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Revolutionising Finance for Agri-Value Chains

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Revolutionising Finance for Agri-Value Chains

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1. Context

There are an estimated 500 million smallholder farmers in low- and middle-income countries. However, despite some improvement in their access to general financial services, relatively little progress has been made in financial services specific to their agricultural activities.¹

Agriculture remains the backbone of the African economy. It is the main source of income for about 90% of rural population in Africa and 60% of its labor force. Many people in rural areas of Africa lack access to financial services, and most commercial banks are not interested in moving into these areas due to their low income levels, lack of scale economies, and poor infrastructure. Also, few banks understand agriculture. While microfinance institutions have made some inroads into rural Africa with the financial backing of international nongovernmental organizations and other sponsors, their sustainability is questionable. They tend to lack banking licenses and therefore have a very limited product range, and they cannot afford modern technology-based distribution systems.²

One of the most prominent gaps in developing banking services for rural Africa is poor infrastructure—bad roads, erratic electricity provision, and lack of communications systems—which impedes effective outreach to customers. The legal environment is typified by insecure property rights—especially land titles in rural areas—limit any bank's collateral options; combined with poor contract-enforcement opportunities, this takes away a bank's incentive to provide credit, especially for long-term loans. Proper land registration and enforceable

mortgage systems are important issues for rural development. Often, as a result of poor access to formal sources of finance, farmers are left to borrow at very expensive rates from informal money lenders.

The inefficiency of markets is also a barrier to developing rural financial services. Agricultural value chains are often poorly organized, lacking in transparent pricing, and fragmented in primary production—all of which results in high transaction costs. In many cases, the banking environment is distorted by stakeholders—including donors, governments, and development banks—who do not always regard agriculture as an economic activity, but rather as a social problem. These stakeholders provide subsidized funding to farmers or cooperatives, which means private banks often lack a level playing field. Poor financial literacy rates, especially among small farmers, and a limited understanding of banking requirements also pose a problem.³

A major obstacle to financing agriculture is unpredictable or erratic government behavior and interference in the agricultural sector. This is especially the case in cash crops like coffee, which are often important sources of hard currency, and in grains, of which African countries are often net importers. In several coffee-exporting countries, the coffee export is not free but rather regulated through auctions with only a limited number of private exporters licensed. In grains, prices are often regulated by the government to safeguard food security. This comes often at the expense of local farmers

who are struggling to break even, and it is aggravated by relatively high transaction costs and the weak market position of African farmers.⁴

It is estimated that only 20% of populations in most developing countries have access to formal financial services (IFAD, 2009), the situation is worse for Africa where only 4% of the total population have a bank account while only 1% of Africans have a loan or credit facility with a formal financing institution (AFRACA, 2009). These figures are even lower for the rural areas.⁵

Commodity exchanges could help improve agricultural marketing and finance, and help mitigate some of the risk factors (e.g., climate and price volatility) that prevent smallholder agricultural producers from accessing working and investment capital. Such exchanges can provide a bridge between farmers and financial markets. A full-fledged exchange already operates in South Africa, while Ethiopia has an exchange with a more limited scope; several other African countries have established exchanges with limited volumes, or have exchange projects.

Changes to agri-food systems are being observed in all segments of the production-distribution chain, as well as in the institutional environments in which they operate. Production processes are becoming similar to the practices of manufacturing enterprises and have developed closer ties to processors, retailers and other partners in the supply chain. The rapid rise of supermarkets is also a related development, whereby consolidation at the retail level is influencing procurement

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practices and therefore impacting agri-food chains internationally. Changes have been influenced by a global, liberalized and fragmented marketplace with little seasonality and high product diversity, food

safety and traceability requirements, greater consumer demands for more processed or value added products, and high quality standards in conjunction with the enforcement of basic environmental regulations.

Despite these changes the offer for financial products and services for agricultural and rural production has been deficient and not very innovative, often due in part to government directives⁶.



2. Addressing the rural finance gap

Tailoring the provision of financial services for small-scale farmers remains challenging

Conventional thinking is that financing agriculture has high transaction costs, low returns on investment and is a risky business. Collateral is a major constraint to access to finance in agriculture not only from banks, but also from credit unions and other financing institutions due largely to land tenure restrictions and/or other requirements that are often designed to protect the livelihood assets of the community, but in doing so effectively limit their use as collateral.⁷

Financial service providers may also see high risks because they lack understanding of the agricultural sector and food markets, and have no way to evaluate the risks in agricultural value chains. To most of financial institutions, the cost of directly lending to small-scale farmers in remote rural areas with less-educated and low-income populations is prohibitive. Thus, financial institutions are reluctant to finance rural entrepreneurs, classing this collective as non-bankable. Commercial banks prefer to provide loans to well-established large businesses, rather than numerous small loans to micro-entrepreneurs. The result is a serious and long-lasting rural finance gap that keeps the economic potential of agriculture underused.⁸

From the 1950s to the late 1980s, public bodies intervened extensively in directing credit to agricultural lending programmes in developing countries, especially in Africa. Governments and international donors used heavy subsidies to promote rural lending. However, those programmes commonly

have unsatisfactory results with low repayment rates and credit misallocation, making rural credit programmes dependent on external resources, and not operational for private banking.

In the 1970s and 1980s, microfinance institutions (MFI) provided financial services to low-income individuals who had no access or limited access to the formal financial sector. From the pioneering Grameen Bank in Bangladesh, microfinance started to expand from reaching 7.6 million families in 1997 (5 of whom in Bangladesh) to 100 million families worldwide in 2006. Since then, poor households increasingly have access to small loans from MFI. With the use of microfinance, rural entrepreneurs showed repayments of their loans with interest, using money they would earn through own productive work, and enhanced positive social pressure to create trust and loyalty. Nevertheless, MFI have some limitations that should be addressed, such as high transaction costs and interest rates, lack of information for credit assessment, small amounts and short-term loans that are generally not able to address the full range of agricultural needs, little flexibility in loan terms conditions, underestimation of savings, limited reserve of funds, combined with the of need of professionalization staff bank members. Many MFI have recognized such limitations and are actually working towards overcoming them, like making investments in social performance monitoring and adding extra financial services to their microfinance support activities.⁹

Despite the creation of MFI, many rural producers and small and

medium sized agribusinesses remain underserved. Their financial needs are generally too large for microfinance, but too small for commercial banks. The entrepreneurial potential of rural producers and small and medium sized agribusinesses becomes clear when looking at the value chains that link farm production to rural trading and other sectors of the economy. These chains show that farmers are part of a wider system. The small-scale businesses of asset-poor farmers at the beginning of the chain are intimately connected with larger businesses of traders, food processors and supermarket chains at the end of the chain. Thus, it is crucial to address the financial gap that hampers growth, limits agricultural development and means a loss to the financial sector, and ignores millions of potential rural clients.

Since access to finance remains one of the critical obstacles for economic development and growth, especially for farmers and small enterprises in developing countries, a semiformal modality of emerging importance, value chain finance (VCF), aims to address the aforementioned constraints and risks. It does so by providing innovative ways of delivering financial services to rural producers and agribusiness and also contributes to meeting the growing need for agricultural finance and investment in response to greater consumer demands for more processed or value added products.

The financial access data in Figure 1: % of Rural Branches by Institution shows that commercial banks remain the dominant formal institutions providing finance to farmers. Commercial banks constitute more than 75 percent of all rural branches



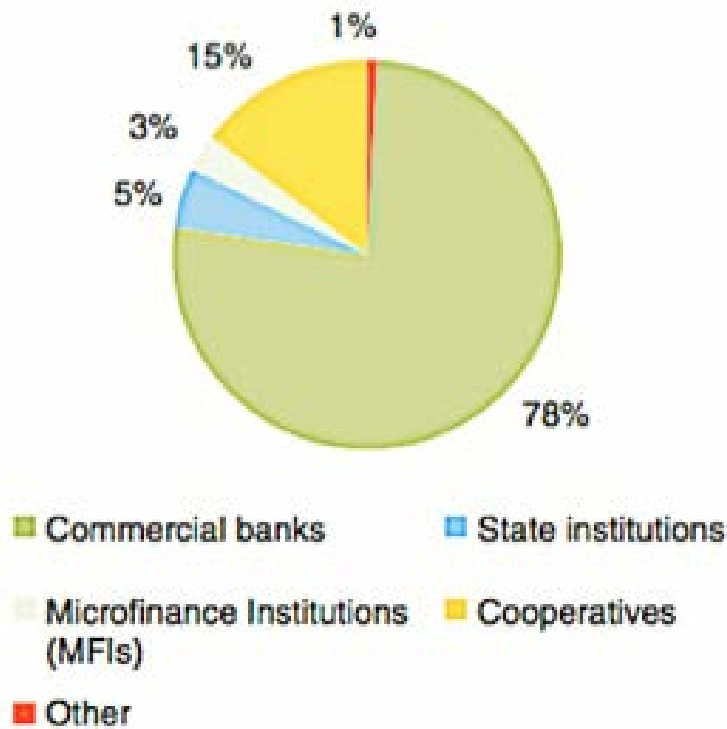
of financial institutions worldwide; in comparison, microfinance institutions account for less than 3 percent. Microfinance institutions and cooperatives may situate a larger share of their branches in rural

areas, 41 percent and 43 percent, respectively, but their absolute total country reach is limited.

Financial products and services in rural areas will remain a challenge

until financial institutions can reduce the high operating costs associated with catering to rural clients; however, ICT applications have demonstrated considerable promise in doing so.

