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## BACKGROUND PAPER

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Session 3: Unlocking Africa's Agricultural Potentials for Transformation to Scale

### Innovative Financing

#### *Innovative Financing*

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## 1. BACKGROUND

**Across Africa, growth and opportunity in the agriculture sector is constrained by limited access to capital.** Agriculture in Africa employs or provides livelihoods to 60 percent of the population while contributing 20-30 percent to Africa's GDP. And yet, it typically attracts less than 5 percent of lending from financial institutions on the continent, leaving farmers and agricultural enterprises starved of the capital they need to operate and grow their businesses. With Africa's population expected to more than double to 2.5 billion by 2050, significant advances in agricultural production and productivity will be required to enable Africa to feed itself. Finance is what will make this possible.

**Finance matters because it is a catalyst for growth.** While there are a number of critical bottlenecks constraining the growth of a highly-productive and prosperous agriculture sector in Africa, finance is a cross-cutting catalyst for growth in the sector. By making possible investments in, e.g., productivity-enhancing farm inputs or agro-processing equipment, finance is an enabler of the positive outcomes that policymakers, development institutions, farmers and firms seek: increased productivity, higher value products, and broadened diversity of agricultural production that drives economic growth.

**There are a range of drivers to limited access to capital in the agriculture sector.** The causes include perceptions of higher risk in the agriculture sector, along with lower expected returns than what financial institutions can obtain elsewhere. But there are also real challenges in African agriculture that limit the economic opportunity that financial institutions see in the sector: low productivity, co-variant risk profiles, fragmented supply chains, inadequate infrastructure, and sub-optimal policies in areas as disparate as food safety, import regulations and land tenure. As a result of both perceived and real considerations, banks and other financial institutions tend to minimize exposure to agriculture in their portfolios. Even those banks that do serve agricultural enterprises or farmers tend to provide primarily short-term financing like revolving credit lines that only scratch the surface of financing needs.

**Unmet demand for finance in the agriculture sector exists across the value chain.** This includes both smallholder and emerging commercial farmers, who are particularly under-served, as well as agro-processor SMEs, seed and input companies, agro-dealer networks, and others enterprises such as logistics and storage providers. The vast majority of Africa's farmers are hard-working smallholders that operate, by and large, in fragmented markets with limited access to formal financial services that meet their unique needs. Many well-known constraints determine this outcome. On the supply side of the market for finance, banks face a steep cost to reach smallholders and develop the capability to serve their needs with appropriately-trained staff and tailored products, while lending margins to farmers are often no better than alternatives that banks can pursue. On the demand side, most smallholders are not organized into producer groups that can serve as a locus of productivity improvements, mechanization and connections to downstream markets, all of which increase their attractiveness to commercial banks. Farmers also often lack clear title deeds and other forms of collateral which help reduce risk for banks. Finally, agro-enterprises across the value chain can face significant barriers to accessing the capital they need to grow and operate at scale. Evaluating the credit risk of an agro-enterprise, as is the case with farmers, requires agriculture-specific expertise that financial institutions often simply lack, often

due to a limited presence in rural areas where agriculture predominates. Banks that do finance small- and mid-sized agribusinesses often employ unique operating models, technologies or processes—all of which require upfront investments in staff and systems that cannot be recouped without reaching scale.

**Demand for finance in agriculture spans a range of different types of capital, from short-term trade finance to long-term debt and equity investment.** Farmers and agro-enterprises require an assortment of capital to thrive. This includes, for instance, short-term working capital that farmers use to purchase seeds and farm inputs on a seasonal basis, or that SMEs use to purchase offtake from farmers or operate an agro-processing facility. Demand for finance in agriculture also includes medium-term financing for farm or agro-processing equipment, as well as long-term debt and equity investments in capital equipment and land. Further, smallholder farmers often face limited access to the full gamut of formal financial services, including a dearth of savings and risk management products tailored to their unique circumstances. This situation creates an opportunity for different types of financial intermediaries and providers of capital—from commercial banks to private equity funds, state-run agricultural development banks, microfinance institutions, and non-banking financial institutions like merchant banks, credit unions, insurance companies and mobile money providers—to play different roles in addressing different unmet finance needs in the agriculture sector.

