 in the initial years and reflects the effect of inflation, rural integration into the global economy, higher financial impact rates for enterprises on bigger investments, and the changing definition of a “micro” investment (Sonne, 2012; Amarnani and Amarnani, 2008).

Enterprise Development
The market failure that Aavishkaar aims to tackle is the lack of financing for inclusive innovation and social entrepreneurship, especially for early-stage enterprises as they are considered very risky (Sonne, 2012). To this end, Aavishkaar buys equity in the enterprises it incubates and then seeks to earn commercial returns (Sonne, 2012; Amarnani and Amarnani, 2008). Being a for-profit entity, it follows the venture capital fund model and charges a management fee (a set proportion of the investment) to remain financially sustainable, and also aims for an ambitious internal rate of return of between 12-15% over a ten year investment (Sonne, 2012).

Aavishkaar provides both financial (equity and some debt financing) and non-financial support to the enterprises, however, the main focus is on financial support (Sonne, 2012). Non-financial assistance is available in the form of business strategy and development plans, capacity building, mentoring and network support, all of which is also geared towards making the enterprise more productive and attractive to external funders for further financing (Sonne, 2012). The organization also usually nurtures relatively more established ventures that are in need of financial backing more than non-financial assistance (Sonne, 2012).

Producers & Smallholder Impact and Spillovers:
The Aavishkaar model aims to improve the livelihoods of the poor by investing in enterprises that gainfully engage the underprivileged populations (Sonne, 2012). The main focus of more than 90% of the ventures under Aavishkaar is the rural and semi-urban markets (Sonne, 2012). These operations are spread all over India because of the high-risk taking ability of Aavishkaar in enterprises functional in underserved regions (Aavishkaar, 2014). The enterprises aim to benefit the underserved populations in various capacities: providing access to products (ranging from healthcare to internet access) for consumers, increasing employment opportunities for employees, leveraging income and savings for producers/suppliers (Sonne, 2012). Rather than “micro” investing in the individuals themselves, the Aavishkaar model supports the poor indirectly by investing larger amounts in ventures expected to provide improved products and services to the underprivileged (Sonne, 2012). Currently Aavishkaar has 31 portfolio companies operating in 26 states in India, including all seven Low Income States (Aavishkaar, 2014). According to Aavishkaar’s portfolio in 2007, two out of 11 companies had an agriculture focus (Sonne, 2012). One example of an indirect effect on smallholder farmers is through Aavishkaar’s investment in SKEPL, an enterprise that improves the analysis of milk before sale in order to provide more accurate data about how much farmers deserve to be paid (Sonne, 2012).

Outcomes:
Over the past ten years, Aavishkaar has managed to grow a diverse portfolio of enterprises. Some of the main outcomes as stated on the organization website are (Aavishkaar, 2015):
- Main focus of 90% of the companies is rural and semi-urban markets and more than 75% companies have considerable operations in Low Income States
- 48 investments across eight sectors with 9 companies headquartered in Low Income States
- 11 full exits and 4 partial exits
- 83% companies started by first time entrepreneurs
- 13 companies have women promoters and 21 companies have women board members
- In 2014: Total beneficiaries: 17,058,971; People Employed 29,661; Woman Employed 10,032; Woman Producers 13,857; Low income producers provided market access 27,806; Producers from low income states 23,505.

References


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**BOMA Rural Entrepreneur Access Project (REAP)**

<table>
<thead>
<tr>
<th>Location</th>
<th>Nanyuki, Kenya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Areas Served</td>
<td>Marsabit &amp; Samburu Counties, Northern Kenya</td>
</tr>
<tr>
<td>Years Active</td>
<td>2005-present (BOMA) 2009-present (REAP program)</td>
</tr>
<tr>
<td>Amount of Investment:</td>
<td>N/A</td>
</tr>
<tr>
<td>Major Subsequent Funds:</td>
<td>N/A</td>
</tr>
<tr>
<td>Current Resources:</td>
<td>REAP 2014 Budget: USD 753,890</td>
</tr>
<tr>
<td>Crops/Products</td>
<td>Microenterprises that supplement the livestock economy, predominately trading</td>
</tr>
<tr>
<td>Website</td>
<td>bomaproject.org</td>
</tr>
</tbody>
</table>

**Key Findings:**

- The REAP program gives grants of USD 150 to groups of three women to begin sustainable microenterprises relating to food processing and sales.
- The BOMA Project has launched 2,301 sustainable businesses since 2009, impacting more than 44,000 women and children in Northern Kenya (BOMA, 2015a).
- The average REAP business surveyed more than doubled in value over the first year in the program, and 92.6% of businesses were worth more than the size of the initial grant after a year. Average business value after three years of participation in the program increased by 362% (BOMA, 2012).

**Background:**

The BOMA Project was founded in 2005 in the Marsabit District of Northern Kenya. In January 2009, the Rural Entrepreneur Access Project (REAP) was established, and in January 2012, it began to target women exclusively. REAP aims “to provide a way through which individuals can increase their incomes, acquire basic financial skills, and develop a more consistent and reliable source of cash within their own communities. It focuses on creating useful and sustainable micro-enterprises: a supplement and alternative to the livestock economy” (BOMA, 2012). Women receive a start-up grant and training for two years with a local business mentor. The program focuses on both business skills, saving, and access to credit.


**Enabling Environment:**

As of 2005, 91.7% of the population of Marsabit District lived below the Kenya national poverty line (National Bureau of Statistics, 2012; as cited in BOMA, 2012). The district lacks public services such as health facilities, education, water, and roads, and is dominated by the livestock economy, which provides 90% of employment opportunities and 95% of household incomes. Individuals in Northern Kenya experience chronic food insecurity, own few household assets, and have little access to financial services, and thus often depend on livestock as a savings mechanism. However, Kenyans who depend on livestock for income experience great risk, particularly in times of drought or other climate emergencies. Owning a business provides an alternative source of cash for household consumption and emergencies, as well as serving as a vehicle for long-term savings (BOMA, 2012).
Enterprise Development:
REAP provides a start-up grant of USD100 to a group of three women who want to create a small business together. If they are still operating their business six months later, they receive an additional grant of USD 50 for a total initial investment of USD 150. For two years, the women entrepreneurs are provided with mentoring and training on business management skills and micro-savings and assisted to form and operate savings associations (Huka, Njehia & KarukiMbugua, 2015). The BOMA Project considers REAP a graduation-from-poverty program. The Graduation Model includes seven steps, including (1) introducing the program to local leaders, followed by (2) the initial grant, (3) business skills training, (4) progress report and second grant, (5) creation of savings groups, (6) micro-trainings, and (7) access to credit. The expected outcomes of the REAP program are food security, sustainable livelihoods, increased assets, reduced vulnerability, and increased resilience (Huka et al., 2015).

Most REAP microenterprises sell goods such as sugar, salt, tea, and cooking fat, purchased by the business owners from a wholesaler and sold at a modest markup to neighbors (BOMA, 2012). The BOMA Project aims to “lift 100,000 women and children out of poverty within five years,” giving them a source of income to pay for food, school fees, and medical care (BOMA, 2015a).

Producers & Smallholder Impact and Spillovers:
97% of REAP participants sampled who began a business in 2011 were women, with an average of 6.3 dependent children. They were mostly pastoralists prior to joining the program, although many have other sources of income such as collecting water or firewood, or receipt of remittances. Participants and their families typically continue to depend on livestock for some of their income after starting a business (BOMA, 2012). REAP entrepreneurs often sell or trade their goods to other nomadic village residents, giving these individuals access to products they otherwise would have to travel to purchase. Additionally, the BOMA Project hires its full-time, paid Village Mentors locally, who provide mentoring services to groups of three women (BOMA, 2012).

Outcomes:
REAP measures its long-term success by “the ability of women to earn a sustainable income, accumulate savings, feed their families, send their children to secondary school, adapt to a changing climate, and create a resilient grassroots economy in the rural drylands” (GuideStar, 2015).

The BOMA Project has launched 2,301 sustainable businesses since 2009, impacting more than 44,000 women and children in Northern Kenya (BOMA, 2015a). In 2012, 99 of 100 sampled businesses established in 2011 were still in operation, and 93 of 100 businesses begun in 2009 were still operating. The average business more than doubles in value over the first year in the program, and 92.6% of businesses are worth more than the size of the initial grant after a year. After three years of participation, average business value had increased by 362% (BOMA, 2012).

Participation in REAP was correlated with increased wealth indicators. After three years in the program, the median wealth of evaluation respondents was 445% of their baseline wealth. The average business had a total of 27,860 KES (approximately 300 USD) in savings and emergency funds. The average survey respondent who joined the program in 2011 increased their Tropical Livestock Units (TLU) from 2.75 to 4.74 (from 10.06 to 19.91 animals), and among those who joined the program in 2009, TLU increased from 0.79 to 4.71 (from 3.62 to 17.36 animals), a statistically significant increase of every type of livestock (BOMA, 2012).

Participation in REAP is also associated with other health and educational outcomes. Among survey respondents who had been in the program for one year, 83% increased their consumption of rice (a staple good which is not distributed as humanitarian food aid; consumed only when purchased), 52% increased their consumption of meat, 63% fewer put their children to bed without having eaten, and 58% more were spending at least 500 KES per month on school fees. After three years in the program, REAP families had 78.1% more of their school-aged children enrolled in school (BOMA, 2012).

References
CenTev/UFV Technology Incubator

| Location: | Vicosa, Minas Gerais, Brazil |
| Areas Served: | Minas Gerais, Brazil |
| Years Active: | 2001-present |
| Crops/Products: | Agribusiness and food industry, forestry, pest management, biotechnology |
| Website: | http://www.centev.ufv.br/en-US/ |

Key Findings:
- University Setting: The CenTev incubator was formed by the Federal University of Vicosa. The university provides the majority of the funding as well as access to current research. Many students and university researchers apply for the incubation program to turn their academic research into a technological enterprise (infoDev, 2014b).
- Technical Center: The incubator is part of the larger Technical Center of Regional Development of Vicosa (CenTev). This connects the incubator with the Technology Park, the Center for Junior Enterprises, and the Center of Social and Educational Development (CenTev, 2014).
- Results: 29 firms have graduated from the program, of which 11 had an agribusiness focus. Graduated companies in agribusiness and other sectors earn on average USD 2.5 million in revenue 3-5 years after graduating (infoDev, 2014b).

Background:
The CenTev technology incubator was organized by the university when a professor hypothesized that a campus incubator would have a comparative advantage in supporting technology-oriented businesses and agribusinesses.

Since the public sector in Brazil is responsible for almost all R&D (nearly half of public funding goes to higher education institutions), the university-based incubator has good access to new research from the public university.

UFV is structured like a US agricultural research institution and is a leading institution in innovation and entrepreneurship. UFV students and researchers are also potential incubates - 90% of proposals are submitted by UFV students and researchers (infoDev, 2014b).

The governing board includes representatives of the government, university, and private sector. This approach aims to reach decisions that take multiple points of view into account (infoDev, 2014b).