Figure 1: % of Rural Branches by Institution



Source: World Bank, 2011

3. Understanding the concept and approaches to value chain finance

3.1. Concepts

The renewed focus on agriculture and agribusiness, as priority sectors for spurring economic growth in Africa, calls for developing value chains that integrate producers and markets to make the agricultural sector more responsive to consumer demand.

- Value chains encompass the full range of activities and services required to bring a product or service from its conception to sale in its final markets—whether local, national, regional or global. Value chains include input suppliers, producers, processors and buyers. They are supported by a range of technical, business and financial service providers. (USAID)
- Value chain is the full range of activities involved in getting a product or service from conception, through the different phases of production (...) and delivery to the final consumer. (Kaplinsky and Morris)
- A value chain in its simplest form is a collaborative effort. (Jerry Bouma)
- A value chain is a system of people, organisations and activities needed to create, process and deliver a product or service from inception to the finished product. It consists of a series of chain actors, linked together by flows of products, finance, information and services. Actors in value chains include primary producers, processors, traders and service providers.

They transform natural resources, raw materials and components into a finished product that is delivered to the end customer. The value chain concept is rooted in the organisation of different actors and how they interact in their institutional environment.¹⁰

3.2. Chain actors exchange products, money, information and services

The chain actors are the individuals or organizations that produce the product, or buy and sell it. Chain actors actually own the product at some stage in the chain. At each stage of the chain the value of the product goes up, because the product becomes more convenient for the consumer. Besides value, costs are added at each stage in the chain.¹¹

Actors exchange products and money and may be prepared to invest in the chain and to support the other actors to make sure that it functions smoothly. This gives rise to additional flows of finance between the different actors in the chain. For example, a trader may give a loan to a farmer at the start of the season so the farmer can buy inputs such as seeds and fertilizer.

Or the farmer may give the trader a loan – this is essentially what happens when the farmers get paid several months after they deliver the produce to the trader. Such financial flows may also include fees paid by a farmer to

an association or cooperative that markets their produce.

In addition, the farmer and trader exchange **information**. The trader may tell the farmer how much coffee he or she wants to buy, when and where to deliver it, and what quality it should be. The trader may train the farmer on things like quality standards or new varieties. The farmer may tell the trader what the yield is likely to be and when the harvest will be ready. The two are likely to haggle over the price.

The farmer and trader also provide **services** to each other. The farmer may dry the produce, sort and grade it, put it into sacks and take it to a convenient pickup point. The trader may provide labour for harvesting, supply sacks to hold the produce, and deal with the local government's paperwork. Similar exchanges also occur at each stage of the chain.

Chain supporters

Flows of finance, information and services are not limited to the actors within a chain. Often other individuals and institutions surrounding chain actors are involved, like moneylenders, savings and credit groups, microfinance institutions (MFIs), banks, equity funds and so on, surrounding the chain actors. Those actors may provide financial services such as loans, pre-financing, shareholdings, factoring, leasing arrangements, and so on to the chain actors. And also, they provide non-financial services like input supplies, farm labour, transport, grading,



processing, storage, packaging, advertising, research, training, advice, organization, and so on. Many of these chain supporters provide services to the chain actors for a membership fee. Other chain supporters do not have to be paid by the chain actors, at least not directly. Like research and extension services, standards organizations, and non-government organizations (NGOs).

3.3. Finance needs in the value chain

For the value chain to work well, all the chain actors need access to finance but in different ways. There are three types of finance for the actors in the value chain¹²:

- *Chain liquidity*: short-term loans from suppliers or buyers within the value chain (trade credit, or

chain credit). While it offers low costs (no charge interest, loans are informal and uncomplicated), low risk, tailor-made and improved chain efficiency. But there are also limitations of chain liquidity caused by the fact it relies on trust, it is for short-term, small amounts and a danger of dependency.

- *Agricultural finance*: financial services from commercial banks, microfinance institutions and other financial institutions that become chain supporters in one-to-one relationships with a chain actor. It includes loans, deposits and insurance which, compared to chain liquidity, are longer-term, involve larger amounts of money, are more transparent, and the risks of exploitation are considerably less. But agricultural finance also has its limitations:

high transaction costs, a lack of information on borrowers' creditworthiness, high risks, and the bad past performance of rural credit organizations. Microfinance institutions have few branches in rural areas or expertise in the agricultural sector and few offer financial services that are adapted to the needs of farmers and traders.

- *Value chain finance*: financial services that are based on cooperation in the value chain. Value chain finance is when one (or more) financial institutions link into the value chain, offering financial services which build on the relationships in the chain. The seller, the buyer and the financial agent work together, using the business relations in the value chain as a carrier to provide financial services.

Some examples of value chain finance:

Warehouse receipts In this system, farmers take their produce to a warehouse and get a receipt in return. They can use this receipt as collateral if they want to apply for a loan, so do not have to wait for payment. This is a useful arrangement for co-ops that want to store their products until prices rise, or if farmers have to wait for payment from buyers.

Repo finance Repurchase agreements ("repos") are a form of commodity finance. The bank actually buys the product from the seller (e.g., a co-op), and at the same time signs a contract to sell it back to the co-op at a certain point in the future. The contract specifies a price that reflects the costs that the bank incurs.

Leasing This is an alternative to long-term loans to buy equipment, which many financial institutions think are too risky. The leasing company provides the farmer (or other borrower) with equipment for a few years on a contract basis, and the farmer pays off the lease in installments. At the end of the lease period, the leasing company either repossesses the equipment or offers to sell it to the farmer. Leasing is less risky than a loan because the equipment remains the property of the owner, who can withdraw it easily if the farmer defaults on payments. With a loan, by contrast, it may be difficult to take possession of the collateral offered to guarantee a loan because legal constraints and weak judicial systems.

Factoring A farmer delivers the produce to the buyer and writes an invoice for the amount delivered. Instead of asking the buyer to pay, the farmer sells the invoice to a third party, a factoring house. The factoring house pays the farmer immediately (minus a fee), then submits the invoice to the buyer for payment.

Source: KIT and IIRR. 2010. Value chain finance: Beyond microfinance for rural entrepreneurs. Royal Tropical Institute, Amsterdam; and International Institute of Rural Reconstruction, Nairobi.

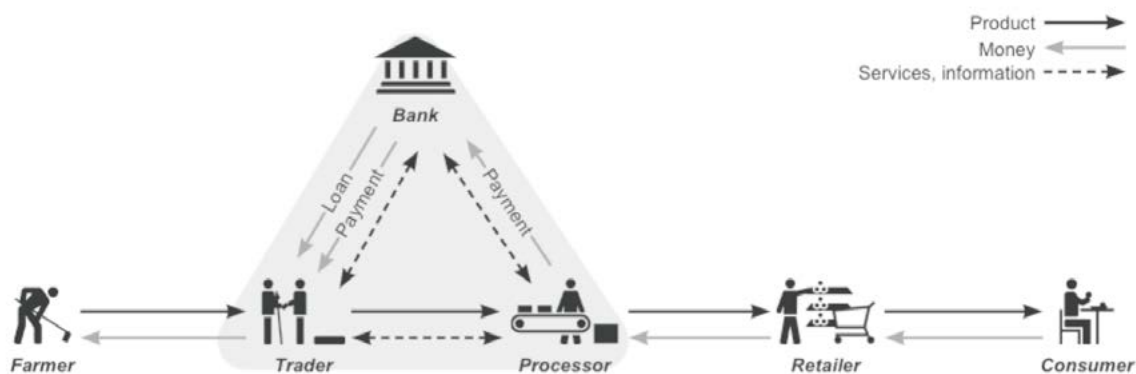
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In value chain finance, a financial institution engages with the actors in the chain. This creates a triangle of cooperation (see Figure 2: Value Chain Finance). The triangle is between the seller, the buyer, and the financial institution. Together they make an agreement that covers four essential aspects:

- The *product* that is produced and sold
- The *finance* needed to produce and deliver the product
- The way the parties communicate and exchange *information*
- The way *risks* are managed.

And often, there is also collaboration between various financial agents working together to serve the value chain: local and international banks, microfinance institutions, development finance organizations, insurance companies, and credit and saving associations.

Figure 2: Value Chain Finance (KIT and IIRR, 2010)



Value chain finance refers to both internal and external forms of finance:

- Internal value chain finance is financing that takes place within the value chain, such as when a supplier provides credit to a farmer or when a lead firm advances funds to a market intermediary.
- External value chain finance is financing from outside the chain made possible by value chain relationships and mechanisms; for example, when a bank issues a loan to a farmer based on a contract with a trusted buyer or a warehouse receipt from a

recognized storage facility. This definition of value chain finance does not include conventional agricultural financing from financial institutions such as banks and credit unions to actors in a chain unless there is a direct link with the value chain as noted above.