## *I. Innovative Financing in Agriculture*

**Private sector-led innovative financing tools have great promise to improve access to capital in African agriculture by catalyzing private investment and addressing market failures.** Innovative financing instruments are designed to mobilize additional resources and address market failures or institutional barriers. They complement traditional resource flows such as foreign direct investment, remittances, government investment and development aid. And while public sector investment is important in agriculture, the private sector ultimately drives activity and growth in agricultural development. This makes private sector involvement central to public sector-initiated innovative financing efforts.

**Innovative financing means different things to different people.** Our view on what makes financing for development “innovative” is when it (a) introduces novel approaches or financing products to address established problems; (b) extends proven financing products to new markets or customers; and/or (c) includes new types of investors or sources of capital to address development problems. For example, pioneers in microfinance extended an established financing product to a new market and, eventually, enabled new participants, including commercial investors, to address limited access to finance at the bottom of the pyramid. Green bonds use an established product to channel capital from institutional investors, including private pension funds and asset managers, to address a global challenge. Collectively, these mechanisms represent innovative ways of achieving development goals.

**Importantly, innovative financing is not financial innovation.** Established financial instruments such as guarantees and bonds, which have existed for centuries, constitute nearly two-thirds of the innovative financing market globally. Even in the context of international development, such financing instruments are not new: the World Bank, for example, issued general obligation bonds

in 1947 to fund development financing efforts, and the Multilateral Investment Guarantee Agency (MIGA) was established in 1988. A 2014 study by Dalberg identified a taxonomy of 14 different instruments that are frequently classified as innovative financing instruments, across four categories: securities and derivatives, which accounted for 80% of the estimated \$100 billion in innovative financing mobilized between 2001 and 2013; results-based financing mechanisms; voluntary contributions; and compulsory charges.<sup>1</sup> As illustrated in the figure below, these financing instruments are considered “innovative” for different reasons and serve different functions in addressing development problems.

	What is innovative?			How does it support development?		
	New Product	New Market	New Participants	Mobilize Resources	Financial Intermediations	Deliver Resources
<b>Securities and Derivatives</b>						
Bonds and Notes			X	X	X	
Guarantees		X	X		X	
Loans	X			X		
Microfinance Investment Funds		X	X		X	
Other Investment Funds		X		X	X	
Other Derivative Products	X	X		X	X	
<b>Results-based Financing</b>						
Advanced market commitments	X	X			X	
Awards and Prizes	X				X	
Development Impact Bonds	X					X
Performance-based contracts			X			X
Debt-swaps and buy-downs	X			X		
<b>Voluntary contributions</b>						
Carbon Auctions (voluntary)	X	X	X	X		
Consumer Donations			X	X		
<b>Compulsory charges</b>						
Taxes	X			X		