Enabling Environment:
The incubator exists within the larger Technology Center of Regional Development of Vicosa (CenTev) that also includes a Technological Park, Center of Junior Enterprises, and Center of Social and Educational Development. CenTev has 40 acres dedicated for occupation by technology-based companies. The Technology Park serves many of the enterprises after they have graduated from the incubator. The Junior Center trains students in entrepreneurship who in turn provide services to the incubated companies. The Social Center spreads entrepreneurship education opportunities throughout the larger community. Each of these interconnected units contributes to the success of the enterprises (CenTev, 2014).

Graduated enterprises that enter the Technology Park receive several advantages including access to subsidized infrastructure and utilities. Services of the park include the CPPI (Permanent Commission of Intellectual Property) to guide the design and monitoring of patents and licensing, Sebraetec, which allows access to consulting services on technology use, and Relnova, a technological laboratory that establishes and strengthens partnerships in the region (CenTev, 2014).

Enterprise Development
The incubator incorporates a “pre-incubation” phase to for entrepreneurs who have an idea for a new product or service but need support to turn it into a business. Entrepreneurs independent from the university apply for the program, and the Innovation Incentive Program also provides specifically for UFV researchers to turn their research projects into actual enterprises.

EPAR’s innovative student-faculty team model is the first University of Washington partnership to provide rigorous, applied research and analysis to the Bill and Melinda Gates Foundation. Established in 2008, the EPAR model has since been emulated by other UW Schools and programs to further support the foundation and enhance student learning.

NOTE: The findings and conclusions contained within this material are those of the authors and do not necessarily reflect positions or policies of the Bill & Melinda Gates Foundation.
CenTev provides several forms of incubation including “virtual incubation,” which allows a greater number of entrepreneurs to be guided through the preliminary stages like preparing a business plan and developing prototypes. The incubator incorporates “post-incubation” to monitor the graduated enterprises, assess their problems and success, and provide them with further services and support (infoDev, 2014b).

The incubator charges a fee per square meter of rental space and collects 0.5% of the business revenue after incubators graduate. Aside from these fees, consulting services are offered for free (Assefa & Bekele, 2014). Fees represent about 10% of the incubator’s total revenue (ACI & ETG, 2011).

Producers & Smallholder Impact and Spillovers:
Regional farmers do not directly participate in the incubation activities but still may benefit from the new technologies and services provided by the emerging enterprises (11 of the 29 graduated enterprises have an agricultural focus). These technologies primarily serve the pre-production phase of the value chain. Examples of enterprise products include pest management mechanisms, seedling substrate enhancers, veterinary medicines, and fertilizers (CenTev, 2014). CenTev as a whole is committed to regional development. However, the documents and website do not explicitly refer to local farmers or smallholder farmers.

Outcomes:
29 firms have graduated from the program, of which 11 were focused in the agribusiness sector. Graduated companies earn on average USD 2.5 million in revenue 3-5 years after graduating. The firms, both agribusiness-focused and others, have created 197 jobs over the past six years with an average growth rate of 23% (infoDev, 2014b).

References
Corporación para el Desarrollo de Tunía (Corpotunía)

Location: Tunía, Cauca, Colombia

Areas Served: Southwest Colombia

Years Active: 1986 - present

Amount of Investment: USD 100,000

Major Subsequent Funds: Not specific

Current Resources: Tropical crops, floriculture, dairy, bananas, chickens, legumes

Website: www.corportunia.org

Key Findings:
- Corpotunía is based in a rural area (community of Tunía) and was formed in 1986 by the Carvajal Foundation, to provide business training and credit to small and medium-scale farmers. Their management structure is flexible and has adapted to include a variety of different crops and value chains over the years - bananas, chicken, cassava, artisan handicrafts, flowers, and telecommunications.
- Initial funding for Corputunía came from a private sector foundation, Carvajal Foundation, as compensation to the local community for moving a book publishing facility that provided employment in the Tunía community. Other funding partners included CIAT (1991-1993), UNDP (from 1992), and InforCauca, Universidad Autónoma de Occidente, and CIAT (2000). There is little information about current funding strategies but sources state that they charge a fee for services to farmers to facilitate market connections (Castaño, 2001).

Background:
Corpotunía is a non-governmental organization formed in 1986 with support from Fundación Carvajal in the city of Cali and a group of community leaders from the city of Tunía with the goal of conducting integrated development projects that support local producers who grow tropical crops. They partner with the Cauca Chamber of Commerce, the Cauca Regional Center for Productivity and Innovation, and the International Center for Tropical Agriculture (CIAT) (infoDev, 2005). The Fundación Carvajal supported the development of Corpotunía after Carvajal Company moved a book publishing facility to another town in 1985, eliminating many local jobs. Corpotunia attempts to connect small producers to agricultural markets and provides training in agricultural production, post-harvest, and handicrafts (Gottret, 2007; Castaño, 2001). Therefore, it emphasizes enterprise development so that rural producers can efficiently process their crops (Gottret, 2007).

Corpotunia initiated with a credit program that serves 6 municipalities, a health program, and training to support small farm management and technology adoption through entrepreneurs' collectives (Gottret, 2007). In the early 1990s they partnered with CIAT to develop Farmer’s Research Committees (CIALs) to design and test technology adaptation projects. However, this relationship ended in 1993 (Gottret, 2007). In 1993, they began a partnership with the UNDP CIPASLA program (Inter-Institutional Consortium for Sustainable Agriculture on Hillsides) to support sustainable agricultural development for rural producers (UNDP, 2012).

Enabling Environment:
The mountainous Cauca region was one of the most violent departments in Colombia because the agro-ecology is suitable for growing coca, which is linked with civil conflict in the area. There are few work opportunities, poverty is high, education levels are low, and many parts of the region lack infrastructure (UNDP, 2012).

Rural development in the Cauca region is impeded by many past legal attempts to re-distribute land and tensions between indigenous populations and mestizo (mixed, or Latino populations) over agricultural lands (Gottret, 2007). The UNDP (2012) observed that current agricultural practices (slash-and-burn, use of agro-chemicals, and expansion of the agricultural frontier on hillsides and for livestock) have led to environmental degradation. Primary crops include coffee, corn, beans, banana, cassava, fruit trees, sorghum, and sugar cane. Many producers also process plantain/banana flour, sugar, and cassava starch.

CIPASLA created linkages between local community groups, local NGOs (such as Corpotunia and CETEC - Foundation of Interdisciplinary Studies and Technical Assistance), CIAT (International Centre for Tropical Agriculture), and local governments to channel government and NGO resources into Cauca department. They coordinated with the National Program for Technology Transfer (PRONATTA), a national government program. Financial resources were allocated to community organizations to invest in equipment and infrastructure in exchange for work on watershed restoration and
reforestation projects (Gottret, 2007).

Enterprise Development

Gottret (2007) explains that Corpotunía's services have adapted since it initiated in 1986. They began with business management training and a credit program. They then evolved to testing and adapting technology in the early 1990s. They then shifted to a ‘snail’ strategy where they had a small number of core personnel and could expand as new projects emerged. In 2000, they redefined their organizational mission to focus on improving the technological aspects of production and post-harvest processing, as well as market development and supporting entrepreneurship.

Castaño (2001) writes that Corpotunía had a major role in facilitating marketing of beans from 1991-1993, during a period of high-demand for locally-produced beans. They linked producers to supermarket chains and grocery cooperatives in Cali, the largest city in the region. Corpotunía charged farmers a fee for services (coordinating markets and delivering production inputs) that was offset by price premiums of 10-15% in urban markets (that was partially subsidized by Carvajal Foundation for the sale of beans in poorer urban neighborhoods).

Around 2000, Corpotunía opened a rural telecenter in cooperation with InforCauca, Universidad Autónoma de Occidente, and CIAT. They offered internet and telephone services to the general public for a small fee (Amariles et al.).

The 2005 infoDev report describes primary project activities are to create a agro-enterprise incubator model with centers (núcleos) for direct and virtual business incubation, developing an agri-business unit the develops and online information system for value chains, and developing ICT applications that aid in the incubation process. However, Corpotunía does not have a website and it is difficult to confirm whether these activities took place.

A UNDP case study (2012) states that inter-institutional support and coordination was important in order to realize CIPASLA’s project goals. Corpotunía was one of 12 coordinating agencies that worked with 21 community-based organizations to develop a dairy processing plant, commercial horticulture, and commercial flower production by women’s groups. Gottret (2007) states that CIPASLA’s collective of NGOs supported 156 different rural development projects and that Corpotunía supported reforestation projects, artisan handicrafts, and women’s groups that grew and sold flowers.

Producers & Smallholder Impact and Spillovers :

A 2012 UNDP case study and Gottret (2007) highlight that Corpotunía was created to benefit smallholder farmers by incubating their agri-processing businesses (through management training and technology adaptation) so that they can access markets. Case study evidence presented above from the UNDP (2012) and Gottret (2007) suggests that Corpotunía focused on smallholder development, but specific examples and metrics are not available.

Outcomes:

No information available about outcomes.

References


Ethiopia Sustainable Agribusiness Incubator (ESAI)

**Location:** Ethiopia

**Areas Served:** Bishoftu and Adama, Ethiopia

**Years Active:** 2012-present

**Amount of Investment:** USD 8.3 million

**Major Subsequent Funds:** N/A

**Current Resources:** N/A

**Crops/Products:** Sesame, honey, dairy

**Website:** None

**Key Findings:**
- ESAI focuses on business model experimentation. Enterprises test out new forms of value addition or market linkages based on the results of ESAI strategy studies.
- ESAI regularly disseminates emails, newsletters, and/or text messages regarding information about price and market trends, financing opportunities, and potential partnerships with technology suppliers, potential buyers, and investors.
- ESAI has created an intra-incubator business network that fosters business relationships between the incubated enterprises.

**Background:**
ESAI is the first agribusiness incubator in Ethiopia. In 2012, USAID’s Feed the Future initiative and Precise Consult International (PCI) established the project through a cooperative agreement. In 2014, Irish Aid joined the project to create the Dairy Innovation Fund, which provides funding to entrepreneurs adding value to the dairy industry (USAID, 2015). ESAI also incubates the apiculture sector in Bishoftu and Adama.

Unlike most incubators, ESAI’s main objective is not to cultivate businesses so much as experimenting with innovative business *models*. The enterprises being incubated serve as “keystone enterprises, i.e., as test beds for the formation of new kinds of value addition and new models for farm to market linkages” (Assefa & Bekele, 2014). Before beginning the incubation process, ESAI conducted detailed studies (“deep dive studies”) of each value chain to determine their strategy.

**Enabling Environment:**
Irish Aid, USAID, and PCI are the three donors and facilitators of the project. There is no fund earmarked for financing the individual businesses, so ESAI instead assists its clients in finding bank loans, capital goods financing, crowd funding, grant programs, and equity investments (Assefa & Bekele, 2014).

Assefa and Bekele (2014) mention that funding was viewed as essential by ESAI staff as among other things, it would help the incubator deal with various government bodies to lobby and advocate on serious challenges to innovation in the agriculture sector. ESAI is actively involved in learning and advocacy, by consulting with multiple stakeholders in the value chain to discuss implementation challenges and strategies (Assefa & Bekele, 2014).