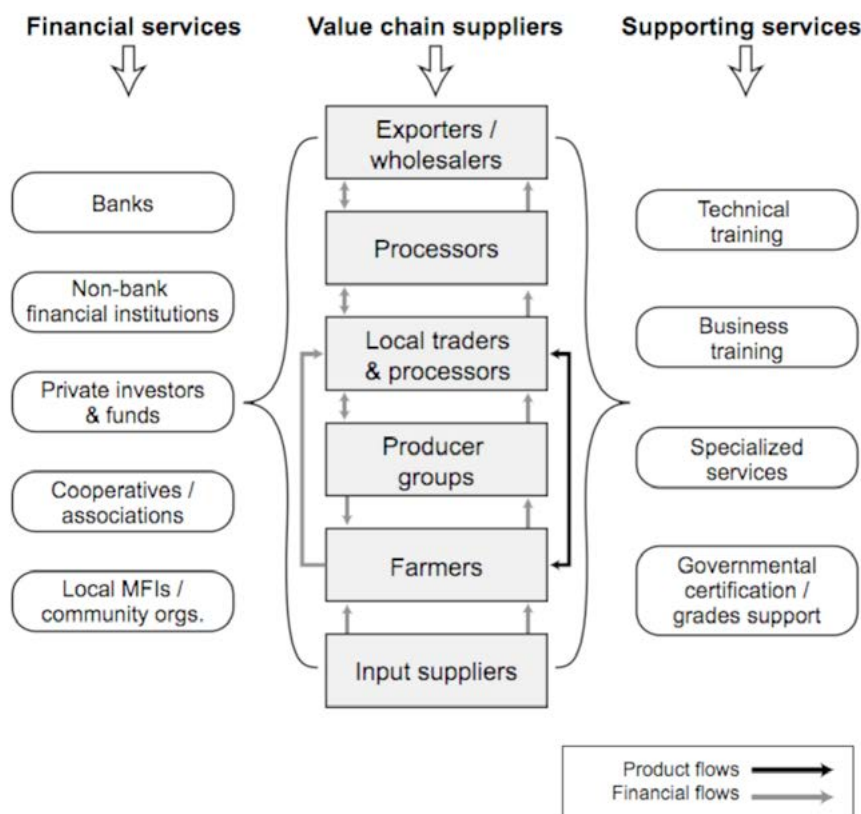
Figure 3 Product and Financial flows within the value chain, presents a simplified framework for understanding value chain finance. It illustrates that finance is provided by those within the value chain itself, as well as is provided by various types of institutional financing entities who provide financing to the

chain. Products flow in one direction through the chain with varying levels of value addition at each level. Within the chain the finance flows in two directions, depending upon the particular value chain and/or region and the dynamics of the companies and participants involved. It is noted in the figure that those within the chain can be both recipient users of finance as well as suppliers of finance.

Value chain financing is an approach to identify where the financing needs are, where are the financing gaps, who can provide the financing, and what are the ways to improving access to financing.



Figure 3: Product and Financial flows within the value chain (Miller and Jones, 2010)



3.4. Borrowers assessment

While much of the emphasis in a value chain finance approach is on the health of the chain and its value-adding transactions and linkages, a well-rounded assessment of all borrowers is still critical. This **borrower assessment** can be undertaken by looking at key areas commonly called the 5 C's of loan assessment.

- **Character:** Suppliers, producers, purchases and others in a value chain who interact regularly can assess the character and management savvy of each other

better than a banker, with whom they have infrequent interaction.

- **Capacity:** Assessment is broadened from the borrower's individual capacity toward a focus on the health and growth potential of the value chain and the competitiveness of those involved in it; also an individual's borrowing capacity can be strengthened because they are integrated into a strong value chain.
- **Capital:** The capital of the borrower alone is less emphasized in value chain finance, as increased attention is given to the capitalization within the whole chain.

- **Collateral:** Cash and commodity flows which can be predicted from past relations or contracts can replace or enhance traditional collateral; also in tightly integrated chains the collateral of the strongest partners can be used for attracting finance, which can also be a benefit to others in the chain.
- **Conditions:** Conditions for financing are more adapted to the chain; tailoring finance to fit the specific needs becomes paramount to its success and can improve "bankability" of the clients.

4. Challenges and opportunities in value chain finance development

The most critical challenges are:¹³

- *Knowledge of the agricultural system.* Decisions about financing are based on the health of the entire system and not just on the individual borrower.
- *Fragmentation of the agricultural value chain at the production segment level.* African agriculture is dominated by geographically dispersed smallholder farmers who produce limited surplus quantities. This results in many barriers to marketing, high cost of access to modern inputs, slow diffusion of technical innovations and in many cases low level of and returns to productive investments.
- *Limited availability of adapted financial services products.* Banks and nonbank financial institutions (NBFIs) often cite the high cost of reaching individual smallholders as a key constraint to serving the vast group of smallholder producers.
- *High cost of establishing and operating businesses.* At the

country level, the challenge is to reduce obstacles related to laws and regulations affecting business registrations, licensing, worker employment and compensation, property registration, investor protection, taxes, financial sector transactions, and contract enforcement. At the regional level, the challenge is to rapidly advance toward establishing effective economic unions.

Risk management needs to improve dramatically so that agricultural finance can flourish. Strides have been made in recent years in reducing information problems and transaction costs through, respectively, peer-group lending and a greater reliance on information and communication technology. Uncontrollable risk, however, continues to be a major impediment to the development of more efficient rural financial markets. Renewed private-public sector efforts and higher amounts of investments will be required at various levels to address these issues. At the farmer level, governments need to spur the rebuilding of farm extension services,

while farmers need to become more financially literate and save more so they can retain some of the risks. Governments, donors, and insurance companies need to collaborate in the development of yield-insurance products that are inexpensive, sustainable, and appropriately designed. Governments, commodity exchanges, and financial institutions likewise need to collaborate in developing futures, structured finance products, and other hedging instruments to reduce price risk.

At present, the lack of high-quality weather data, inadequate distribution of weather stations, limited supply of people with risk-modeling capabilities and expertise in agricultural risk management, small capital markets, and weaknesses in regulatory and legal infrastructure hamper the pace of progress. Since the depth and efficiency of financial markets are highly correlated with the speed of overall economic development, innovative methods of improving rural financial services will be critical in facilitating and sustaining any marked improvement in rural welfare.¹⁴



Risk to Financial Service Providers

Type of Risk	Risk Mitigation Measures
<p>Production risks: These arise from a variety of factors (input supplies, lacking or late credit, low quality standards, improper storage and packing, weather risks, diseases, etc.).</p>	<p>By employing a comprehensive chain approach that looks beyond the borrower to the health of the chain, the financing institution is better informed about the capacity of the chain partners and linkages, including producers' capacity to ensure adequate supply in terms of quantity and quality. The financing agency can also finance and manage financial transactions for various actors in the chain (e.g. input suppliers, storage facilities, trade) and appropriate insurance.</p>
<p>Supply risks: This refers to situations where producers (farmers) may not honour their contractual supply obligations. A commonly observed problem in contract farming is "side-selling," which derails the built-in repayment mechanisms for farm credits.</p>	<p>Strong producer organizations (farmers' cooperatives) and/or group solidarity systems (mutual guarantees based upon savings) provide some assurance that contracts will be honoured and the risks of "side-selling" minimized. Reliable supply allows for collateralization through warehouse receipts in which the FSP becomes a party.</p>
<p>Finance risks: These relate to the non-repayment of credit provided to farmers, other producers or other value chain actors. This risk is borne by the FSP or the chain agent acting as retail-finance provider for farmers/other actors or by both.</p>	<p>Non-repayment of credit to chain actors can be greatly reduced by incorporating a lead actor considered trustworthy. Such actors help instill and ensure accountability. Arrangements of this type are strengthened when a lead actor (co-signatory) is able to absorb risks (e.g. through its equity capital or member savings) and when contingency arrangements are in place to deal with unavoidable risks (such as crop failure). Providing financing through a tripartite arrangement not only improves the efficiency of credit delivery, but minimizes the risk of non-performing loans.</p>
<p>Marketing risks: These relate to the inability to sell on time, in the right quantities and/or at an acceptable quality standard. This includes the short- and long-term market situation and the use or absence of marketing contracts.</p>	<p>Fixed contracts throughout the chain help stabilize turnover, especially when dependence on one market can be avoided. Sales or export agreements are a strong asset in negotiations with financiers, especially when they are also financing other agribusinesses within the value chain. In niche markets, such as fair-trade channels, the buyer relationship can significantly reduce marketing risks, even for small-producer groups. Product standards and certification can also reduce risks.</p>
<p>Price risks: These arise from fluctuations in market prices in the period between, for example, the time a farm contract is signed and the delivery date. These risks are borne by producers/farmers or the buying chain actor, depending on the type of contract.</p>	<p>Direct linkages to the end-consumer markets can promote fair and relatively stable prices. Information technology can be used to minimize price risks. Contractual arrangements should be transparent to help the FSP assess risks. Forward contracting and futures are examples of more advanced price-stabilization mechanisms in VCF</p>
<p>Climate risks: These relate to shocks produced by weather, such as droughts or floods. Weather shocks can trap farmers and households in poverty, but the risk of shocks also limits farmers' willingness to invest in measures that might boost their productivity and improve their economic situation</p>	<p>Agricultural insurance, including weather index insurance, has shown potential to help smallholders, FSPs and input suppliers manage low- to medium-frequency covariate risks such as drought or excess rainfall. Farmers can buy insurance as part of a package (e.g. credit and other financial services, technology, agricultural information) or, occasionally, as a stand-alone product.</p>

Source: Miller, 2012

The opportunities¹⁵ that financing can create within a chain are driven by the context, the business model and the relative role of each participant in the chain. Understanding value chain finance can improve the overall effectiveness of those providing and requiring agricultural financing. It can improve the quality and efficiency of financing agricultural chains by:

- Tailoring financial products to fit the needs of the participants in the chain.
- Spread risk among financial institutions and chain actors while providing alternatives to collateral requirements.
- Increase efficiency and value. Efficient value chains normally reduce the use of intermediaries in the chain, and strengthen value-added activities because of better technology and inputs, farm gate procurement, upgraded infrastructure, improved price opportunities through demand-driven production, and facilitation of more secure procurement for food processing and exports.
- Improve access to financial services for chain actors. Chain actors improve their access to financial services based on the fact that they have a small but viable business that forms part of a wider and more stable system of value creation, the value chain. Chain relations help to securitize loans.