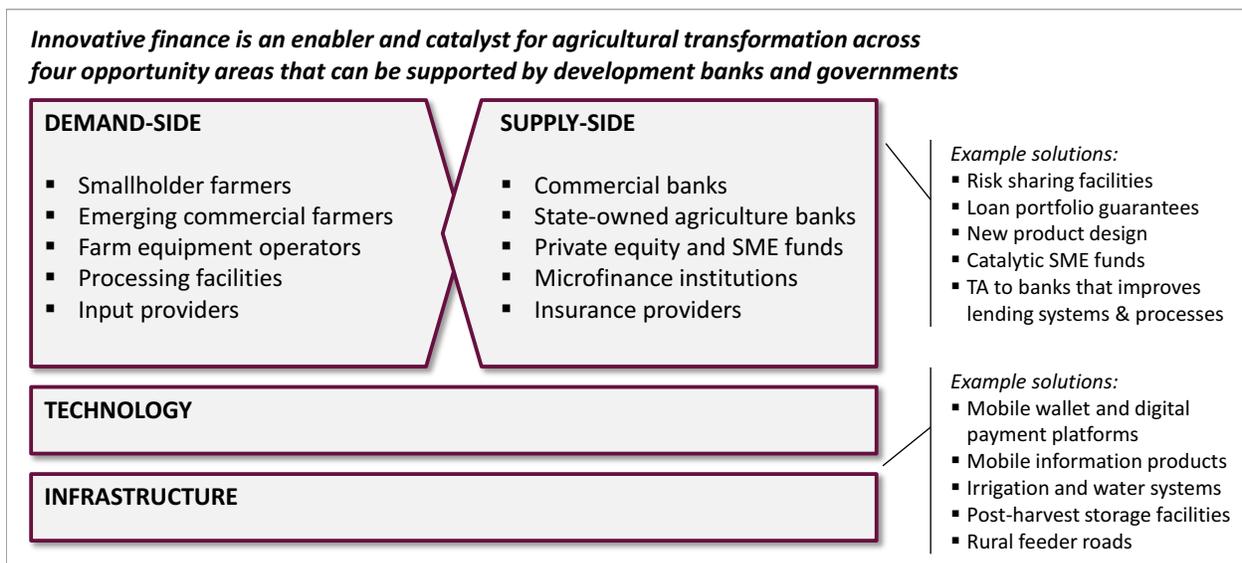
**Many innovative financing mechanisms can catalyze growth in the African agriculture sector, and several are being deployed today.** For example, the KfW-sponsored Africa Agriculture and Trade Investment Fund or the KfW- and Nigerian government-backed Fund for Agricultural Finance in Nigeria represent innovative public-private investment funds that crowd in private capital to the agriculture sector. Efforts such as AGRA’s credit guarantee and risk-sharing facilities with Equity Bank and Standard Bank have leveraged ten times their commitments of risk-sharing public capital into private lending to farmers. Other innovative financing approaches gaining attention in agriculture include risk management tools like weather index-based insurance that helps farmers mitigate climatic risk; guarantee or guarantee-like products such as warehouse receipts programs that eliminate the need for external collateral; and private partnerships like equitable out grower schemes that link agribusinesses and farmers, enabling bank financing of productivity-enhancing farm inputs.

**Innovative financing efforts are building momentum for African agricultural transformation.** Typically operating through partnerships between private investors, development finance institutions, technology companies, governments and/or agribusiness firms, innovative financing in African agriculture is mobilizing new resources, addressing institutional barriers or introducing new financing products into new markets. Innovative financing mechanisms address traditionally high costs to serve the agriculture sector among financial intermediaries, or reduce the risk of doing so. They are also helping to unlock large-scale investments by agribusinesses by

coordinating public-private investments. Finally, innovative financing mechanisms are helping to dispel misplaced perceptions of risk associated with agriculture by demonstrating commercially-attractive returns that crowd in more private capital over time.

## II. Key Challenges

**Innovative financing efforts often focus on the supply side of the market, while constraints to growth in agriculture are multi-dimensional.** Innovative financing typically seeks to increase the amount of capital available in a particular sector or market segment, through a variety of mechanisms that ultimately mitigate risk or enhance returns. Yet, growth-enabling investments in African agriculture can require interventions that address multiple dimensions of the situation on both the demand and supply sides of the market, as well as through technology solutions and complementary infrastructure investments. Supportive, enabling policies are required across each dimension as well. Innovative financing, in this view, creates an ecosystem of opportunity that isn't just about the supply of capital.



**On the demand side of the market for finance, there are several well-known constraints that farmers face in particular.** Most smallholders are not organized into effective producer organizations that enhance banks' ability to provide financing for working capital and equipment, nor do they tend to have reliable linkages to downstream markets that improve the consistency of their cash flows. Smallholders tend to live at the margin of subsistence where fluctuations in cash flow, as is common in agriculture, can be devastating to the household economy and reduce farmers' ability to service traditional loans. Small- and mid-sized agro-enterprises also often face significant barriers to accessing the financing they need to grow, and tend to finance their operating and investment needs through a mix of retained earnings, other household income, and a variety of finance providers including commercial banks and informal money lenders. Some agro-enterprises can mitigate risk by operating flexibly across multiple crop value chains or regions of a country, but the co-variant risks in agriculture—and limited availability of insurance mechanisms to offset this risk—lead banks to reduce exposure to these businesses.