ESAI has also benefited from a cordial relationship with the Ethiopian government, with ESAI representatives conducting purposeful advocacy meetings with higher government officials and taking part in conferences, and association and multi-stakeholder meetings (Assefa & Bekele, 2014). Due to the outcomes achieved, the report also mentions that relevant government institutions also started showing interest in forming partnership with ESAI, and also resulted in partnerships with five government-run Capital Foods Financing service provider companies (Assefa & Bekele, 2014).

**Enterprise Development**
ESAI uses the following eligibility criteria for selecting entrepreneurs (PCI, 2014):
- Clear link to the targeted subsectors and clear business orientation of the project
- Innovative, value-adding, and problem solving business concept
- Socially inclusive and environmentally friendly
- Proof of commitment

Other encouraged project attributes include: involvement of women, contribution to climate change adaptation or green growth, high job creation potential.
In addition to typical incubation services (such as developing business models and plans, providing access to finance and other input and output markets, as well as business promotion services), ESAI facilitates connections between enterprises and outside resources. ESAI regularly disseminates emails, newsletters, and/or text messages regarding information about price and market trends, financing opportunities, and potential partnerships (Assefa & Bekele, 2014). The incubator also facilitates linkages with technology suppliers, potential buyers, and investors.

ESAI has created an intra-incubator business network that fosters business relationships between the incubated enterprises. The concept emerged organically as ESAI observed that entrepreneurs were developing business connections during training (Assefa & Bekele, 2014). In addition to starting new businesses, ESAI works with already-existing companies who are interested in developing new business ideas. In 2014 ESAI was assisting 10 such pre-existing companies.

One challenge that the incubator faced was the tendency of some entrepreneurs to concentrate only on the “free money” from donors rather than on innovation and technology, and remain interested in the incubator as long as these funds are available and their commitment otherwise is very low (Assefa & Bekele, 2014). As a result, ESAI has dropped entrepreneurs that weren’t sufficiently committed to business innovation.

Producers & Smallholder Impact and Spillovers:
ESAI has reached 8,741 farmers through 14 enterprises, primarily value-adding processors. ESAI focuses on market failures that affect smallholder farmers and assists entrepreneurs in developing solutions for them (Assefa & Bekele, 2014). Detailed quantitative data on smallholder impacts are not available, however Assefa & Bekele (2014) report that 8741 smallholders were connected to agro processing industries. Qualitative evidence of program impacts include:

- Smallholders face limited demand and low prices for raw honey. ESAI supported six honey-processing companies in underserved regions of the country. These processors buy the raw honey at a higher price from the smallholders and then produce high-value products, including refined honey, beeswax, and cosmetics, for both local markets and exporting.
- Dairy producers have historically reached large markets like Addis Adaba through middlemen in the supply chain, which has limited their profits. ESAI entrepreneurs developed a new business model for a dairy cooperative union to directly supply its products to large institutions (primarily universities) in the capital.
- Small farmers could not afford imported raw planters because of the high upfront cost and the high traction powers that they require. An ESAI entrepreneur designed the first raw planter in Ethiopia that is affordable for smallholders - it is operated by human or animal power and requires minimal training to use. The prototype is being field tested and the product is expected to be on the market within a year.

Outcomes:
In ESAI’s first year, the incubator selected 20 companies to support, and nine more were added in the second year. Of these 29 companies, only three dropped out. In 2015, 14 entrepreneurs graduated from the incubator (USAID, 2015). As a result of the Dairy Innovation Fund, ESAI is now supporting 50 companies, of which 90% are expected to graduate by the end of year three (Assefa & Bekele, 2014).

In phase one, ESAI created 7,763 jobs through 36 companies and reached 8,741 farmers through 14 companies. In the second phase of the project, ESAI plans to incubate 200 new companies in eight subsectors, create 2,000 new jobs, and link 100,000 farmers to better market outcomes (Assefa & Bekele, 2014).

References


<table>
<thead>
<tr>
<th>Fundación Chile (FCh)</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Location:</td>
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<td>Nationwide</td>
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<tr>
<td>Years Active:</td>
<td>1976-Present</td>
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<tr>
<td>Amount of Investment:</td>
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<td>Major Subsequent Funds:</td>
<td>New endowment of USD 40 million from BHP Billiton and the Chilean government in 2005</td>
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<td>Crops/Products:</td>
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<td>Website:</td>
<td><a href="http://www.fundacionchile.com/home-en">http://www.fundacionchile.com/home-en</a></td>
</tr>
</tbody>
</table>

**Key Findings:**
- Fundación Chile (FCh) has a large private endowment that has provided it with a stable source of income during times of austerity, and has allowed it to take advantage of investment opportunities (infoDev, 2013b, 2014c).
- A diverse portfolio reduces the uncertainty and risk associated with innovation and investment in new businesses and sectors (infoDev, 2014c).
- As a “One-Stop Value Chain Incubator” FCh is able to identify new potential markets and apply its own research and technology development to foster new enterprises and innovation (infoDev, 2013b).

**Background:**
Fundación Chile (FCh) was formed in 1976 through a partnership between the Government of Chile and ITT. (Chandra and Narczewska, 2009; infoDev, 2013b; infoDev, 2014c) and is considered to be one of the earliest and most successful agribusiness incubators (infoDev, 2013b). FCh operates as an independent non-profit corporation whose mission is to “introduce high impact innovations and enhance human capital to increase the competitiveness of Chile, promoting and developing the economy through technology transfers and in partnership with local and global knowledge networks” (Fundación Chile, 2015.) In 2005 BHP Billiton, an international mining conglomerate, replaced ITT as FCh’s primary private sector partner (Fundación Chile, 2015; infoDev, 2014c).

FCh began operations with an initial endowment of USD 50 million and a mandate to conduct research and development and foster innovation in agribusiness and industry where Chile was underrepresented (infoDev, 2014c). infoDev (2013a) describes Fundación Chile as a “One-stop Agribusiness sector developer” typified by their large start-up endowment, strong internal research and management capacity, ability to apply its own market and tech research, enterprise management, and equity funding to new business startups, and profit motivated orientation.

In addition to interest in Agribusiness development, FCh currently supports technology development projects in energy & climate change, water and environment, education, forestry, natural resources, and telecommunications. FCh is primarily funded through revenues from the sales of its products, contracts with public organizations, and returns on investments. FCh received a new endowment of USD 40 million from BHP Billiton and the Chilean government in 2005 (infoDev, 2013a) and maintains partnerships with Chile’s Economic Development Agency (CORFO) and Chile's Science and Technology Ministry (CONICYT) (infoDev, 2014c).

**Enabling Environment:**
FCh was established in the pro-market environment of the Pinochet government, and has utilized a corporate governance structure since its inception (infoDev, 2014c). The foundation’s large endowment provided its R&D department with a stable source of income when the military government withdrew public subsidies from research institutions and other organizations in the 1980s.

The Foundation’s privately endowed R&D department proved crucial in the 1980s, when the military government withdrew subsidies from research institutions and many organizations were forced to undertake short-term, less innovative projects. Thanks to its endowment, Fundación Chile was able to maintain its R&D standards and technological advancement (infoDev,
Enterprise Development
Unlike traditional Agribusiness Incubators, FCh focuses on technology transfer and dissemination as its primary strategy for Agribusiness development (Chandra and Narczewska, 2009; infoDev, 2013b; infoDev, 2014c). FCh also uses its endowment for private equity investment, and often creates or assumes partial or full control of private enterprises during the incubation process.

Fundación Chile’s incubation and technology transfer process employs several phases (infoDev, 2013b):
1. Detecting potentially profitable subsectors
2. Developing and/or importing technology suitable for specific subsector
3. Selecting appropriate technologies
4. Implementing and adapting technologies, including incubation support and/or investment in pioneer firms
5. Diffusing technology results

FCh’s broad approach allows for the creation of new enterprises as well as the incubation of entire clusters (infoDev, 2013b).

Producers & Smallholder Impact and Spillovers:
Fundación Chile’s activities have benefited smallholder farmers in Chile by introducing new crops and management techniques, market linkages and providing financing for SME’s. Over the course of its 36 year history, Fundación Chile has:

- Incubated or invested in over 75 companies involved in Non-Traditional Agricultural Exports, Aquaculture, natural resources and energy.
- Introduced a new variety of Asparagus to Chile in 1979. Exports increased from 6.2 ton to 7550 tons per year by the 1990s (InfoDev, 2014c)
- Establishment of Salmanes Antártica Ltda and Cultivos Marinos Tongoy in 1982, which became cornerstones of the Chilean Aquaculture cluster. Chile exported 300 tons of salmon and trout in 1980, and over 24,000 tons per year by the 1990s (infoDev, 2014c).
- Launched a “boxed beef” project in 1982 which used vacuum packaging to transport processed beef from livestock production areas to consumption centers. This lead to the creation of Procarne, a company which was later transferred to the private sector (infoDev, 2014c).
- In 1985, FCh established “Berries la Union,” a program to introduce new species and varieties of berries and to expand the zone where they could be grown domestically. In 1987 they established Tenagro Cautín, a company that was instrumental to the development of the BioBio Berry Cluster (infoDev, 2014c).

There is no evidence how much the above activities have benefited smallholders as opposed to larger operations.

Outcomes:
A cost-benefit study completed in 2006 estimated that Fundación Chile has had a net economic impact of over USD 1.3 billion through seven agribusiness programs it carried out from 1976-2005. This includes USD 555.7 million from its activities in the Salmon sector and, USD 148.9 million from berries, USD 146 million from meats (Procarne) and USD 71.9 million from its fruit quality control programs. This estimate does not include several sectors that FCh is involved in including asparagus, citrus, apples, and oysters (infoDev, 2013b).

References
Latin American Agribusiness Development Corporation S.A.

Location: HQ in Coral Gables, Florida
Areas Served: Latin American and the Caribbean
Years Active: 1970 - present
Amount of Investment: $1,400,000,000 since 1970
Crops/Products: Agriculture, horticulture, animal husbandry, fish, processing
Website: www.laadsa.com

Key Findings:
- LAAD operates 14 offices that serve 17 countries with the mission of financing small and medium-sized agribusiness companies to encourage trade and investment (LAADSA.com). In terms of portfolio size, the top five countries are Brazil, Ecuador, Nicaragua, Peru, and the Dominican Republic (LAAD, 2013).
- In 2013, they disbursed $155 million to 195 firms in 15 countries, representing a 15% increase over the previous year. That year, they reported $329 million total debt, 64% financed by commercial banks and 36% financed by multilateral agencies (LAADSA.com).
- Their current agribusiness portfolio is $456 million and is expected to generate $500 million in additional revenue and employ 8,000 people full and part-time (LAAD, 2013).
- LAAD finances a diverse portfolio of crops. The top eight crops represent 54.6% of the total portfolio - bananas, soybeans, roses, grapes, cattle, cotton, avocados, flowers (LAAD, 2013).