- Reducing financial transaction costs as chain partners take over due diligence, supervision/monitoring and enforcement.
- New markets for financial providers. Financial institutions can develop whole new markets for their services, while chain actors tap into a wider pool of funds, services and expertise from specialized financial agents.
- Economic development and poverty reduction are attained as small-scale entrepreneurs get better conditions to flourish their businesses.

Thus, value chain finance provides a tremendous potential for unleashing capital, scaling up and sustaining chain prospects, but in order to properly work all chain actors need access to finance for their different financial needs. At the same time, when the chain partners share information on a frequent basis, this contributes to the bank's understanding of how the value chain works and increasing the potential of lending to asset-poor farmers.

4.1. Business models and financial instruments

The value chain approach builds on conditions in the consumer market and emphasizes the interface, linkages, and segments

that connect the final product demanded by consumers all the way to agricultural commodities produced at the farm level.

The actual tools used and their applications depend on the particular value chain and business model which are preliminarily identified during the value chain analysis to match the interests and capacity of the partners selected.

Business model refers to the drivers, processes and resources for the entire value chain system, even if the system is comprised of multiple enterprises. It states the way it creates and captures value within a market network of producers, suppliers and consumers.

Because smallholder production is important in many value chains for both economic and social considerations, special emphasis must be given to models that allow them to fully participate in value chains. With business models that promote economies of scale and reduce risks for lenders and buyers, smallholder farmers are more viable contributors to modern agricultural systems. Thus, it is important to understand how a value chain is structured and coordinated to reduce risk and hesitancy of financial intermediaries to lend to the agricultural sector.



Organizational models of smallholder production

Model	Driver of organization	Rationale
Producer-driven	Small-scale producers, especially when formed into groups such as associations or cooperatives Large-scale farmers	Access new markets Obtain higher market price Stabilize and secure market position
Buyer-driven	Processors Exporters Retailers Traders, wholesalers and other traditional market actors	Assure supply Increase supply volumes Supply more discerning customers, meeting market niches and interests
Facilitator-driven	Non-governmental organizations and other support agencies National and local government	Make markets work for the poor Regional and local development
Integrated	Lead firms Supermarkets Multinationals	New and higher value markets Low prices for good quality Market monopolies

Source: Miller, C. And Jones, L (2010)

- **Producer-driven value chain models**

Producer-driven models are driven by producer associations, which are at the bottom end of the chain. Producer associations may become the driver for value chain development by providing technical assistance, marketing, inputs and linkages to finance. Or may have a financial base whereby a savings and loan association signs a contract with farmers to guarantee sale of their product. They can be successful but face two major difficulties: (1) Producers may not understand the market needs as well as those in the chain who are closer to the end user, and (2) Producers often struggle for financing unless they can find strong partners and/or can get assistance for financing and for linking to reliable and competitive markets and partners.

- **Buyer-driven value chain models**

Buyer-driven models form the foundation for many of the applications of value chain financing. It is often in the

buyer's interest to procure a flow of products and use finance as a way of facilitating and/or committing producers, processors and others in the chain to sell to them under specified conditions. Most often, when financing is involved, the conditions are binding through contracts; therefore contract farming is the most common buyer-driven value chain model. Whether these are formally registered or not, the agreements can still form the basis for loan recovery.

- **Facilitated value chain models**

Facilitator-driven models exist in many countries where there is almost a dual agricultural system in which a developed agro-industry coexists alongside marginalized producers who are living at subsistence levels. The costs of organizing and training small producers can be deemed too high to be taken on by a large company. As a result, intermediation by development organizations, both NGOs and

government agencies, facilitate opportunities for smallholder integration into commercial value chains, and financing has become a commonplace feature of such facilitation. With a goal of long-term sustainability, facilitation is ideally time bound incorporating a clear exit strategy.

- **Integrated value chain models**

An integrated value chain model, not only connects producers to others in the chain – input suppliers, intermediaries, processors, retailers and service providers including finance – but it integrates many of these through ownership and/or formal contractual relationships. The integrated model has many of the features of the other models presented such as strong linkages with multi-party arrangements, technical guidance and strict compliance, and also incorporates an amalgamated structure of value chain flows and services.

5. Innovations in financial instruments: towards highly structured finance

5.1. Financial instruments for the various actors

Many ways exist to categorize the various financial mechanisms and

tools that can be used. Instruments can be used in isolation, but is more common to use multiple instruments within a value chain. And for this reason larger financial institutions specializing in financing agriculture offer an array of conventional and

unconventional financial tools and options, such as transactional-based finance instruments. The following table provides a summary overview of the value chain instruments according to such categorization.

Categories of financial instruments commonly used in agricultural value chain finance

Category	Instrument
A. Product Financing	1. Trader credit 2. Input supplier credit 3. Marketing company credit 4. Lead firm financing
B. Receivables financing	5. Trade receivables finance 6. Factoring 7. Forfaiting
C. Physical asset collateralization	8. Warehouse receipts 9. Repurchase agreements (repos) 10. Financial leasing (lease-purchase)
D. Risk mitigation products	11. Insurance 12. Forward contracts 13. Futures
E. Financial enhancements	14. Securitization instruments 15. Loan guarantees 16. Joint venture finance

Source: Calvin Miller, 2012, IFAD

A. Product Financing

- *Trader credit*: traders advance funds against the expected output to producers to be repaid at harvest time. This allows traders to procure products, and provides a farmer with needed cash (for farm or livelihood usage) as well as a guaranteed sale of outputs. Less commonly, trader finance is also used “upward” in the chain whereby the trader delivers products to buyers on credit.

- *Input supplier credit*: an input supplier advances agricultural inputs to farmers (or others in the VC) for repayment at harvest or other agreed time. The cost of credit (interest) is generally embedded into the price. Input supplier credit enables farmers to access needed inputs that enables increase in sales of suppliers.
- *Marketing company credit*: a marketing company, processor or other company provides credit in cash or in kind to farmers,

local traders or other value chain enterprises. Repayment is most often in kind. Upstream buyers are able to procure outputs and lock in purchase prices and in exchange farmers and others in the value chain receive access to credit and supplies and secure a market for selling their products.

- *Lead firm financing*: a lead firm either provides direct finance to value chain enterprises including farmers, or guaranteed sales agreements enabling access



to finance from third party institutions. Lead firm financing, often in the form of contract farming with a buy-back clause, provides farmers with finance, technical assistance and market access, and ensures quality and timely products to the lead firm.

B. Receivables Financing

- *Trade receivables financing (including bill discounting and letter of credit):* a bank or other financier advances working capital to agribusiness (supplier, processor, marketing and export) companies against accounts receivable or confirmed orders to producers. Receivables financing takes into account the strength of the buyer's purchase and repayment history.
- *Factoring:* is a financial transaction whereby a business sells its accounts receivable or contracts of sales of goods at a discount to a specialized agency, called a factor, who pays the business minus a factor discount and collects the receivables when due. Factoring speeds working capital turnover, credit risk protection, accounts receivable bookkeeping and bill collection services. It is useful for advancing financing for inputs or sales of processed and raw outputs that are sold to reliable buyers.
- *Forfaiting:* a specialized forfaitor agency purchases an exporter's receivables of freely-negotiable instruments (such as unconditionally-guaranteed letters of credit and 'to order' bills of exchange) at a discount,

improving exporter cash-flow, and takes on all the risks involved with the receivables.

C. Physical asset collateralization

- *Warehouse receipts:* farmers or other value chain enterprises receive a receipt from a certified warehouse that can be used as collateral to access a loan from third party financial institutions against the security of goods in an independently controlled warehouse. Such systems ensure quality of inventory, and enable sellers to retain outputs and have opportunity to sell for a higher price during the off-season or other later date.
- *Repurchase agreements (repos):* a buyer receives securities as collateral and agrees to repurchase those at a later date. Commodities are stored with accredited collateral managers who issue receipts with agreed conditions for repurchase. Repurchase agreements provide a buy-back obligation on sales, and are therefore employed by trading firms to obtain access to more and cheaper funding due to that security.
- *Financial leasing (lease-purchase):* a purchase on credit that is designed as a lease with an agreement of sale and ownership transfer once full payment is made (usually in instalments with interest). The financier maintains ownership of said goods until full payment is made making it easy to recover goods if payment is not made, while allowing agribusinesses

and farmers to use and purchase machinery, vehicles and other large ticket items, without requiring the collateral otherwise needed for such a purchase.

D. Risk mitigation products

- *Insurance:* insurance products are used to reduce risks by pooling regular payments of clients and paying out to those affected by disasters. Payment schedules are set according to statistical data of loss occurrence and mitigate the effects of loss to farmers and others in the value chain from natural disasters and other calamities.
- *Forward contracts:* are sales agreements between two parties to buy/sell an asset at a set price and at a specific point of time in the future, both variables agreed to at the time of sale. Forward contracts allow price hedging of risk and can also be used as collateral for obtaining credit.
- *Futures:* are forward contracts that are standardized to be traded in futures exchanges. Standardization facilitates ready trading through commodity exchanges. Futures provide price hedging, allowing trade companies to offset price risk of forward purchases with counterbalancing of futures sales.

E. Financial enhancements

- *Securitization instruments:* cash flow producing financial assets are pooled and repackaged into securities that are sold to investors. This provides financing that might not be available to

smaller or shorter-term assets and includes instruments such as collateralized debt obligations, while reducing the cost of financing on medium and longer-term assets.

- *Loan guarantees:* are offered by 3rd parties (private or public) to enhance the attractiveness of finance by reducing lending risks. Guarantees are normally used in conjunction with other financial instruments, and can be offered by private or public sources to support increased lending to the agricultural sector.
- *Joint venture finance:* is a form of shared owner equity finance between private and/or public partners or shareholders. Joint venture finance creates opportunities for shared ownership, returns and risks, partners often have complementary technical, natural, financial and market access resources.