**On the supply side of the market for finance, there are a range of deterrents to increased participation in agriculture.** There are high costs associated with banks serving smallholder farmers or farmer groups in particular, requiring upfront investments in staff skills, systems and back-office processes that cannot be recouped without reaching scale. The seasonality and uncertain timing of cash flows inherent in agriculture also lead to unique liquidity management issues for banks; banks must reach significant scale to smooth anticipated cash flows and reduce the co-variance of risk across their agricultural portfolio. Banks also need specific agricultural expertise to properly assess credit risk among both farmers and agro-enterprises, as well as to design appropriate financial products that meet farmers' needs. Further, while commercial banks across the developing world report that average default risk in agricultural lending is on par with the rest of their lending portfolios, the risk distribution is skewed towards occasional catastrophic negative "spikes" (e.g., during droughts) with risk that cannot be easily hedged or distributed to others through reinsurance mechanisms.<sup>11</sup> Compounding the problem, agriculture poses particular challenges for risk management, as the higher likelihood of co-variant risks and thus large, concentrated payouts against losses requires holding large financial reserves against losses unless significant scale and risk diversification can be achieved (e.g., at a regional or continental level).

**Inadequate infrastructure is a cross-cutting barrier to agriculture sector growth that can be addressed through innovative financing.** Investments in irrigation, transport and market infrastructure are critical to improving returns and productivity in the agriculture sector, and necessary complements to private investment. Irrigated agriculture in much of Africa is a small proportion of overall production, and yet consistent access to water is one of the fundamental drivers of increasing yields. Access to irrigation can significantly decrease risk to financial institutions and off takers or buyers of agricultural produce, enabling a "virtuous circle" of increasing productivity and incomes in agriculture. High transport costs are a significant constraint to growth in African agriculture, where production is dispersed in relatively under-connected rural communities and inadequate rural road infrastructure creates fragmented markets and increases post-harvest losses. Yet, the public good nature of this infrastructure, and the typically high initial cost of building it, leads to under-investment that dampens agriculture sector growth. Public-private partnership (PPP) models for agriculture-enabling infrastructure are promising but relatively unproven in Africa to-date.

**Finally, information and communications technology (ICT) offer significant potential to better enable the provision of financial services across the agricultural value chain.** The rapid adoption of mobile technology across the continent has been followed by solutions such as mobile-based electronic payment and money transfer services that create new distribution channels to reach previously unbanked populations, along with a host of mobile-based services that provide market information or enhance market linkages. Policies to create an enabling regulatory environment, however, have not always kept pace. Regulators are often understandably concerned by relaxing prudential regulations in the banking sector, but growth in the depth and breadth of non-bank mobile financial service providers is widely considered to be held back due to the absence of an effective regulatory framework in many countries. Creating enabling and competitive regulatory environments for digital financial inclusion will help to enhance agriculture sector growth.

### III. Success Cases

With increasing attention on innovative financing as a means of mobilizing additional resources for investment in agriculture or solving long-running market failures that can unlock private investment, it is useful to illustrate ongoing or recently-concluded partnerships that have helped enable these outcomes. The following brief case examples are a point of departure for continued discussion and dialogue among *Feeding Africa* conference participants, with several of the principals involved in these initiatives present in the Innovative Finance sessions.

#### ***Supply-side: Nigerian Incentive-Based Risk Sharing System for Agricultural Lending***

As emphasized above, innovative financing is not financial innovation. Credit guarantee programs to support specific types of bank lending as an instrument of development policy have been around for decades. For instance, the Government of Nigeria (GoN) established the Agricultural Credit Guarantee Fund Scheme (ACGSF) in 1977 to encourage banks to lend to smallholders farmers. By 2009, ACGSF had guaranteed a total of nearly 650,000 loans valued at US\$ 230 million, and the GoN initiated a revamped program to better incentivize banks to lend to farmers and agro-enterprises: the Nigerian Incentive-Based Risk Sharing System for Agricultural Lending (NIRSAL).