Background:
Since 1970, LAAD has extended short and medium-term loans to private agribusinesses to facilitate rural development in Latin America and the Caribbean. LAAD is a for-profit private investment corporation whose financing activities focus on improving production, distribution, marketing (especially exports) of agricultural products (including livestock, fish, forestry, and agriculture). Their mission is “to finance small and medium sized agribusiness projects to promote sustainable economic and social development in Latin America” (LAAD, 2012).
LAAD operates 14 offices that serve 17 countries with the mission of financing small and medium-sized agribusiness companies to encourage trade and investment (LAADSA.com). In terms of portfolio size, the top five countries are Brazil, Ecuador, Nicaragua, Peru, and the Dominican Republic (LAAD, 2013). It finances a diverse portfolio of crops. The top eight crops represent 54.6% of the total portfolio - bananas, soybeans, roses, grapes, cattle, cotton, avocados, flowers (LAAD, 2013).

Enabling Environment:

LAAD typically finances small and medium sized, family-owned agribusinesses to help expand operations, make capital investments in fixed assets (purchase of land, agricultural equipment, and irrigation systems), refinance debt, and provide crop financing (LAADSA.com). This sector is often underserved by traditional financial institutions because it is perceived as risky due to volatile agricultural commodity prices. LAAD is a private company and extends loans at current market rates but is financed by multilateral institutions (such as the IFC) to provide long-term financial resources that are unavailable from commercial banks (IFC, 2009). The IFC is a member of the World Bank Group and provides financing that facilitates rural developing and poverty alleviation. Without financing from IFC, LAAD would be unable to grow as quickly and would have to extend loans on a shorter-term basis, which would limit their ability to finance longer-term capital asset projects. The IFC has also encouraged LAAD to strengthen social and environmental standards on their entire loan portfolio (IFC, 2009).

Enterprise Development
LAAD facilitates enterprise development by financing loans to small and medium sized agribusinesses in Latin America. Loans range in size from $200,000 to $3 million, repaid over 5 to 7 years (LAADSA.com). All agribusiness companies sell in foreign markets in order to generate the foreign exchange required to repay LAAD loans. By 2014, they had extended a
total $1.4 billion in loans to over 3,000 agribusinesses in 20 nations. They estimate that their financing activities have contributed to the creation of 120,000 jobs and generated $1.25 billion in export revenue (LAAD, 2012). The average return on assets is 3% (LAAD, 2013).

In 2013, they disbursed $155 million to 195 firms in 15 countries, representing a 15% increase over the previous year. That year, they reported $329 million total debt, 64% financed by commercial banks and 36% financed by multilateral agencies (LAADSA.com). Favorable financing terms from multilateral agencies enables LAAD to extend long-term loans to SMEs, which are believed to increase financial sustainability and facilitate growth (IFC, 2009). Their current agribusiness portfolio is $456 million and is expected to generate $500 million in additional revenue and employ 8,000 people full and part-time (LAAD, 2013).

Producers & Smallholder Impact and Spillovers:
They target privately-held, usually family-owned, agribusinesses that export all or some of their agricultural products. As a result, businesses served are usually small and medium sized in terms of capital and number of employees and they do not necessarily target smallholder farmers in terms of land size. They consider that their focus on long-term financing enables agribusinesses to sustainably increase financial capital, grow operations and provide employment in rural areas (LAAD, 2013).

An example of a loan is the family-owned Agropecuaria Sara in the Santa Cruz region of Bolivia that produces soybeans on a 250-hectare farm. Since 1993, LAAD has financed over $2 million in loans to fund expansion and increase working capital. As a result, Agropecuaria Sara grew from a 250-hectare operation to 3,420 hectares in soybeans, 800 hectares of sugarcane, 620 hectares of forestry, and manages 700 heads of cattle. Revenue grew from $1.1 million in 2001 to $4.8 million in 2005. It generates $3.9 million in export revenue, has 60 full-time and 200 part-time employees (LAADSA.org). Another example is Agroferns in Guatemala, a family-owned company that is a leading exporter of leather leaf fern world-wide. Since 1991, Agroferns grew from annual sales of $1 million to $10 million and plants over 160 hectares.

Outcomes:
They have loaned $1.4 billion to over 3,000 agribusinesses in 15 Latin American countries. They estimate that their financing activities have contributed to the creation of 120,000 jobs and generated $1.25 billion in export revenue (LAAD, 2012). The average return on assets is 3% (LAAD, 2013). Their current agribusiness portfolio is $456 million and is expected to generate $500 million in additional revenue and employ 8,000 people full and part-time (LAAD, 2013).

Other business outcomes reported in their 2013 annual report include (LAAD, 2013):
- Technology upgrades (precision seeding and zero-tillage cultivation) in Mexico that have enabled a five-fold increase in corn yields.
- Corn producers in Ecuador implementing pivot irrigation systems and adopting improved variety seeds has enabled producers to have two harvest cycles per year instead of one.
- 54.5% of LAAD’s portfolio in Peru finances asparagus and grape producers, two export crops that have experienced an increase in demand in recent years.

References
### Kenya Feed the Future Innovation Engine (KFIE)

<table>
<thead>
<tr>
<th>Location:</th>
<th>Nairobi, Kenya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Areas Served:</td>
<td>Nationwide, with a focus on 27 Feed the Future Priority Counties: Bomet, Bungoma, Busia, Elgeyo, Garissa, Homa Bay, Isiolo, Kakamega, Kericho, Kisii, Kitui, Machakos, Elgeyo Marakwet, Makueni, Marsabit, Meru, Migori, Nandi, Tharaka Nithi, Nyamira, Siaya, Taita Taveta, Trans Nzoia, Turkana, Uasin Gishu, Vihiga and Wajir</td>
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<tr>
<td>Years Active:</td>
<td>2012-2017 (est.)</td>
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<td>Amount of Investment:</td>
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<td>Current Resources:</td>
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<td>Crops/Products:</td>
<td>Dairy, Livestock, Horticulture and Staple Crop Value Chains</td>
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<tr>
<td>Website:</td>
<td><a href="http://www.idd.landolakes.com">www.idd.landolakes.com</a></td>
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</table>

#### Key Findings:
- Kenya Feed the Future Innovation Engine (KFIE) targets businesses developing products that are designed to serve rural producers in dairy, livestock, horticulture and staple crop value chains (USAID/Kenya, 2014).
- Using a competitive application process similar to a venture capital fund KFIE is able to identify and select businesses which have potential for high impact and commercial viability (USAID/Kenya, 2014).
- While the program is still ongoing, several products have already been supported including SMS and mobile information dissemination, soil testing, and low-cost cold storage systems, among others.

#### Background:
Land O’Lakes, Inc. is one of the largest cooperatives operating in the United States, producing dairy products as well as a variety of agricultural goods and services (www.landolakesinc.com) The company’s International Development Division (IDD) is involved in agricultural productivity and agribusiness development, food security and livelihoods, and environmental stewardship and sustainability projects around the world. Since 1981, Land O’Lakes conducted 280 programs and training initiatives in 80 countries. In 2014, Land O’Lakes IDD managed 30 agriculture and enterprise development projects in 19 countries, which benefited 139,413 rural households in Africa, Asia and the Middle East. Land O’Lakes IDD’s activities are primarily funded by the USDA, USAID, and the USAID Office of Foreign Disaster Assistance (Land O’Lakes, 2014).

In 2012 Land O’Lakes IDD, in partnership with IDEO.org and Dalbeg was awarded a five year, USD 22 million dollar grant from USAID to enhance adoption of innovative agricultural technologies and practices, improve agricultural productivity and markets, and increase private sector investment in agriculture and nutrition-related activities. The project works closely with the Ministry of Industrialization and Enterprise Development, Agriculture Sector Coordination Unit, Kenya Agricultural Research Institute (KARI), Kenya Plant Health Inspectorate Services (KEPHIS), and the Pest Control Products Board (USAID/Kenya, 2014).

#### Enabling Environment:
An evaluation of a previous USAID Kenya Agricultural Innovation Project (USAID/Kenya, 2012) noted that the enabling environment has improved over the last decade. In the 1990s weak and ineffective institutional support in the agriculture sector in Kenya meant that rural producers had little access to information, inputs, and markets. High levels of corruption and poor infrastructure also discouraged private sector development. Renewed interest in the rural sector, and introduction of the Kenya Agricultural Sector Development Strategy and Medium Term Investment Plan have led to “dramatic improvements in the enabling and regulatory environments, especially reflected in the horticulture sector.” The Ministry of Agriculture has also introduced projects to support horticulture producers, including the Kenyan Horticulture Competitiveness Project, which expanded smallholder participation in profitable horticulture export markets (USAID/Kenya, 2012).

#### Enterprise Development:
KFIE provides financial and technical assistance to enterprises that provide innovative goods and services to reduce poverty and improve nutritional outcomes, agricultural productivity and food security. Enterprises are identified and selected

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6 This list only includes countries projects that are active or have closed within 6 months of March 2015
through a competitive application process that is similar to a venture capital fund. All enterprises must be related to select value chains including dairy, non-dairy ruminant livestock, horticulture, maize and staple food crops such as potatoes (USAID/Kenya, 2014).

Businesses which were funded through the first application cycle include:
- M-Farm Ltd, a woman-led company which has developed an app and SMS messaging system which farmers can use to get price information, buy inputs, and locate buyers (http://www.mfarm.co.ke/);
- Quest Technologies, a firm providing low-cost, mobile soil testing services (Sykes, 2014.); and
- A project developed by the University of Nairobi to introduce a low cost alternative to post-harvest storage called Coolbot (Ambuko, 2014).

Producers & Smallholder Impact and Spillovers:
According to the organization, the Kenya Feed the Future Innovation Engine identifies, fosters, and brings to scale innovative market-driven solutions to persistent food insecurity, under-nutrition and poverty. The program focuses specifically on businesses who develop low cost, mobile, and innovated products that serve the needs of rural producers. Examples include the development of new varietals, improving access to farm inputs, increasing farmer market access, and using ICT to improve access to information (USAID/Kenya, 2014).

Outcomes:
The project is still ongoing, but reported accomplishments as of October, 2014 are as follows:
- 46 innovation applications received in three request cycles
- 13 innovators from wave one and wave two are now in proof-of-concept stage, i.e., testing their innovations in the field.
- All awardee innovators were provided with customized, short-term technical assistance in finance, business planning and strategy, ICT, monitoring and evaluation, etc. (ongoing) (USAID/Kenya, 2014).

References
**One Acre Fund**

<table>
<thead>
<tr>
<th>Location:</th>
<th>Bungoma, Kenya (Headquarters); field staff and offices in each country served</th>
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<tr>
<td>Areas Served:</td>
<td>Kenya, Rwanda, Burundi, and Tanzania; trials in Uganda and Malawi</td>
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<td>Website:</td>
<td><a href="http://www.oneacrefund.org/">http://www.oneacrefund.org/</a></td>
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</table>

**Key Findings:**
- One Acre Fund provides enrolled smallholder farmers with financing for seed and fertilizer, distribution of farm inputs, training on agriculture techniques, and market facilitation, all within walking distance of the farm.
- In 2014, 203,600 farmers experienced an average income gain of USD 128. This 47% increase represents a 201% return on investment (One Acre Fund, 2014b).
- One Acre Fund plans to expand to serve one million farmers in its core programs by 2020, as well as embarking on government partnerships and field building to reach more farm families at a less intensive service level (One Acre Fund, 2014b).