Most of these instruments are used in many types of finance; hence they are not exclusive to AVCF. Even so, while such instruments as factoring may be common within commerce or manufacturing, their application to agricultural financing is often new and unknown. It is also important to note that the fact that one uses one or more of these financial instruments does not make it VCF; rather VCF is an approach which applies instruments as appropriate to the VC, whereby the simple use of some of these financial instruments is not defined as VCF.

The descriptions of these 16 AVCF instruments are useful for

understanding the concepts. But, it is important that governments and donor agencies understand the benefits and risks of the different financial instruments to the various participants within the value chain and ensure that adequate mechanisms are in place to permit and govern their application. Thus, in the annex of this document a brief analysis looking at benefits, limitations, potentials and application of each instrument is provided.

5.2. Innovations in financial instruments

Integration of the chain and formalization of its processes have enabled value chain finance to rapidly evolve from a relationship-based credit towards highly structured finance.

Advances in value chain knowledge and experience have taken place in parallel with the evolution of financial services, although the two have often developed as separate processes. In particular, an **agricultural value chain is no longer viewed as a single channel that tracks a product from a farmer to a market, but as a complex chain that is impacted by relationships within the chain, enabling environments, availability of appropriate services and inputs from technology to raw materials, and most importantly, changing market demand.** It is recognized that one value chain does not exist in isolation, but is part of a sub-sector that is generally comprised of multiple value chains. Furthermore, the sub-sector might incorporate a

range of products reaching different markets, crossovers between chains, and activities in one channel that impact another channel. Supporting innovation is an important role for donor and technical agencies. However, it should not focus undue attention on the latest technologies and untested ideas but rather on all types of innovations that reduce costs and risks and improve services¹⁶.

Innovations have taken place in financing approaches, technology, in new applications of existing technologies that support chain development and stimulate financial products and process development, and in ways of strengthening enabling environments and support service provision. Innovation has played a critical role in the strengthening and use of value chain finance.

5.2.1. Value chain innovations

Important value chain innovations in the agricultural sector that supports the financing of the chain are:

- *The development of models for market access* such as contract farming, lead firm buyers, vertically integrated chains, networks of producers and buyers, and various niche markets, including organics and fair-trade.
- *Assessing relationships through a range of analysis techniques:* for example, value chain drivers, linkages, power relationships, and value chain control and governance.
- *Development of commodity management companies* with



end-to-end service support options for ensuring compliance, security and quality, as well as facilitating finance.

- *Commodity exchange development* with rapid and accessible prices and trade opportunities for facilitating trade, risk management and opportunities for use of new financial instruments.
- *The promotion of industry competitiveness* through the formation of member-led industry associations, market assessment and development strategies, promotional tools, branding, product life cycle and product differentiation.

Innovations In Africa

Numerous examples of value chain innovations have been implemented in African countries.

In Eastern Africa for example, **FarmConcern International and the World Vegetable Centre worked with international partners to establish a programme to enhance market access for African traditional vegetables (ATV).**¹⁷ This initiative involved supporting small-scale women farmers to commercialise ATV, increase productivity skills and streamline the efficiency of their value chains.

In Kenya, the **DrumNet initiative** has operated in Kenya since 2005 as an innovative management system for rural value chains targeting farmers.¹⁸ It establishes relationships with key actors along a supply chain—a buyer, a bank, and several

farm input retailers—and links them to smallholder farmers through a dedicated transaction platform and a fully integrated finance, production, delivery, and payment process. The targeted use of information and communication technologies. (ICTs) across the platform makes the process efficient, cost-effective, and practical in the African context.

The process begins when farmers (organized into farmer groups) sign a fixed-price purchase contract with an agricultural buyer. The contract allows farmers to approach a partner bank, obtain credit, and get farming inputs from a local, certified retailer. At harvest, the contracted produce is collected, graded, and sold to the buyer at designated collection points. A successful transaction triggers a cashless payment through a bank transfer. DrumNet serves as the intermediary in the flow of payment to ensure that credit is repaid before earnings reach farmers' accounts. A master contract governs the entire process, and DrumNet's information technology (IT) system monitors compliance. The process creates an enabling environment for agricultural finance: (i) banks are assured at the time of lending that farmers have a market for their produce and the means to adequately serve that market—two building blocks of a healthy revenue stream; (ii) banks minimize the problem of loan diversion by offering in-kind credit to farmers for inputs and directly paying certified (and monitored) input retailers after distribution of the inputs; (iii) cashless payment through bank transfers reduces strategic default, since farmers cannot obtain

revenue until their outstanding loans are fully repaid.¹⁹

In terms of challenges, DrumNet has experienced its share of noncompliance. Farmers have opted to side-sell produce outside buyer agreements to attain quick cash or evade loan obligations. Buyers have at times failed to honor contract terms, and input retailers have engaged in dishonest practices as well. Even banks have strayed from the program by delaying payments and introducing unexpected fees to farmers.

To address these challenges and low agricultural yields, DrumNet has identified new products and services such as: **performance rating** system; **crop insurance** product that insures farmers' inputs against drought or other disasters would reduce the weather risk inherent in agricultural financing, win further buy-in from farmers, and fill a crucial gap in this bundled, supply-chain approach; a **soil analysis** service would provide farmers with precise recommendations on how best to restore fertility to their soils and, accordingly, improve land productivity; **payment systems** with electronic payment options.²⁰

Various other value chain innovation initiatives in Eastern Africa have been more commodity specific, such as **Honey Care Africa (Kenya)**²¹, which adopted an innovative business model that structures quality honey production by subsistence smallholders and commercialises it amongst urban consumers. Ethiopia was the site of the **Business Organisations and their Access to Markets (BOAM)**

programme launched by SNV in 2006,²² which promotes the development of the honey chain in the country, leading to an increase of exports of honey from Ethiopia (mainly to the EU) from zero to 400 tonnes between 2008 to 2011. A follow-up programme, ASPIRE (Apiculture Scaling-up Programme for Income and Rural Employment) was launched by SNV with the goal of supporting the maturity of the value chain to a level that by 2017, all actors – processors, beekeepers and their organisation, input suppliers and local retailers and association – will have access to financing from multiple sources. In the Kenyan dairy sector, the International Livestock Research Institute conducted research in Kenya demonstrating the successes in innovation in value chains of smallholder dairy farmers which involved training, branding, certification of the informal sector, quality checks and the introduction of metal milk cans.

An innovative value chain project which sought to support an entire domestic industry was the **Nigerian Catfish Market Assessments project**²³ which had the aim of understanding the value chain and integrating information into strategy. The project was initiated by the government, and involved undertaking a market survey for quantitative and qualitative information on buyers, sellers, volumes, prices, market trends, market share, and market segments and for competitors as well. This information can then be used by value chain participants to identify problems and to potentially establish new products or services in the value chain.

5.2.2. Financial innovations

Innovations in value chain finance have been largely driven by the developments in value chains themselves such as integration and formalization of relationships, the globalization of agricultural food chains, the attention from donors, facilitators and others on the role that small farmers can play in these chains, and the willingness of financiers to look at new ways to support them. Important financial innovations that support the financing of the chain are:

- *Willingness of financial institutions to examine value chain relationships and make financing decisions based on third-party agreements.* This has led to third-party lending where banking institutions will provide loans to businesses higher in the chain – such as processors – knowing that the firm will lend to trusted suppliers. This reduces the due diligence and operational costs of lending on the part of the bank, while also mitigating their own risk.
- *Collateralization of agricultural outputs and the formalization of their value.* With the growth of managed warehouses, lenders gain confidence in the preservation of goods, and their sustained or increased value over time. This is especially helpful to farmers and others in the chain that become able to maintain ownership beyond the high season, and sell products when markets are not glutted and prices are more favourable. This leads to higher returns

and enhanced ability to repay loans and be profitable, with instruments like warehouse receipts and forward contracting being innovated as a result of this trend.

- *The recognition that value chain businesses have critical financing needs beyond credit.* The potential to offer a range of financial services is bolstered by the strength of value chains, and the spread of risk across large numbers of producers and multiple chains. Innovations in weather, crop and health insurance have helped increase their use for risk reduction, including smallholder farmers, enabling them to ‘push the envelope’ on productivity and cash-cropping.
- *Microfinance Institutions (MFIs) look at higher risk lending to farmers and agro-enterprises.* MFIs have begun to work with farmers’ groups and agribusinesses in the chain to understand their needs and risks, and then to adapt loan terms, collateral and repayment mechanisms to match the value chain and demand, in addition to adaptation of existing loan products. MFIs have also adopted new financing instruments, such as leasing arrangements and financing of warehouse receipts, and savings products to help smooth incomes, accrue assets for times of need, and to reinvest into their businesses.
- *Use of Internet and cell phone applications* to be able to not only share information on current and



futures prices much more broadly, even among small producers, but also allow them to make use of that information for making forward contract sales. This in turn allows the option to borrow funds against the sales contracts and also to hedge risk of price reductions at the time of harvest or delivery of the products.

- *Firm understanding of the value chain and all its interconnectedness*, indirect financing to the chain through support services and products, and even partial grants, offers interesting options for value chain growth.
- *Enhanced understanding of household income sources*. Household income is taken into consideration in assessing the risk of lending, and offers possibilities to families that might otherwise not be considered creditworthy. In developing countries, a loan made to an individual is frequently a loan to an extended family with diverse sources of income. So, although a loan might ostensibly be made to purchase seeds and fertilizers, repayment of that loan might come from a range of sources such as salaried or daily employment and from non-agricultural enterprise activities such as trading and small-scale manufacturing.