**Objectives.** NIRSAL aims to increase the productivity of the Nigerian agricultural sector by mobilize financing for Nigerian agribusiness. This supply-side intervention seeks to generate an additional US\$ 3 billion in agricultural financing over ten years by incentivizing banks to increase the availability of capital in the market. NIRSAL recognizes the need for a holistic approach, and in addition to encouraging banks to lend, NIRSAL provides support to farmers and enterprises along the agricultural value chain through business and technical training.

**Operating model.** The program has two facilities, a Risk Sharing Facility and an Insurance Facility, which aims to de-risk lending to the agricultural value chain through partial guarantees and insurance products. Secondly, a Technical Assistance Facility educates farmers and builds the capacity of banks and microfinance institutions to lend sustainably in agriculture. NIRSAL also established two facilities to incentivize bank lending including the Bank Incentives Mechanism which gives cash awards for effective agricultural lending and related social impact. The Holistic Bank Rating Mechanism rates banks on agricultural lending practices and will publicize the ratings.

**Outcomes.** To date, NIRSAL has guaranteed US\$ 273 million in loans and enabled three private insurance companies to expand their portfolios to include agricultural finance. The program has also given investment and technical advice to over 27,000 farmers and strategic advice to state and local governments on how to foster an enabling environment for agriculture.

**Lessons.** NIRSAL is a primarily supply-side intervention, yet its approach highlights the importance of addressing the needs of each actor in the agricultural value chain. NIRSAL not only encourages banks to lend, but educates farmers and provides assistance to allow farmer groups to effectively absorb financing. Finally, all levels of government are engaged to create a strong enabling environment through supportive policy change.<sup>iii</sup>

### ***Demand-side: The Coffee Initiative for East Africa***

Providing financing is only as valuable as the investment purposes to which it is put. Simply increasing the supply of capital will often not result in the desired effect, as is evident from decades of mixed or disappointing results in subsidized agricultural credit programs across many countries. Innovative financing efforts therefore require attention to improving the enhancing the underlying economic activity, functioning of markets, and the ability of the individuals involved, be they farmers or agro-entrepreneurs, to optimize their economic returns.

**Objectives.** The Coffee Initiative for East Africa, operated by TechnoServe and funded by a grant from the Bill and Melinda Gates Foundation, aimed to increase the incomes of over 182,000 East African smallholder coffee farmers. The Initiative, running from 2008 to 2012, sought to increase farmer productivity, strengthen farmer cooperatives and the value they provided to farmers, and improve overall value chain functioning, resulting in increased demand for agricultural financing and improved incentives for banks to serve farmers and cooperatives.

**Operating model.** The Coffee Initiative employed a three-prong approach. First, the Initiative established a “farm college” educating farmers on agronomic practices to increase their yields. Secondly, the Initiative provided business support to farmer cooperatives, allowing them to upgrade machinery and establish rural coffee processing stations known as wet mills which improves the quality and price of coffee. Lastly, the Initiative strengthened value chain connections, giving cooperatives access to credit from local private coffee exporters known as “coffee service providers” (CSPs). By creating market linkages between value chain segments, the initiative improved the market’s efficiency and sustainably raised farmer incomes.

**Outcomes.** As a result of the initiative, over 250 wet mills were upgraded or purchased by cooperatives, supporting 195,000 smallholder farmers. Additionally, in Rwanda, the CSP model unlocked US\$ 3 million in working capital for cooperatives, resulting in 30,000 farmers benefitting from an average 42% increase in yield and 50% increase in income. In Ethiopia, where the CSP model was revised to account for a more conservative financial sector, the Initiative worked with banks to unlock US\$ 10 million in working capital for cooperatives. A successful track record attracted additional partner banks such as Netherlands-based Rabobank. Investments under the Initiative totaled nearly US\$ 19 million for this initiative—with an estimated total incremental income gain among farmers of US\$ 1.9 million annually, the program is expected to “break even” on its social benefit in Year 10.