**Background:**
One Acre Fund invests in smallholder farmers, aiming to generate permanent gains in farm income. The organization defines its purpose as follows: “We serve small-scale farmers. In everything we do, we place the farmer first. We measure success in our ability to make more farmers more prosperous” (One Acre Fund, 2015f). One Acre Fund provides enrolled smallholder farmers with a complete service bundle: financing for seed and fertilizer, distribution of farm inputs, training on agriculture techniques, and market facilitation, all available within walking distance of the farm.

Founded by Andrew Youn in rural Kenya in 2006, the organization now serves 200,000 rural farmers in four countries with aims to expand to serve 1,000,000 farmers and their families by 2020, both by enrolling more farmers in current service areas as well as expanding to new districts (One Acre Fund, 2014b) and to one new country each year (One Acre Fund, 2015d). In 2015, One Acre Fund anticipates serving 305,000 farm families (One Acre Fund, 2014b).

One Acre Fund funds the majority of its field operations through farmer repayments, but also receives support from partners including the Barr Foundation, the Bill & Melinda Gates Foundation, the MasterCard Foundation, the Pershing Square Foundation, the Whole Planet Foundation, and USAID (who each gave between 3 and 12 million USD). Additional supporting organizations provided supplemental support in smaller grants or awards (One Acre Fund, 2015e).

**Enabling Environment:**
According to One Acre Fund’s 2014 annual report, 50 million hungry farm families in Africa could benefit from increased agricultural productivity. But few microfinance institutions provide loans to rural smallholder farmers. By providing asset financing, One Acre Fund provides high-quality farm inputs in remote areas where they may be difficult for a farmer to purchase, even with a cash loan, and also ensures that farmers use the loans to invest in farm productivity rather than for household consumption or emergency spending (One Acre Fund, 2015b).

David Hong, senior global policy analyst for One Acre Fund, attributes the success of the program in part to support and funding from USAID’s Feed the Future initiative, which allowed One Acre Fund to expand operations across East Africa (Hong, 2015). The Bill & Melinda Gates Foundation also provided a three-year, USD 11.6 million grant to One Acre Fund in 2013 to expand the agriculture innovations platform and increase access to agriculture technologies for smallholder farmers in Africa (One Acre Fund, 2013). Some of One Acre Fund’s newest innovations include government partnerships, farmer mobile repayment options, and farm trials on maize-legume intercropping, smallholder agroforestry, soil acidity, postharvest home crop storage, dairy cow care, and various new crop and variety packages (One Acre Fund, 2015a).

One Acre Fund currently partners with four African governments to improve implementation of agriculture subsidies, input distributions, and training interventions. One Acre Fund also works to create an association of farm finance practitioners, to disseminate agricultural research, and to influence agriculture policy in countries of operation and in donor countries (One Acre Fund, 2014b). To reach local governments for support and collaboration, One Acre Fund has a Government Relations
Team that meets regularly with government representatives (One Acre Fund, 2014f). In 2013, Kenya began transitioning to a more decentralized form of government that gave more power to lower levels of government and created 47 new counties. One Acre Fund took advantage of this reorganization to interact more directly with more local jurisdictions (One Acre Fund, 2014f).

### Enterprise Development:
One Acre Fund’s program model offers bundled goods and services to enrolled smallholder farmers, providing credit, agricultural inputs, insurance, extension services, and more. According to a Bain & Company report on scalable agricultural innovations, One Acre Fund “facilitates activities and transactions at each part of the farming value chain, from seed sourcing to education on selling output” (Bain & Company, 2014).

Farmers enroll their land by the acre: in 2014, 121,009 acres of land were cultivated in partnership with One Acre Fund (One Acre Fund, 2014b). Inputs are procured centrally from suppliers and delivered within three-week windows scheduled up to ten months in advance, to ensure planting materials always arrive in time (Bain & Company, 2014). Loans are joint-liability with a term of 10 to 11 months and a fully flexible repayment schedule, made to groups of 5 to 15 farmers. Farmer groups agree to help each other with farm labor and meet with their field officer biweekly to receive training and make loan payments (One Acre Fund, 2015c).

Over the last two years, One Acre Fund has begun to invest in government partnerships and field-building efforts (including agriculture research, microfinance, and government services) as additional strategies to reach the millions of smallholder farmers not currently served directly by the program (One Acre Fund, 2014).

### Producers & Smallholder Impact and Spillovers:
One Acre Fund is focused explicitly on rural smallholder farmers, seeking “to generate transformative impact in the lives of the farmers we serve” (One Acre Fund, 2014b). One Acre Fund measures impact by weighing the harvest from randomly selected plots of thousands of clients and comparing yields with those of non-One Acre Fund farmers in the same area (One Acre Fund, 2014b). The organization aims to balance the dimensions of scale and per-client impact in measuring its success (One Acre Fund, 2014d).

Through One Acre Fund, farmers can purchase fertilizer, seed, and other inputs on credit, as well as receiving training on crop diversity and rotation, use of improved varieties, and use of sufficient fertilizer. One Acre Fund also sells “add-on” products like solar lights to its clients (One Acre Fund, 2014b). Because clients choose which product packages to buy and must opt-in with new purchases each growing season or loan cycle, their needs and preferences drive One Acre Fund’s product and service offerings (One Acre Fund, 2014a).

Additionally, One Acre Fund hires field officers from among its farmers, so participant smallholders have employment opportunities beyond the farm (One Acre Fund, 2014b). Field officers are provided with professional development and opportunities for advancement within the rapidly-growing organization (One Acre Fund, 2014c).

### Outcomes:
In 2014, 203,600 farm families participated in the program (up from 78,100 in 2011), full-time staff reached 2,343 (up from 700 in 2011), and farmers experienced an average income gain of USD 128, an increase of 47% on average. This represents a 201% return on investment, exceeding the organization’s goal of 100% return on investment (One Acre Fund, 2014b).

In 2014, 99% of loans for farm inputs were repaid, and farmer repayments covered 74% of field operating costs. One Acre Fund’s sustainability goal is to cover 100% of field expenses with loan repayments, using charitable gifts only for initiatives that generate public good and not for direct service operations. In 2014, One Acre Fund reached 100% loan repayment in two of four country operations. Farmer loan repayments totaled USD 19.7 million in 2014 and will be USD 30.5 million in 2015 (One Acre Fund, 2014b).

### References
Bain & Company. (2014). *Growing prosperity: Developing repeatable models to scale the adoption of agricultural...*


Root Capital

**Location:** Cambridge, Massachusetts  
**Areas Served:** Latin America and Africa  
**Years Active:** 1999 - present  
**Amount of Investment:** USD 791,000,000 credit disbursed  
**Major Subsequent Funds:** N/A  
**Current Resources:** N/A  
**Crops/Products:** Coffee, cacao, fruits and vegetables, honey, cereals (quinoa, sorghum, millet, maize), cotton, value-added processing (shea butter, alcohol for cosmetics, tree resin), artisan products  
**Website:** www.rootcapital.org

**Key Findings:**
- From 1999-2015, Root Capital loaned a total of USD 791 million to 546 borrowers (rootcapital.org).
- Their financing model consists of providing short-term loans for trade credits and long-term loans for capital assets to rural agricultural cooperatives. Those cooperatives, in turn, purchase from small-scale farmers located in their region and sell products to national and international supply chains (rootcapital.org).
- On average, 74% of business/cooperative revenues are paid to producers and payments increase as firms grow in size (Root Capital, 2013).
- The repayment rate of borrowers is 99% (Doran et al., 2009).
- Root Capital currently partners with 120 international companies, including Green Mountain Coffee, Equal Exchange, The Body Shop, Whole Foods Market, Starbucks, and General Mills, among others (rootcapital.org).

**Background:**
Root Capital was founded by William Fulbright Foote in Cambridge, Massachusetts in 1999. That year, the organization disbursed its first loan to a cardamom and coffee cooperative in Guatemala. They started with loans for trade credits, short-term loans that are used to finance the purchase and sale of agricultural and artisan craft products and are intended to coincide with the harvest and production cycle. In 2000, Starbucks Company began providing guarantees for Root Capital’s trade credits. In 2001, they started offering long-term fix-asset loans to cooperatives and companies seeking to upgrade equipment, infrastructure, or other aspects related to operations. They provide financial advisory services to borrowers to facilitate repayment, financial sustainability and business growth (rootcapital.org).

**Enabling Environment:**
Root Capital’s investments cover half its operating costs and the other half comes from support from foundations and companies seeking to diversify their supply chains or invest in social impact vehicles. Since it is a social impact investor and a registered non-profit based in the United States, Root Capital benefits from access to low-interest loans and can use grants and donations for operating expenses (Doran et al., 2009).

A 2008 report stated a goal of the organization was to become financially self-sustaining after tripling their loan portfolio, but there is no evidence to date of whether the goal was met (Root Capital, 2009). Root Capital currently partners with 120 international companies, including Green Mountain Coffee, Equal Exchange, The Body Shop, Whole Foods Market, Starbucks, and General Mills, among others (rootcapital.org).

**Enterprise Development**
Root Capital primarily offers loans to businesses and cooperatives situated in the ‘missing middle.’ These are firms that are too large for microfinance institutions and too small for traditional banks, usually requiring loans between USD 25,000 and USD 2 million dollars. The majority of loans are for short-term trade credits to firms so that they can purchase from rural producers. In addition, Root Capital is increasing its portfolio of fixed-asset loans to cooperatives to finance purchases of post-harvest processing equipment and infrastructure (Root Capital, 2013; Jackson, 2013). Borrowers (cooperatives and businesses) receive training in financial management and then are advanced 60% of the trade credit contract value. A buyer (such as Starbucks or Equal Exchange) pays Root Capital when they receive the products and then Root Capital pays the remaining balance to the cooperative after deducting interest. The repayment rate is 99% and trade credits do not require collateral. However, fixed-asset loans usually demand collateral worth 1.3-1.5 times the value of the loan principal (Doran et al., 2009).

Root Capital began with loans to coffee cooperatives but has expanded its services to businesses and cooperatives that
work with a variety of agricultural value chains, including cacao, cotton, fruits and vegetables, honey, sorghum, millet, maize, tree resins, artisan products, and shea butter (rootcapital.org).

**Producers & Smallholder Impact and Spillovers:**
Root Capital reports that financing cooperatives and businesses that purchase from small-scale, rural farmers helps increase farmer incomes in the long-term by:

1. Increasing prices to producers and wages to employees;
2. Increasing producer productivity by increasing access to sustainable inputs and providing access to output markets; and
3. Increasing stability of producer income by offering forward contracts (guaranteeing to purchase a specific volume), and offering credit, savings and loan products.