Innovations In Africa

A considerable number of value chain projects or initiatives involve or seek to develop financial innovations.

In Niger, an **inventory credit model (credit warranté)** was launched by FAO in 1999 through its 'Promotion of the Use of Agricultural Inputs by Producer Organisations' project.²⁴ This inventory credit model allows farmers, through their associations, to obtain short-term credit from local financial institutions by storing part of their harvest as a guarantee for a loan. A number of input stores managed by the farmer associations were also created. The project was implemented by the FAO and other international partners, and the local financial institutions, with the Central Bank and other monetary authorities providing a supportive legal and regulatory framework (the Central Bank has since accepted stock of agricultural produce as a guarantee for loans by financial institutions).

The **honey value chain of Ethiopia** has benefited from the ASPIRE programme project launched by the SNV²⁵, whose aim is that by 2017, all actors in the value chain should have access to financing from multiple sources, including commercial banks, social investors, microfinance institutions and so on. The programme targets a broad range of market participants, from subsistence beekeepers to commercially advanced honey producers, as well as semi-commercial beekeepers in between. The financing of the programme supports processors, the Ethiopian Apiculture Board, banks, local investors, and international social investors to deliver to each category of beekeepers the right mix of services and financing they need to make the transition to the next level of the value chains.

Honey processors, associations, cooperatives and others will be provided grants to develop test and scale innovative business and service models.

Risk is a major issue that hampers value chains finance, and in light of this, ICCO, a Dutch cooperative, created the **ICCO Guarantee Fund** in 1999, managed by its business unit, ICCO Investments, which aims to reduce the risk of lending to producer organisation, microfinance institutions and SMEs.²⁶ By working with local banks and investors (Oikocredit, Triodos Sustainable Trade Fund etc), the ICCO Guarantee Fund provides partial, shared-loss guarantees on loans to high-risk small organisation and businesses, and on an exception bases, it may also provide a first loss guarantee. The outcome of the ICCOs Guarantee Fund has been to encourage financial service providers to get to know the relevant operators in the market (producer organisations, MFIs and SMEs) and for them to discover the attractiveness of these clients.

A well documented agricultural value chain finance innovation is the **Kilimo Salama project** established by the Syngenta Foundation for Sustainable Agriculture,²⁷ which develops and provides insurance for African farmers ranging in size from smallholders to large-scale entities. Insurance services include cover for a variety of crops against drought, erratic rain and disease, and the system is developed in a manner to primarily suit smallholder farmers and to reduce the often prohibitive costs of insurance for these historically uninsured market participants.

Value chain finance innovations also involve and utilise new technologies such as the **Agrilife platform in Kenya**,²⁸ which uses mobile telephony and the internet to allow financial institutions and suppliers to obtain near-real-time information on farmer's ability to for services. Service providers use point-of-sale devices for cashless transactions between farmers and merchants and real-time reporting.

5.2.3. Technological innovations

New technologies and their innovative applications have supported and spurred the development of finance in general and value chain finance in particular. From the use of management information systems (MIS) to monitor stored goods in a network of warehouses, to the accessing of remittances through mobile phones, the proliferation of technology has enabled the more rapid development of affordable and accessible finance in agriculture.

- *Management information systems (MIS) have supported the development and documentation of sophisticated processes* such as traceability of agricultural products, tracking of warehouse goods, and consolidation of products for sale. With reference to finance, MIS allow portfolio and client management, structured finance instruments, commodity trading, analysis of risk, and fraud detection and control. Thus, MIS provide numerous facilities that increase access to needed information, support sound decision-making that encompasses analysis of client

risk, product security, potential for trade and profitability, and so on. A second aspect of MIS that is significant is the increasing level of sophistication of the financial and portfolio management systems of both financial and non-financial institutions to track loans, investments and cash, and in-kind accounts receivable. With sufficient 'back-office' systems of this nature, many of the value chain finance tools and processes can now be applied.

- *Creation of networks and exchanges due to Internet.* This happens in two main ways: the delivery of critical information to farming communities such as market demand, pricing and technical advice; and the creation of exchanges that support the trade of agricultural outputs.
- *Mobile phones and mobile banking.* In the case of implementing MIS solutions, mobile phone and handheld devices may be used at the point of data collection, and set up to transfer timely information to the larger MIS. For example, in traceability applications, field agents can track individual farmers, capture the data on a handheld device and remotely transfer the information to a central database. In turn, this central database can track availability of compliant crops and monitor expected volumes and time of market availability. In the other direction, information can be pushed out from an MIS to mobile phones and handheld devices. For example, farmers

may be set up to receive alerts on changing prices for commodities and preferred market locations or buyers. Users can exchange cash at a retail agent in return for an electronic record of the transaction value. This virtual account is stored on the server of a non-bank service provider, such as a mobile network operator or an issuer of stored-value cards. The use of cellular devices can play a central role in both financial and value chain activities, as when mobile phones are used for remittance transfers, loan repayments, and other financial transactions with important identification data stored on the phone. This innovation goes beyond the hardware itself, and includes new kinds of relationships between banks, clients, agribusinesses and communication companies.

For examples of technological innovations in Africa, please refer to Chapter 6, section 6.2

5.2.4. Other needed innovations

Infrastructural development of roads, storage, ports and other requirements are often serious constraints to value chain development that are left unaddressed in large part because of the significant investment costs and the slow, long-term returns on capital. In order to facilitate this infrastructural financing, value chain financing through instruments such as forfaiting, which are relatively innovative in the agricultural sector, can be considered.



Unlike financing in other areas of the value chain, infrastructural financing can take place under non-agriculture projects, which then have a direct effect on agricultural value chains and capacity. Irrigation is often the most appropriate target for infrastructural financing and support, but other infrastructure issues such as storage, transport links and communications systems are all increasingly being addressed.

Policy and public sector innovations for value chain financing are often subtle and indirect.

- *Less governmental intervention* less subsidy or price controls, for example, those stifle strong value chain development.
- *Public support to producer groups, market development programmes and research linked to value chains.* Innovative public interventions focus on demand and addressing the areas of weakness in the vertical and horizontal linkages within agricultural chains, giving priority to those that are most strategic in terms of the economy and the social outcomes.
- *Agri-export zones (AEZs)* are another example of public policy innovations that promote value chains for agricultural export products. AEZs identified based on the availability of a particular agriculture product in a region and the potential for further development of the entire value chain.

Certain initiatives are also dependent on public sector or policy innovations because the government has exclusive capacity to undertake specific activities. These initiatives may furthermore be essential to the establishment of a favourable enable environment for investment and financing in the agricultural sector. A good example is the Ethiopian Commodity Exchange, which is an initiative that was sponsored by the Ethiopian government, as Africa's first commodity exchange. Through a network of warehouses in Ethiopia used to store produce securely, have it measured accurately and also graded, the Exchange has since its 2008 launch, helped address various problems that plagued the Ethiopian agriculture markets such as poor market structure, lack of order, high contract performance risk and high market risk in quality.

Process innovations

- *Development of models for market access* such as contract farming, lead firm buyers, vertically integrated chains, networks of producers and buyers, and various niche markets, including organics and fair-trade.
- *Assessing relationships through a range of analysis techniques;* for example, value chain drivers, linkages, power relationships, and value chain control and governance.
- *Development of commodity management companies* with

end-to-end service support options for ensuring compliance, security and quality, as well as facilitating finance.

- *Commodity exchange development with rapid and accessible prices and trade opportunities for facilitating trade, risk management and opportunities for use of new financial instruments.*
- *The promotion of industry competitiveness* through the formation of member-led industry associations, market assessment and development strategies, promotional tools, branding, product life cycle and product differentiation.

A clear example of an agricultural value chain process innovation is the Kenyan **Green Beans and Other Fresh Vegetable Exports** initiative to deepen the value chain by adding processes.²⁹ This involves identifying "gaps" in the value chain or facilitating new linkages between value chain actors, and then undertaking value adding initiatives such as new operations to capture market demand and value, upgrading the chain, promoting specialisation among chain participants and increasing chain cost efficiencies. In the case of Kenya, the fresh vegetable export industry has used this value addition system to its value chains by introducing new processes and operations, led by the private sector, but supporting by the public sector.

6. Are ICTs revolutionising finance?

ICT introduces new channels for delivering financial products and services to the rural sector, and it has the potential to reach farmers, intermediaries, entrepreneurs, and rural dwellers more directly than traditional brick-and-mortar bank branches or microfinance offices.

Institutions or agencies that are not banks (NBFIs)³⁰ may start providing rural financial services. Since the early 2000s, a number of nonbank institutions have developed innovative approaches to financing agriculture. They have sometimes adapted microfinance concepts to provide agricultural finance, used good banking practices, and above all, drawn on knowledge of agriculture and ICT to enter and succeed in this market. Many of these new approaches show great promise, but no single approach will work for all situations. Rather, organizations have the most success when they are not dogmatic, apply innovative and comprehensive risk-management strategies and tools, and retain the ability to perform credit analyses of their intended rural clients without political interference.

The path of developments in information and communication technologies has been dramatic, affecting all segments of agri-food systems in both direct and indirect ways. Computers became much faster, smaller and less expensive and with this thrust information and communication technologies (ICTs) became widely adopted in all areas of economic activities.

For agri-food chains, ICTs allow fast and cost effective collection,

storage and retrieval of data at its different stages. Information can then be readily exchanged among organizations and fed into managerial systems that permit better planning, control and decision-making. Supply chain management in the agri-food industries is today heavily based in such information exchange processes. Consumer purchases, registered at the checkout counters of retail stores, immediately trigger inventory adjustments and replenishment orders from upstream suppliers. Supply chain efficiencies yielded by these systems are believed to be the major driver of the dominance of large retailers, in the food distribution business.