**Lessons.** The East Africa Coffee Initiative demonstrates that good data attracts follow on private sector investors, leading to a sustainable solution. Likewise, scale attracts financial and private sector partners. Projects that are too small are often not compelling examples to motivate private sector actors. Lastly, addressing all areas of the value chain is required for maximum impact. Educating farmers, CSPs, and banks fueled sustainable improvements in the value chain, realizing the greatest possible impact.<sup>iv</sup>

### ***Technology: Mobile Wallets for Farmers in Nigeria and Kenya***

The explosive growth in mobile telephony across Africa, and the large number of Africans with access to mobile phones but not to formal financial services, offers the potential for transformative innovation in financial services. Because of the rural and dispersed nature of agricultural production, where banks and formal financial institutions often lack a presence, mobile technology provides a convenient and low-cost distribution channel to reach farmers and agro-enterprises with electronic payments and information products, as well as savings, credit, and insurance products, among others. Mobile technology can also serve as a conduit for implementing government programs involving cash transfers, vouchers and other policies that require better targeting and delivery to beneficiaries.

**Objectives.** Nigeria and Kenya have pioneered systems to distribute fertilizer subsidies directly to farmers through partnerships with mobile technology companies and network providers. The programs streamline fertilizer subsidy distribution programs which are traditionally costly and ineffective: for example, the pre-electronic fertilizer subsidy program in Nigeria reached just an estimated 11 percent of intended recipients in 2011. In the case of fertilizer subsidies, both demand and supply were abundant, yet an innovative platform was needed to effectively link the supply with demand from farmers—and in the process, a foundation for providing a range of financial services for farmers was created.

**Operating model.** Through the Cellulant and Safaricom programs, farmers receive electronic vouchers via their mobile phones to redeem at appointed stockists such as the 1,500 agro-dealer redemption centers in Nigeria. Farmers are not required to have a mobile phone to register for e-subsidies, however, they are then reliant on the community to know when subsidies are available.

**Outcomes.** In Nigeria, as many as 4.3 million farmers are estimated to have benefited from Cellulant’s mobile wallet program for fertilizer subsidies, and the cost per farmer receiving fertilizer subsidies decreased from US\$ 225-300 in 2011 to US\$ 22 in 2013. In Kenya, Safaricom expects to deliver subsidies to 3.5 million farmers through its E-Fertilizer platform while increasing the speed and reducing the cost of delivery. These tech-enabled platforms have the added benefit of vastly improving data availability and accuracy, providing a financial record for millions of farmers: a first step towards bringing otherwise unbanked farmers into the formal financial system.

**Lessons.** E-subsidies demonstrate the power of technological innovations to lower the cost of and improve access to services. Supply and demand for fertilizer subsidies exist, and a technology-enabled solution removed the connection and distribution-based inefficiencies in the market. Additionally, Cellulant’s mobile wallet and Safaricom’s E-fertilizer embrace public and private sector collaboration to combine private sector expertise and innovation with the government’s broad networks and legislative authorities.<sup>v</sup>

#### ***Infrastructure: Guerdane Irrigation PPP Investment in Morocco***

Investments in infrastructure help drive increased private investment and production in the agriculture sector. Often resulting in public goods that benefit a broad base of economic activity, investments in irrigation, transport and market infrastructure in particular are critical to improving economic returns and productivity in the agriculture sector. Increasingly, agriculture-supporting infrastructure is created through public-private partnerships that aim to enhance the efficiency and effectiveness of such investments, with a blended capital structure that aligns incentives and crowds-in private investment.

**Objectives.** The Guerdane Irrigation project sought to ensure the future of 1,900 citrus farmers and their valuable agricultural products in Morocco by providing a sustainable and adequate source of water to the Guerdane region. Sustainable citrus farming was jeopardized as groundwater levels decreased annually. The project developed a public-private partnership to finance the construction and management of an irrigation network and distribution system to transport water from a dam 65km away.

**Operating model.** The Moroccan government involved the IFC to perform due diligence and conduct a competitive and transparent bidding process. A 30-year concession was granted to build, co-finance, and manage an irrigation network and distribute water to farmers. Importantly, the concession was structured such that operational, commercial, and financial risks were distributed amongst the various stakeholders. The unique selection criteria for the concession was the lowest water tariff offered to ensure an affordable water supply to farmers, while a public subsidy was designed to maintain water tariffs near pumping costs.