The organization links rural farmers to ‘green’ markets that pay price premiums for products grown using sustainable methods. In addition to business and financial management training for cooperatives, Root Capital facilitates agronomic training for farmers to learn sustainable practices that increase productivity and minimizes the environmental impact by using fewer natural resources and using sustainable production inputs, such as organic fertilizer, drip irrigation, and post-harvest processing that minimizes water usage (Root Capital, 2013).

**Outcomes:**
According to the organization website, from 1999-2015 Root Capital has disbursed a total of USD 791 million worth of loans to 546 borrowers, accounting for 1.5 million hectares of cultivation. Those borrowers are farmers’ cooperatives and associations that represent approximately 1 million producers and an estimated 4.3 million total household members. Of those 1 million producers, 815,000 were reached ‘directly’ by selling crops to the businesses/cooperatives supported by Root Capital loans and training and 193,000 farmers participated ‘indirectly,’ by purchasing inputs or post-harvest processing services from businesses. The organization reports training 600 ‘small and growing’ businesses and reaching 172,000 female farmers and estimates that total business revenue is USD 1.1 billion (Root Capital, 2013).

Root Capital defines success according to four broad evaluation themes:

1. What is Root Capital’s value to clients?
2. What is the value to small-scale farmers served by Root Capital’s clients?
3. What is the impact on local communities and the environment?
4. What is the impact on the regional and national economy?

The organization measures these four themes using three ‘dimensions:’

- Type of impact (as measured through outputs and outcomes);
- Scale (units effected); and
- Depth (intensity of change measured per unit of interest - people, organizations, or ecosystems).

Root Capital has a cumulative renewal rate of 70% (firms that take out more than one loan). Average farmer purchases rose from USD 254 million in 2009 to USD 467 million in 2012. Total revenue of rural ‘small and growing’ businesses (firms and cooperatives that purchase from producers) grew from USD 340 million in 2009 to USD 594 million in 2012. On average, 74% of business/cooperative revenues are paid to producers and payments increase as firms grow in size. To evaluate the sustainability of this increase in revenue, in 2012 they began measuring stability of producer incomes, producer and employee treatment, community practices, and environmental practices, but as of the preparation of this case study no data are available on these new metrics.

Some case study-based results are publicly available, for example, a coffee cooperative in Haiti took a USD 150,000 loan in 2010 and a USD 200,000 in 2011 with financial management training during both years. In 2012, the cooperative’s revenues had increased 85%, farmer prices increased 300%, and the number of farmers that sold to the cooperative increased 20% (Root Capital, 2013).

**References**
Sustainable Finance & Investment, 3(2), 95-110.


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### TechnoServe Mozambique (TnsMz)

<table>
<thead>
<tr>
<th>Location:</th>
<th>Based in Maputo, Mozambique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Areas Served:</td>
<td>Country-wide</td>
</tr>
<tr>
<td>Years Active:</td>
<td>1998-present</td>
</tr>
<tr>
<td>Amount of Investment:</td>
<td></td>
</tr>
<tr>
<td>Major Subsequent Funds:</td>
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<tr>
<td>Current Resources:</td>
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</tr>
<tr>
<td>Initial investment USD</td>
<td>500,000</td>
</tr>
<tr>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Annual budget of USD</td>
<td>7-8 million</td>
</tr>
</tbody>
</table>

| Crops/Products:          | Cashew, legumes, bananas, poultry |
| Website:                 | http://www.technoserve.org/our-work/where-we-work/country/mozambique |

### Key Findings:

- TechnoServe Mozambique (TnsMz) is a financially autonomous division of TnsGp that started with a grant from USAID to support value-chain development in cashews, horticulture and oil seeds.
- In the past five years, TechnoServe-assisted businesses in Mozambique have generated more than USD 76 million in revenue, purchased raw material from more than 154,000 smallholder producers and created more than 6,200 jobs.
- TechnoServe Mozambique assists relatively mature enterprises that aim at the next stage of growth, believing that their investment efforts pull up other enterprises in the chain (infoDev, 2013b).
- TechnoServe Mozambique plans to target new industries and increase the share of TnsMz supported industries from 7% of GDP to 24% by 2025.

### Background:

TechnoServe (TnsGp) is a multi-national NGO with a stated purpose to develop “business solutions to poverty by linking people to information, capital and markets” (TechnoServe, 2015a). According to the organization website TechnoServe’s work is “rooted in the idea that hardworking people can generate income, jobs and wealth for their families and communities.”

TechnoServe Mozambique (TnsMz) is a financially autonomous division of TnsGp that started in 1998 with a 500,000 USD four-year grant from USAID to support value-chain development in several industries with high job-growth potential in Mozambique: cashews, horticulture and oil seeds. In subsequent years TnsMz expanded its activities to include policy analysis and advocacy and into other industries including poultry (infoDev, 2014d). Today, the stated goal for the next 10 years for TnsMz is “mobilize investment of approximately USD 500 million into the fruit industry and approximately USD 9 billion in the forestry industry.” By targeting agribusinesses with high potential for growth, it hopes to “increase the scale of TechnoServe-supported industries from 7 percent of Mozambique’s gross domestic product (GDP) to approximately 24 percent of GDP by 2025” (TechnoServe, 2015b).

TnsMz receives 98% of its funding from donor contributions including the USDA, the Bill and Melinda Gates Foundation, the Ford Foundation, Irish Aid and USAID (infoDev, 2014d). Today it is regarded as a leader within the broader TechnoServe organization and its methods have become “best practice” templates for other country operations. TnsMz recently started two for-profit businesses (professional services consulting to local/foreign investors & an agribusiness franchisor), where its influence had been limited in the past (infoDev, 2014d).

### Enabling Environment:

Noting the lack of a cash economy in many rural areas of Mozambique, TnsMz targets entire agribusiness sectors with high-growth potential that create new markets for rural labor, farm products and local inputs (infoDev, 2014d). It also engages local government officials to strategically influence the assignment of public funds for the agribusiness sector, which has happened with cashew, tropical fruit and poultry growers (infoDev, 2013b).
Though we know that corruption, weak state institutions and challenges arising from widespread poverty and conflict constrain progress in Mozambique, the literature on this incubator does not explain how TnsMz overcomes these obstacles. However, TnsMz must sell its vision to large private-sector investors by emphasizing Mozambique’s diversified, private-sector-driven agribusiness future, to small farmers who must fit into these new value-chain structures, and to government policy makers, whom it tries to influence to initiate policy reforms that overcome regulatory and trade (infoDev, 2014d). For example, by partnering with the Poultry Growers Association of Mozambique, the national government was convinced to enforce food safety standards and prohibit the importation of frozen poultry from Brazil with expired sell-by dates, improving the local market for poultry (infoDev, 2014d).

### Enterprise Development

TnsMz is not a typical incubator in that it does not have centralized facilities for developing business skills, but serves rural areas where clients do business and works with industry leaders to train new entrants in processing, marketing, logistic management and quality control (infoDev, 2014d). By working with industry leaders to improve business models and consulting with private investors, it attempts to increase the multiplier effects of private investment and works with sector leaders to train other members in the sector (infoDev, 2014d; infoDev, 2013b).

At any given time, TnsMz supports 30-40 clients in industry value-chain management programs (though no more than 3 agribusiness sectors at a time), each of which works with 50-100 farmers at the farm-level. TnsMz expects 50% of clients to drop out over the five to eight year sector cycles, largely resulting from failure to comply with contract terms rather than business failure (infoDev, 2014d). Value-chain clients manage small-scale matching grants or loan programs which bind farmers to the chains and offer trainings to farmer-suppliers to induce behavioral changes that increase competitiveness of the entire chain (infoDev, 2014d; infoDev, 2013b).

In addition, contracts between industry-leading firms and TnsMz offer subsidies and support to these firms in exchange for them to share information with other private firms that want to enter the sector. Readily available information of this sort creates a public good that benefits new market entrants and thus the overall value chain (infoDev, 2014d). FinAgro, a program funded by USAID and the Government of Mozambique is one such example that focuses on tropical fruits, pulses, cashew nuts and other crops and is designed to contribute to the competitiveness of selected sub-sectors, enterprise clusters or value chains as opposed to generating financial benefits to an individual grantee (TechnoServe 2015d).

TnsMz has succeeded in developing a poultry cluster that is organized into three regional zones which compete with one another for access to the Maputo market. However, the cluster formed a Mozambican Poultry Association to facilitate collaborative development by setting food safety standards, working with the government to reduce risk of infectious diseases, and overcoming import competition, an effort that is widely considered a success and that is frequently cited (infoDev, 2014d; infoDev, 2013b).

### Producers & Smallholder Impact and Spillovers:

In most cases, TnsMz facilitates connections between industry leaders and small-holder farmers in the form of training programs and other supports that differ per industry. It conducts outreach to smallholders to sign them up for grant or loan programs that bind them to new value-chain structures, and thereafter, they primarily work with clients (infoDev, 2014d). In the poultry sector, for example, TechnoServe helped connect the companies to smallholder farmers through a credit system in which the farmers receive chicks, feed and vaccinations up front. The costs are then deducted when the farmers sell the full-grown chickens to the processors (TechnoServe 2015c). Development at the industry level also supported thousands of small-scale maize and soy farmers growing feed grains to support the growing poultry sector. In the cashew processing industry, TnsMz is working with MozaCajú, a USDA-funded initiative that supports the Mozambican cashew industry. TnsMz offers agricultural extension services to improve cashew tree productivity and implement traceability standards (TechnoServe 2015d). The MozaCajú website estimates that the initiative has helped an estimated 30,000 smallholder cashew farmers increase productivity and competitiveness (MozaCajú 2015).

### Outcomes:

TnsMz reports that “in the past five years, TechnoServe-assisted businesses in Mozambique have generated more than USD 76 million in revenue, purchased raw material from more than 154,000 smallholder producers and created more than 6,200 jobs (TechnoServe, 2015d).
Approximately 400 companies have graduated from TnsMz incubators and each of these affects the livelihoods of 50-100 farms. In addition, poultry, cashew, banana, lentils and soybean agricultural sectors have reportedly been strengthened (ACI & ETG, 2011). For example:

- Between 2004 and 2009, the Mozambican poultry industry grew more than fourfold, with more than 1,200 poultry jobs created, 2,500 small-scale farmers trained, leading to two-to-tenfold increases in those farmers’ household incomes (McNamer, 2010).
- Revamped cashew-nut processing resulted in Mozambique went from exporting no kernel in 2002 to becoming the eight-largest processor in the world that employs 5,000 workers and has annual revenues of USD 25 million (TechnoServe, 2015d).
- Brokered the first in-country supply agreement with Matanuska Farm to supply Chiquita Brands, and supported the farm in gaining government approval to build a dam to irrigate 3,000 hectares of export banana cropland. TnsMz estimates that Mozambican farmers could cultivate more than 30,000 hectares of bananas in the next 15 years, creating approximately 90,000 jobs (TechnoServe, 2014d).