ICT create the potential to deliver a greater diversity of financial products to greater numbers of rural clients in remote areas than conventional financial service providers have been able to reach so far. With the use of ICT, formal and semi-formal institutions can extend their reach if they provide their services in ways that satisfy the primary needs of the rural poor: (1) convenience, such as short distances, appropriate opening hours and low documentation needs, (2) security, such as a strong brand, good systems and ethical field staff, (3) flexibility, such as few withdrawal/deposit restrictions and appropriate products that match agricultural cycles, and (4) low cost. ICTs can also enhance the government's capacity to monitor and evaluate financial services provided to rural clients and design effective financial policies and regulations for the rural sector³¹.

6.1. Some applications supporting VC Finance include:

- *Mobile financial services.* Given the pervasiveness of mobile phones in developing countries, financial service providers can use them to reach clients in rural areas and provide a broad array of financial products and services, including credit, insurance, payments, and deposits. Financial service providers can tailor financial products offered through mobile phones to rural needs. Major constraints to mobile phone use are limited functionality and user interface. To date, low-cost devices that do not need to be connected to the Internet to download large data files and applications are being used. This need has led to a higher use of SMS text messaging and Unstructured Supplementary Service Data (USSD) technology. However, USSD can be somewhat problematic for customers (many of whom are illiterate). A promising technology for overcoming illiteracy issues is the use of Interactive Voice Response³² (IVR).
- *Branchless banking.* Field agents, equipped with mobile phones or POS devices, can serve as mobile branches. Agents can provide financial services to smallholders, take deposits, provide financial information, and keep records of clients' creditworthiness. In this way, branchless banking deepens financial inclusion throughout rural areas.



- *Automated Teller Machines (ATMs)* can serve as cash-dispensing machines in tandem with branchless banking, mobile financial services, and other ICT-enabled financial products and can place cash-exchange points within reach. ATMs have long been tested and used throughout the world. However, most of them are concentrated in urban areas as there are common issues in rural areas; (1) the low volume of business often does not warrant the cost of purchase, installation and maintenance, (2) it is difficult to send people to repair and replenish, (3) vulnerable to theft and damage, and (4) high level of dedicated, strong connectivity required for the ATM network. However, encouraging innovations include requiring customers to use their mobile phones to access the ATM avoiding the need for a card or a bank account for remittances/ loan disbursements such as M-PESA. The mini-ATM launched by the Indian financial inclusion service provider FINO and NCR Corporation. And using a hybrid machine-and-human model in which the administrative side of the transaction takes place at the ATM machine and the cash disbursement/deposit takes place at the counter of the shop where the ATM is housed.
- *Smartcards*. Though not entirely in the category of ICT, smartcards (or stored-value cards) are an alternate means of providing services when mobile financial services are not readily available. Pre-paid cards, debit cards, or credit cards provide payment

and credit facilities to rural clients. Stored-value cards have historically assumed some level of literacy (in particular, the ability to sign for a transaction), but the advent of smartcards that use biometric cards eliminates the challenges associated with literacy barriers.

- *Point of sale (POS)* devices are among the most commonly used devices for agent banking across the developing world, as the technology for credit and debit card transactions has been implemented in a stable manner for many years. POS devices are (1) generally much cheaper than ATMs and computers, (2) more flexible in their connections to the financial institution's central system, and (3) very portable, allowing agents to roam if needed. However, functionality can be limited by the small screen size.
- *Computers* are often used to extend financial reach into rural areas as they have higher functionality and data retrieval than POS or mobile phones. Some of the advantages of computers are (1) agents can use computers connected to peripheral devices allowing to offer other services, such as bill payments and ticket purchases and (2) are portable, which can allow agents to visit customers at their homes or places of business. However, computers generally need to be connected through phone lines or traditional Internet providers, which many rural areas do not have and, although prices have diminished over time, computers can still be expensive, especially for agents.

6.2. Types of ICT services for value chain

The primary types of financial services offered through ICT solutions for value chains are³³:

- **Credit**

Credit in the form of loans, personal loans, salary loans, overdraft facilities, or credit lines, is often used as working capital at the beginning of the growing season to purchase inputs and prepare land. Farmers also need capital to invest in equipment such as tractors or drip irrigation and to harvest, process, market, and transport their produce. It is important to distinguish between short-term loans, which microfinance institutions usually provide, and the long-term financial services required for agricultural and livestock enterprises.

The use of agricultural credit has been a common response for facilitating rural development. In last decades, there has been a significant increase in access to credit from private credit providers, such as input suppliers, lead buyer firms, speciality lenders, MIS and banks. As a result, higher efficiency to improve credit risk monitoring and delivery to farmers has been encouraged and achieved partly by ICT.

Financial institutions do not extend their services to remote rural areas mainly because of the fixed costs of running a branch there. Operating a branch in a rural area requires the same of "bricks and mortar", information technology, security and human resources than operating it in

an urban area, however, the amount of business that can be generated in a rural branch is significantly less. ICTs reduce the fixed costs even when there are fewer clients who have small financial needs in two ways. By increasing the number of customers one staff member can serve in the credit underwriting, disbursement and servicing processes, which increases staff productivity and reduce human resources. And also, infrastructure costs are lower; less space is needed for the processing, filing and storage of documents with solutions like cloud-commuting.

In addition, ICT improves financial risk management systems. The primary risk that lenders face is default by borrowers. Technology allows lenders to enter data during the underwriting process, using software that can predict the likelihood of default in a short time enabling lenders' staff to appoint their time to more value-added activities. It also allows lenders to aggregate and analyse transaction data for monitoring credit repayment trends and can be used for data transmission between branches/outlets and the central office in real time through sophisticated dedicated line transmission or simpler, less costly transmission over the Internet or through mobile phone networks.

On the other hand, farmers benefit from the use of ICT by lenders. They can access to credit with better credit-terms with a well-reputed institution, improvement in delivery and reduction transaction times. And also, they are able to check their credit balances and confirming that lenders' staff has registered their repayments.

- **Savings for agricultural needs**

Savings may be in the form of current accounts, savings accounts, or fixed or time deposits. Farmers have a significant need for savings, because their income is seasonally tied to the harvest, and for much of the year they rely on savings to smooth consumption. Farmers' savings primarily serve as safety net and to purchase larger items while reducing the need for engaging on credit.

ICT can improve formal financial institutions to reach rural poor in remote areas to provide saving options and other products. Most banks use simple technology such as point-of-sale (POS) terminals or mobile phones to update transactions. This allows the customer to have more control and oversight over his/her account.

The term "**mobile savings**" is referred to as a subcategory of mobile banking. Mobile banking is a form of mobile financial services, whereas mobile financial services are a form of branchless banking (Yousif et al. 2012, vii). The key-enabling factor of branchless banking is the existence of information and communications technologies which allow players to handle cash transactions outside branches. An automatic teller machine accepting, storing, and dispensing cash or a point-of-sale (POS) device placed at an outlet in combination with a human attendant handling the cash, called agent, are the most common forms of branchless banking. A POS device can be any hardware that can identify customers and receive instructions for the transfer of value. Hence, typical POS devices are mobile phones using the mobile connection

to send instructions to transfer value from one account to another (Ivatury 2006, 3-5). Since the advances in mobile technology and the greater affordability of mobile phones, mobile financial services gained much excitement (Yousif et al. 2012, 6).³⁴

- **Transfer and payment facilities**

The cell-phone-based payment service in Kenya called M-PESA ("M" for "mobile" and "pesa" for "money") has become an outstanding success. Vodafone, the world's leading international mobile communications group, based in the United Kingdom, originally developed M-PESA with funding from the Department for International Development (DFID) as a pilot program to extend the growth of financial markets to the unbanked (people without access to conventional banking services) in East Africa. In March 2007, M-PESA was launched in Kenya in partnership with Safaricom, Kenya's leading mobile telecommunications company. It quickly became clear by the demand from the unbanked that this cell-phone-based, money-transfer business was a welcome commercial opportunity across Africa and elsewhere.

M-PESA's 9million registered users transfer on average \$320million per month (World Bank) to perform tens of millions of transactions every month throughout the country. Although this success has led to new opportunities, it has also brought about many unforeseen challenges.

The initial focus of M-PESA was to enable workers to send money (remittances) home via faster, safer, and more affordable means than those previously available to them.



M-PESA allows customers to send money home and make a variety of other payments without a bank account. People can begin using the system simply by registering for free at certified M-PESA agents, which include retailers such as supermarkets, gas stations, and shops that sell prepaid airtime cards. In fact, several banks have even become M-PESA agents. Customers can use cash to “buy” electronic money (e-money) from an agent, then use their phones to perform financial transactions (for example, to send money to another person or buy additional airtime). The e-money can also be converted into cash by selling it back to an agent. Agents are paid a commission for providing cash-in and cash-out services and for registering customers.

Transaction values are typically low; M-PESA moves smaller amounts of money than banks would normally service. As M-PESA gains acceptance, however, it is also becoming attractive to people who already have bank accounts as a way to pay out wages to, for example, tradesmen and

household staff—who are, of course, M-PESA’s targeted customers.