**Outcomes.** The Guerdane irrigation project developed the world's first public-private partnership irrigation project and delivered a lower than expected unit water price to farmers, while attracting US\$ 36.9 million in private investment. The initiative achieved a 100 percent water connection rate and, in addition to securing the livelihood of citrus farmers for years to come, it also increased incomes for over 1,900 farmers and 11,000 people.

**Lessons.** Key success factors for the Guerdane project included the IFC's role as a neutral third party to conduct an unbiased, competitive, and transparent bidding process, encouraging private sector interest by assuring them of the project's integrity and transparency. Another factor central to the project's success was the strategic alignment of public and private sector incentives through a single, objective selection criteria, the lowest water tariff. Lastly, the Guerdane highlights that by altering risk-return characteristics, financing for public works can be secured from the private sector. The government guaranteed water security and capped potential losses for the concessionaire by assuming financial risk in the case of severe drought. This transaction structure made the project profitable for the concessionaire while reducing the public resources required for a large infrastructure project.<sup>vi</sup>

#### ***IV. The Road Ahead***

**Innovative financing can help enable agricultural transformation in Africa, with different roles for different actors.** Innovative financing for development often, though not always, uses blended capital structures that bring together public, private and/or philanthropic sources. This mode of partnership is a common theme in the agriculture sector: *public-sector enabled, private-sector scaled*.

- ❖ **Government** has a role to play in developing policies and a regulatory environment conducive to growth and private investment in the agriculture sector. It can identify and address underlying gaps in infrastructure, workforce skills development, and market linkages. It can also backstop some types of catastrophic agricultural risk or facilitate the creation of national insurance markets relevant to the agriculture sector.
- ❖ **Private investors** can surface information about gaps in infrastructure relevant to investment projects they would undertake in the presence of such supporting infrastructure. Investors can

also bring co-investment opportunities to public agencies and development banks that aim to catalyze investment in the sector, and seek out operating and investing roles in PPPs.

- ❖ **Philanthropic donors** can experiment with new models of agriculture investment partnership that reach under-served populations in novel ways. Donors can also pay for efforts to develop an evidence base about what types of innovative financing mechanisms are most effective in catalyzing growth in the sector or in addressing institutional barriers, and advocate for replicating and scaling the most promising interventions more widely across Africa.
  
- ❖ **The African Development Bank** can accelerate these efforts with expertise in agricultural development, strong networks across the continent, and a range of innovative financing instruments at its disposal. AfDB can increase the supply of capital for agriculture across the continent through risk-sharing and guarantee mechanisms for financial institutions. It can provide continent-wide support to reinsurance and risk mitigation mechanisms, to support the broad-based emergence of insurance products relevant to farmers and agro-enterprises. And it can structure agricultural PPPs by acting as a trusted third party, and scale private sector operations in agriculture through catalytic equity and debt investments in large agro-enterprises that engage significant numbers of farmers.

## END NOTES

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<sup>i</sup> Dalberg Global Development Advisors, “Innovative Financing for Development,” September 2014.

<sup>ii</sup> Initiative for Smallholder Finance, Briefing 1, “Local Bank Financing for Smallholder Farmers: A \$9 Billion Drop in the Ocean,” October 2013.

<sup>iii</sup> Central Bank of Nigeria, “Overview of NIRSAL,” 2012.

<sup>iv</sup> Initiative for Smallholder Finance, Briefing 9, “Case Study: The Return on Investment from TechnoServe’s Coffee Initiative,” February 2015.

<sup>v</sup> CGAP, “Serving Smallholder Farmers: Recent Developments in Digital Finance,” June 2014; CGAP, “Bringing Mobile Wallets to Nigerian Farmers,” 24 June 2014; Safaricom press release, June 2014.

<sup>vi</sup> IFC, Public-Private Partnership Impact Stories, “Morocco: Guerdane Irrigation,” August 2013.