References
### Timbali Technology Incubator

<table>
<thead>
<tr>
<th>Location:</th>
<th>Mpumalanga, South Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Areas Served:</td>
<td>Mpumalanga, South Africa</td>
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<tr>
<td>Years Active:</td>
<td>2003-present</td>
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<tr>
<td>Amount of Investment:</td>
<td>USD 3,000,000</td>
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<tr>
<td>Major Subsequent Funds:</td>
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<td>Current Resources:</td>
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<tr>
<td>Crops/Products:</td>
<td>Flowers, fruit, vegetables</td>
</tr>
<tr>
<td>Website:</td>
<td><a href="http://www.seda.org.za/MyBusiness/STP/Pages/timbali.aspx">http://www.seda.org.za/MyBusiness/STP/Pages/timbali.aspx</a></td>
</tr>
</tbody>
</table>

#### Key Findings:
- Smallholder farmers, mostly women, are the targeted entrepreneurs.
- Timbali uses a franchise model, which allows participants to immediately start working and earning revenue. However, this model leads to less innovation than traditional incubation models.
- Farmer entrepreneurs are clustered in order to take advantage of economies of scale, shared risk, and shared marketing and branding.
- Since the majority of the incubator’s funding comes from a single government source (the South African Department of Trade and Industry’s Small Enterprise Development Agency), Timbali faces uncertainty about funding based on government budget fluctuations.

#### Background:
The Timbali Technology Incubator was founded in 2003 by Louise de Klerk (who still remains the CEO) in order to raise the income and business skills of rural farmers. Timbali serves the least-represented groups in the region - 97% of clients are black women. Although the incubator initially focused on cut flower production, it has since diversified to include fruit and vegetables (infoDev, 2013a).

The incubator is organized as a farm-to-market franchisor in which smallholder farmers become franchise operators in the supply chain. The resulting clusters of small and medium enterprises benefit entrepreneurs through economies of scale, bulk buying of inputs, and collective marketing and branding (Jordaan, 2011).

#### Enabling Environment:
Timbali is funded by the South African Department of Trade and Industry’s Small Enterprise Development Agency (SEDA). Other supporters include the Agricultural Research Council, which donated the land for the on-site incubation program, and MEGA, which provides Timbali clients with micro-loans to develop their businesses and establish a credit history (infoDev, 2014e). Timbali has also created a science research park in order to support farmers in expanding their businesses. This gives them the benefits of cluster economies of scale and access to technology (infoDev, 2013a).

Aside from fees for services (12% of franchisee monthly sales), Timbali receives all of its funding from SEDA and faces constant competition for government funding. The incubator has a great deal of financial uncertainty as the government budget fluctuates (infoDev, 2013a).

#### Enterprise Development
The incubator offers both on-site and off-site incubation services. The off-site incubation program now represents 72% of Timbali’s total clients. Since there is limited space and capacity at the main site, off-site incubation is currently Timbali’s only option for expanding their services.

Incubated entrepreneurs are essentially franchisees. Timbali connects them with Amablom, their main commercial purchaser, which allows the women to begin earning revenue “almost immediately” (infoDev, 2013a). They also benefit from marketing and branding of Timbali products, which have a reputation for high-quality and allow some growers to sell their flowers on the stringent export market (Jordaan, 2011).

In order to be accepted into the incubator, potential franchisees must complete a “Personal Strengths and Weaknesses Worksheet” and are evaluated based on access to land, commitment to business, ability to pay for services in the future,
and growth potential, among other criteria (infoDev, 2013a). Franchisees are then accepted into a pre-incubation program for one year for basic training, initial financial loans, and mentorship. After successful completion of pre-incubation, franchisees participate in a three year full-time program in business and area-specific planning, technical processes, financial analysis, and bulk purchasing. On-site clients are assigned an area while off-site clients are monitored while planning their own farming site (infoDev, 2013a).

**Producers & Smallholder Impact and Spillovers:**
The smallholder farmers, mostly women, are the direct recipients of the incubation business services. The incubator has served 80 farmer enterprises, 30 of which have already graduated (infoDev, 2013a). Since the incubator targets underprivileged populations, many of the farmers require training in basic business skills and values as well as literacy education.

**Outcomes:**
140 small farm enterprises have graduated from the program since 2004.

ACI & ETG (2011) also reported that the women participating in the program became more assertive, independent, and confident entrepreneurs. Within the first year of incubation, franchisees earn on average R8,000-R60,000 per month (approximately 670-5,000 USD per month) (infoDev, 2013a).

infoDev (2013a) reported that the average previously unemployed or underemployed women were able to sell more than USD 30,000 per year per producer as part of a cut-flower franchising operation.

According to infoDev (2013a), one disadvantage of the franchising model is that it does not foster innovation or creativity. Although the strict focus on predetermined best-practices has been effective, it should only be one aspect of the incubator’s strategy.

**References**
Uganda Industrial Research Institute (UIRI)

Location: Kampala, Uganda
Areas Served: Uganda

Years Active: 2002-present
Amount of Investment: USD 150,000 (initial investment, 2002 dollars)
Major Subsequent Funds: N/A
Current Resources: N/A

Crops/Products: Agro-processing of potatoes, peanuts, fruit, meat, dairy
Website: http://www.uiri.org/ (website not working)

Key Findings:
- The first of its kind in Africa, the UIRI incubator has four virtual incubation and processing facilities in remote areas to reach rural farmers and potential entrepreneurs.
- No enterprises have graduated from the incubation program because they still lack the marketability and capital to succeed financially without the support of the incubator.
- The incubator faces competition with other incubators both for grant funding and potential clients.

Background:
The Ugandan government established the Uganda Industrial Research Institute (UIRI) in 2002 to conduct research for industrial processing and technology development (UNIDO, 2007). UIRI began incubating businesses in 2004 and focuses on agro-processing SMEs. UIRI helped to form the African Incubator Network and now serves as a regional coordinator for east and central Africa (infoDev, 2014f).

Over time, UIRI revised its mandate, purpose and organizational structure to better address the country’s industrial development strategies and its staffing and practices, including the use of information and communications technology were supported by escalating funding, including a short-term grant from the World Bank/infoDev (infoDev, 2014f).

Enabling Environment:
Today, UIRI is completely funded by the Ugandan government. Although it was established as the lead organization for SME incubation in Uganda, UIRI faces competition with other incubation centers for limited funding services and attraction of the highest quality entrepreneurs (infoDev, 2014f). Though infoDev (2014f) observes that UIRI is not concerned about financial independence, the changing political climate that leads to unpredictable government funding makes it difficult for UIRI to conduct strategic planning (infoDev, 2014f). Staff training is cited as an ongoing issue, and the incubator needs more skilled scientists and engineers (infoDev, 2014f).

Enterprise Development
UIRI provides two forms of incubation - physical and virtual. Physical in-house incubation takes place on the UIRI campus and provides enterprises with services including entrepreneurship training, marketing, and technological advising. It also offers access to the internet, conference facilities, utilities, and other amenities (infoDev, 2014f).

UIRI’s virtual incubation is offered to clients off the main campus and includes technology-sourcing, capacity-building, and the provision of some infrastructure. UIRI has four virtual incubation centers that each specialize in peanut, potato, fruit, or mushroom processing. This effort aims to reach remote areas where farmers most need value-added processing facilities and is a unique model in Africa (infoDev, 2014f).

Potential entrepreneurs/clients are only accepted in the incubation program if they can demonstrate their potential to contribute to the long-term success of the Ugandan economy through technological innovation. To apply, they must submit a comprehensive business plan that demonstrates the project’s feasibility, potential for commercialization, and timeframe for collaboration. UIRI’s business development services can help applicants complete their business plans. After being accepted, the entrepreneurs submit periodic reports on operations and finances (infoDev, 2014f). Despite these requirements, no enterprises have graduated from the incubation program, which will be discussed in the “outcomes” section.

Producers & Smallholder Impact and Spillovers:
UIRI’s outreach to remote farming communities is innovative and unique in the region (infoDev, 2014f). Four regional
“value-added centers” provide virtual incubation to rural enterprises as well as processing technologies. Rural SME incubation has helped develop the local markets, but not enough for the enterprises to succeed without maintained incubation support. Nevertheless, infoDev reports that some SME clients and smallholder farmers increased their personal income as a result of UIRI’s expansion to their regions (2014f).

UIRI focuses on post-production in the peanut, fruit, potato, and mushroom value chains. Farmers in traditionally underserved areas benefit from the processing facilities to add value to their products. Farmers can also potentially receive virtual incubation services to start an SME (infoDev, 2014f).

Outcomes:
As of 2010, 15 enterprises were in physical incubation on the UIRI campus (12 of whom focused on agribusiness) and over 100 clients had participated in virtual incubation. None of the incubated businesses have graduated from the incubation program and instead continue operating within the incubator. Some enterprises have been in incubation for more than five years, yet still lack the capital and marketability to become financially self-sufficient. UIRI does not currently partner with any financial institutions to support this need (infoDev, 2014f).

Some of the difficulties stem from the competition between incubators to attract the most promising entrepreneurs. The most positive results come from the virtual incubation facilities where competition from other incubators is less intense and UIRI offers a unique service (infoDev, 2014f). More research needs to be done on the impact of these rural incubators.

References
### Universities, Business and Research in Agricultural Innovation (UniBRAIN)

<table>
<thead>
<tr>
<th><strong>Location:</strong></th>
<th>Forum for Agricultural Research in Africa, Accra, Ghana</th>
</tr>
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<tbody>
<tr>
<td><strong>Areas Served:</strong></td>
<td>Ghana, Kenya, Mali, Uganda, Zambia</td>
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<tr>
<td><strong>Years Active:</strong></td>
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<tr>
<td><strong>Amount of Investment:</strong></td>
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<td><strong>Crops/Products:</strong></td>
<td>Coffee, banana, sorghum, livestock and poultry, non-timber forest products, fruits and vegetables</td>
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<td><strong>Website:</strong></td>
<td><a href="http://faraafrica.org/">http://faraafrica.org/</a></td>
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</tbody>
</table>

#### Key Findings:
- UniBRAIN was convened by the Danish Africa Commission of the Danish International Development Agency (Danida) in 2010. It provides funding, education, and mentoring to six agribusiness innovation incubator consortia in five countries.
- The goals of UniBRAIN are to support and promote commercialization of agribusiness innovations, to produce agribusiness entrepreneurs by improving university training, and to share and up-scale innovative outputs (FARA, 2012; Hjortso & Potz, 2014).
- Most of the incubators began to operate only in 2013 and 2014, so long-term outcomes are not yet available.

#### Background:
UniBRAIN was convened by the Danish Africa Commission of the Danish International Development Agency (Danida) in 2010. Its lead partner and implementing organization is the Forum for Agricultural Research in Africa (FARA), and additional partners include ABI-ICRISAT, the African Network for Agriculture, Agro-forestry and Natural Resources Education (ANAFE), the Pan African Agribusiness and Agro industry Consortium (PanAAC), the Association for Strengthening Agricultural Research in East and Central Africa (ASARECA), the West and Central African Council for Agricultural Research and Development (CORAF/ WECARD) and the Centre for Coordinating Agricultural Research and Development in Southern Africa (CCARDESA) (FARA, 2012).

UniBRAIN provides funding, education, and mentoring to six agribusiness innovation incubator consortia which will eventually be self-sustaining, each with representation from universities, agribusiness, agricultural research institutions, and innovation enterprises (Hjortso & Potz, 2014). These six incubators are (Zdravkovic, 2014):
- **AgBIT (Agri-Business Incubation Trust)**, Zambia: Mango and other fruit value chain development
- **WAARI (West African Agribusiness Resource Incubator)**, Mali: Agro-forestry (shea butter, honey, and tea) and other agro-based value chain development
- **CURAD (Consortium for Enhancing University Responsiveness to Agribusiness Development)**, Uganda: Coffee value chain development
- **CCLEAr (Creating Competitive Livestock Entrepreneurs in Agribusiness)**, Ghana: Livestock and poultry value chain development
- **APB (Afri Banana Products Limited)**, Uganda: Banana value chain development
- **SVCDC (Sorghum Value-Chain Development Consortium)**, Kenya: Sorghum value chain development

The goals of UniBRAIN are to support and promote commercialization of agribusiness innovations, produce agribusiness entrepreneurs by improving university training, and sharing and up-scaling innovative outputs (FARA, 2012; Hjortso & Potz, 2014).

With one exception, the six incubators began to enroll incubates between August 2013 and February 2014 (Hjortso & Potz, 2014). UniBRAIN is not funded beyond 2015, so incubator activities will need to expand sufficiently for partners to sustain themselves by then (FARA, 2012).

#### Enabling Environment:
Hjortso & Potz note that in Africa, “business incubators are set-up under considerable environmental uncertainty.” Business incubation is a novel idea, and it is unclear which services are needed and how to provide them in resource-constrained emerging economies (Hjortso & Potz, 2014). The five countries where UniBRAIN consortia operate lack strong intellectual property protections and regulations (Zdravkovic, 2014).
University agricultural education institutions face several environmental challenges which UniBRAIN seeks to mitigate. These include low interest in agriculture among potential students, increasingly limited funding for teaching and research, inadequate facilities, institutional isolation, inadequate curricula and ineffective curriculum review, and the difficulty of hiring qualified faculty due to brain drain and meager compensation. The educational systems inherited by African countries from their colonizers are often detached from the needs of local communities and seldom focus on entrepreneurial skill development. Though most agriculture degree programs encourage students to complete an internship, the opportunities available to do so are insufficient and many graduates cannot find employment, perhaps because the skills that universities teach do not align with industry needs (Zdravkovic, 2014). Additionally, UniBRAIN attempts to overcome the limited history of collaboration between research institutions, universities, and the agribusiness industry in Africa.

Enterprise Development:
Each incubator affiliated with UniBRAIN is comprised of partners from three different sectors. Altogether, 10 research institutions, 11 private businesses, and eight universities participate in the six incubators. Universities are expected to gain research, internship, and employment opportunities for students and funding for on-campus research. The private sector can access specialized technical support, facilities, and support from the universities, and can benefit from student interns. Research institutions will be able to partner with industry to commercialize products and can access interns (Zdravkovic, 2014).

Participants in the incubators may be start-ups, Small and Medium Enterprises (SME), or enterprises seeking to expand or diversify. They receive planning assistance, financing, technical support, mentoring, student interns, and access to facilities (Zdravkovic, 2014). Each of the six incubators has its own business model, ranging from collecting a small margin of sales as a fee (CURAD, 2015) to collecting rent or facility use payments (WAARI, 2015).

Producers & Smallholder Impact and Spillovers:
Several of the incubators serve the rural areas in which they are located, though few target smallholder farmers directly. AgBIT (Zambia) lists its clients as small and medium entrepreneurs (SMEs), agribusiness start-up enterprises and agro-processors, smallholder farmers (farmer clusters), and agro-technology innovators. One of its projects, Mushroom for Better Life Project, targets women and youth smallholder farmers from Lusaka, Zambia (AgBIT, 2015). WAARI (Mali) lists the objective, “Support existing local small-scale farmers to develop viable agri-businesses based on value-added products” (WAARI, 2015).

Other incubators aim to benefit smallholders indirectly, by supporting enterprises that provide economic benefits like jobs and opportunities for indigenous suppliers and vendors (SVCDC, 2015). Each consortium has a focus on women and youth entrepreneurs.

Outcomes:
As most of the incubators began to operate only in 2013 and 2014, long-term outcomes remain to be seen. In 2012, funding was secured from the Indian Ministry of Food Processing to establish five additional food processing incubators modeled after UniBRAIN (to be located in Uganda, Mali, Ghana, Cameroon, and Angola) (FARA, 2012). By June 2013, APB had placed 15 student interns with incubator-affiliated organizations, and CURAD had placed 26 students with partner firms. However, these two incubators had a history of supporting internships before UniBRAIN began (Zdravkovic, 2014). APB has already incubated 36 enterprises (APB, 2015).

A CURAD member, the National Union of Coffee Agribusinesses and Farm Enterprises (NUCAFE), partnered with Makerere University to develop disease-resistant coffee seeds (Zdravkovic, 2014). Financial support from UniBRAIN allowed for the establishment of a science park center for experiments and studies at Kyambogo University, Uganda (Zdravkovic, 2014). UniBRAIN funding was crucial in developing university-industry partnerships: ten of 12 university and private sector respondents to a study conducted by Zdravkovic (2014) “stated that UniBRAIN is formalizing, sealing, and strengthening collaboration.”

References
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### Villgro

**Location:** Chennai, Tamil Nadu, India  
**Areas Served:** South India, particularly Tamil Nadu and Andhra Pradesh  
**Years Active:** 2002 - present  
**Amount of Investment:** INR 1,000,000 - INR 2,500,000 (Sonne, 2012) (approximately USD 20,833 - 52,083 in 2002 dollars)  
**Major Subsequent Funds:** N/A  
**Current Resources:** N/A  
**Crops/Products:** Low-tech domestic rural innovation facilitator  
**Website:** [http://villgro.org/](http://villgro.org/)

### Key Findings:
- Villgro’s main focus is not just financial support but also the process of commercializing the enterprise. This goal is achieved via mentoring and fellowship programs where an able team of experts works with the enterprise to anticipate and make plans to deal with potential problems, as well as help with the development of business plans, attract potential investors and distribute the product to the end beneficiaries (Sonne, 2012; infoDev, 2014g).
- One of the main lessons learnt particularly for rural development, is that the innovator is not always the best party to commercialize the innovation, a function that can be better performed by entrepreneurs who possess these skills (Sonne, 2012). Therefore, Villgro seeks to transfer technology from innovators to entrepreneurs in order to attain maximum impact (Sonne, 2012).
- Villgro forges beneficial relationships with partners like research and teaching institutions, law and consulting firms, and other incubators to complement Villgro’s expertise, resulting in enterprises getting the best professional help possible (infoDev, 2014g).

### Background:
**Mission:** to enable innovations to impact the poor through social enterprise (Villgro, 2015).

Villgro is a nonprofit corporation that funds and incubates zero-stage growth, innovation-based, for-profit social enterprises in four main sectors, namely healthcare, education, agri-business and energy (Villgro, 2015). It focuses not only on incubating new technologies and products but also adaptation and transfer of new products into the rural areas (infoDev, 2014g). The organization believes that rural innovators understand the rural context and have the comparative advantage in catering to that market (InfoDev, 2014g).

Villgro changed its course from just incubation to a more multidimensional organization supporting innovation and entrepreneurship via business plan competitions for students, chain of rural retail outlets for distribution, and a greater focus on research on social innovation (Sonne, 2012). It also started raised funds to set up an investment fund to support incubators in 2010 (Sonne, 2012).

The organization operates only in South India, particularly in the states of Andhra Pradesh and Tamil Nadu, as Villgro and its partners are located geographically close to each other, and it is also necessitated by the hands-on mentoring and management services provided to the enterprises (Sonne, 2012).

The level of funding for Villgro is limited as it competes with other social enterprises which increases the importance of being more efficient with the available resources (infoDev, 2014g). Almost 75% of the funds for Villgro’s activities come from local and international donor organizations and third-party contributions (infoDev, 2014g). Villgro staff provides the core services while other services are outsourced to affiliated partners (InfoDev, 2014g).

### Enabling Environment:
The Indian State is actively supportive of innovation and start-ups, for instance the Department of Science and Technology (DST) actively funds and supports these initiatives including offering free access to infrastructure such as office space or lab facilities and is also one of the funders of Villgro (GIZ, 2012).

Villgro also makes use of other avenues, like its annual conference “Unconvention” and other forums at the state and federal level, to bring together public and private partners to influence the policy around rural innovation,
Entrepreneurship and development (Sonne, 2012).

Enterprise Development:
The market failures that Villgro aims to address are the lack of funding and incubation support for early-stage enterprises. Villgro therefore nurtures nascent firms by providing them finance, mentorship, talent and a network of investors, knowledge and partners (infoDev, 2014g; Villgro, 2015). It focuses mainly on technology innovation but caters to the needs of the enterprises throughout the value chain. It facilitates needs assessments, business plan development, product improvements, piloting projects, providing business services, improvements in productivity, building relationships with venture capitalists, monitoring and evaluation, and facilitating access to the market via their distribution networks (infoDev, 2014g). One of the graduated enterprises, Villgro Innovations Marketing Pvt. Ltd, has set up retail outlets, Villgro Stores, in underserved poor rural areas which are also used as a distribution channel for other products produced by Villgro enterprises (infoDev, 2014g). A sales-team of entrepreneurs take the products the “last mile” from the Villgro Store to the poor households (infoDev, 2014g).

Villgro partners with research and teaching institutions (like Gandhigram Rural Institute, Dindigul; PSM College of Technology, Coimbatore, and others), law and consulting firms (like Altacit Global, Centroid and Invention Labs, and others), and other incubators whose competencies complement Villgro’s (infoDev, 2014g).

Producers & Smallholder Impact and Spillovers:
Villgro’s ultimate beneficiaries are the small farming and nonfarm communities in non-urban area in South India, particularly those earning USD 2 to USD 4 a day (infoDev, 2014g). The organization does not gather information regarding the geographic reach of the enterprises or the extent of the market they represent (infoDev, 2014g).

However, Villgro asserts that its model is designed based on the needs of the rural communities as it focuses on the disconnect between the innovators, who can produce products useful to the rural population, and rural entrepreneurs, who are experts of the local rural context and can get the product to the target audience which is the rural South India (infoDev, 2014g). Furthermore, the use of Villgro stores and the sales force of entrepreneurs for the “last mile” (infoDev, 2014g) are concrete examples of the effort to improve the quality of life of the rural populaces and also take the products to those remote populations who do not have easy access to these resources and are generally low earning households.

Outcomes:
The main measure of success employed by Villgro is the extent of the benefits to the rural livelihoods based on the enterprises’ sales numbers (infoDev, 2014g). Based on this measure and others, the main outcomes for Villgro as stated in the InfoDev report (2014g) are as follows:

- 350,000 rural people benefited from Villgro products
- More than 1,500 innovations/products identified
- Funded more than 50 enterprises worth almost USD 5 million
- Of the 50 enterprises, 14 have been financially sustainable, one has raised two rounds of venture capital and equity funding, and four to five are ready to become major companies.

References