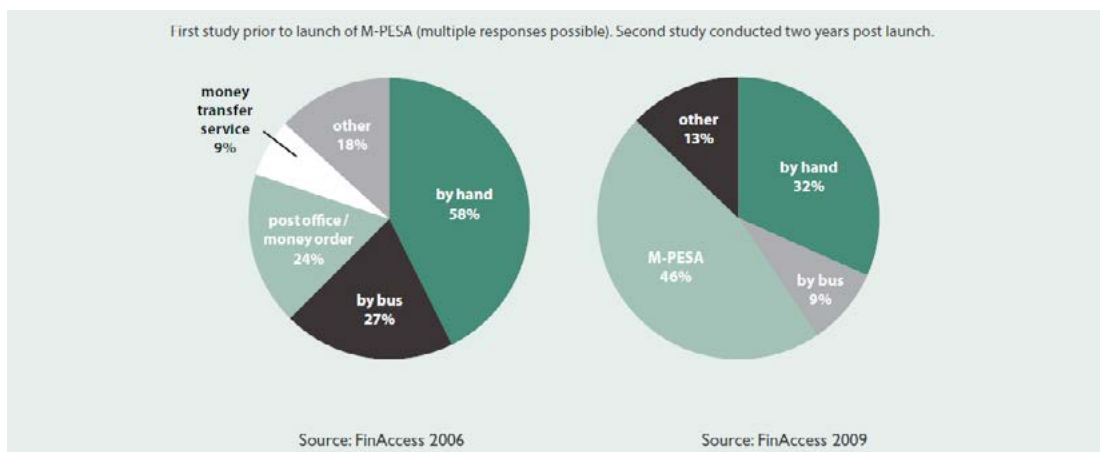
The option for customers to pay their bills via cell phone was recently added to the M-PESA menu. Designed to allow people to pay their regular bills—such as utilities, school fees, and rent—this feature has become a means of payment collection for many other businesses as well. Additionally, several microfinance institutions (MFIs) are now using M-PESA’s bill-paying feature for loan repayment collection. This eliminates the time loan recipients used to spend travelling to urban areas to deposit cash into their MFI bank accounts; this time can now be better spent attending to their farms or small businesses. Similarly, insurance and microinsurance premiums can now be paid using M-PESA.

The “Business Payments” feature allows a business to pay a number of customers or employees through their M-PESA accounts. This service was originally introduced at the request of Safaricom’s temporary

staff working in rural areas. These low-income workers previously had to travel to a Safaricom office in the nearest town to pick up their paychecks and deposit them into bank accounts; it was a time-consuming activity at best. Now they receive their wages directly through their M-PESA accounts. It has proven so popular that the organization recruited to provide M-PESA training to new agents around Kenya actually started to use the payment feature for its own staff expenses. Many other companies are now using M-PESA to pay field operatives working remotely from regional offices. Safaricom also recently offered shareholders the opportunity to receive their annual dividend payments via M-PESA; many thousands of Kenyans—who had become first-time shareholders when Safaricom issued public shares in 2008—accepted the offer.

M-PESA is now giving cell-phone users access to formal banking services. In May 2010 Safaricom and Equity Bank, a leading bank in Kenya,

Figure 4: FinAccess reports on how people in Kenya send money



Source: Calvin Miller, 2012, IFAD

launched an initiative to offer every M-PESA user the opportunity to open a savings account. Customers use M-PESA to both deposit money into and withdraw money from their savings accounts. Called M-KESHO (kesho is Swahili for “tomorrow”), this service effectively gives millions of rural Kenyans access to banking services for the first time.³⁵

M-Pesa has been successful because it relies on traditional practices and structures and modernizes these features. It is indeed a model based on indigenous payment practices, extended mobile phone networks and a large distribution network. The distribution network is based on agents who were already present in markets.³⁶

This service type does not help improve agricultural value chains directly but facilitates the provision of supplemental income for when the agricultural cycle does not allow income generation, and therefore creates a safety net for rural farmers and their families. In recent years, governments have also begun to make use of transfer payments, government-to-person (G2P) payments, for social security and pension transfers to beneficiaries. Ideally, this new way of transferring monetary benefits reduces costs, improves efficiency and, most important, reduces graft and waste.

ICT-based payment services provide perhaps an even more compelling way of improving agricultural value chains directly. These options entail business-to-person (B2P) and person-to-business (P2B) models, with payments from businesses to people/farmers (B2P) or the reverse, from people/farmers to businesses (P2B).³⁷

One major outcome of ICT related financial instruments is the opportunity created for rural farmers to move away from the cash-only informal economy. This transition allows potential investors, banks and other financiers to better gauge the risk/creditworthiness of the smallholder with the ultimate outcome of creating sustained investment and increased productivity. The following case studies illustrate some innovative initiatives which are enabling greater financial engagement throughout the agricultural value chain.

Building on the technological developments in mobile banking (m-banking) and payment facilities, the **dairy company Parmalat**, has incorporated a mobile direct deposit platform in its business model. The following excerpt, from a 2012 USAID briefing paper highlights its case. In Zambia, Parmalat utilizes direct deposits to monitor and manage its milk collection system. Traditionally, Parmalat representatives corresponded with and paid local milk collection centers, which were then expected to pay the individual farmers for the milk. With the new direct deposit system, the milk collection centers compile the quantity and quality of milk provided by individual farmers. That information is manually transferred into a database by Parmalat where it is reviewed monthly and used to calculate payments which are deposited directly to the bank accounts of farmers.

Payments to a large network of suppliers via direct electronic deposits can improve the ability of a company to track, monitor, and

administer its procurement. Direct supplier payments can also build trust and social capital between the company and its network of contracted farmers and producers.³⁸

Another USAID briefing paper from 2013 details the case of **Mobile Transactions Zambia Limited (MTZL)—now called Zoono**. Zoono aims to provide easy, quick, and safe transactional services for the unbanked in the agricultural sector.

Zoono was built with a focus on the rural unbanked and addressed the barriers to financial inclusion for the farmers. In particular, they worked with outgrower schemes to develop MIS software, microfinance solutions for payments/repayments, solutions for rural remittances, e-voucher payments, and savings mechanisms for agricultural inputs linked to farmer cash flows.

Zoono operates primarily by sending electronic vouchers to farmers' mobile phones; the vouchers are then redeemed for either cash or inputs. Zoono can also transfer money to an m-wallet if the farmer has one. Vouchers are redeemed at input suppliers or at cash-in/out agents depending on the type of voucher. Nonprofit organizations and agribusinesses can use this service to more efficiently provide goods or cash to individuals in remote locations.

Several improvements have resulted from the integration of mobile money into the value chain. Most notably, there is increased information for the agribusinesses about farmers. This allows agribusinesses to impose greater accountability in their

system and make evidence-based decisions on whether to work with a given farmer. It is also important to agribusinesses to keep farmers inside an outgrower scheme and to prevent side-selling. Agribusinesses can use the information Zoono's service provides to reward farmers who have a strong record of performance and avoid working with farmers who consistently underperform or try to cheat the system.... The success of Zoono's B2C/B2B business model attracted \$4 million in private investment in February 2012. This has supported a larger team, improved functionality of the platform and led to the expansion of the Zoono platform into Zimbabwe and Mozambique, with Malawi planned for 2013.³⁹

- Insurance

Mitigation and transfer of risk is an essential component to encourage investment in rural areas. Access to adequate insurance is critical in maintaining stability and continued investment within agricultural value chains. Insurance may cover crops, livestock as well as human life and health. Within financial inclusion, insurance, especially agriculture-based, is significantly underrepresented. This is because of multiple issues that are common to offering insurance in the developing world: frequent and severe weather-related events; lack of reliable historical data; low customer understanding, adoption and renewal; fraudulent claims; and high cost of delivery in remote locations.

ICT's are facilitating developments in a sector of agricultural insurance known as **Index insurance** which attempts to extend coverage to those who otherwise would be considered too risky to cover. The insurance functions by paying compensation not simply on the advice of an insurance adjuster, but rather, on a pre-set index for loss of assets and investments, resulting from abnormal weather and/or other catastrophic events such as drought, excess rain and disease.⁴⁰ The elimination of individual claims adjuster in assessing losses lowers the relative transaction cost of index insurance in comparison to its traditional agricultural insurance counterpart. Nonetheless in order to operate effectively index insurance requires adequate investment in accurate weather monitoring stations and other mobile technologies. The Global Index Insurance Facility (GIIF) is playing a leading role in promoting index-based insurance in many ACP countries and Latin America⁴¹ One of the most notable cases is GIIF's partnerships with the Syngenta Foundation for Sustainable Agriculture, who along with Safaricom and UAP insurance began the **Kilimo Salama** initiative, already mentioned above. Kilimo Salama combines mobile technology to extend the reach of its policy to cover rural farmers. The entire transaction process from the collection of premiums to the compensation for losses is done via mobile banking.⁴²

ICT can assist insurance companies in collecting reliable data to help the pricing of policies and monitoring of typical risk events and for actuarial and claim verification needs, and deliver initial and subsequent enrolments, claims processing and other communications with customers, typically covering crop yields, weather, and livestock health insurance.

- The use of ICT-enabled financial services in the rural sector

The major prerequisites for using ICTs to deliver its services in rural areas are robust national financial systems to connect and perform transactions in real time (for example, with national payment systems, credit bureaus, Automated Teller Machines (ATMs) switches, central platforms for microfinance) and the infrastructure that allows electronic financial transactions between institutions and individuals, such as high-speed Internet and mobile phones, available at affordable prices. These services and infrastructure do not benefit merely one operator or financial service provider; they cater to the entire rural and financial sector. For this reason, their provision is often initially regarded as a task for government, although in reality they can be (and often should be) provided by the private sector alone or in partnership with government.⁴³



7. The way forward

The situation for banks involved in agricultural finance is no different from that of other businesses. Getting the business model right is key to the long-term survival. Understanding and using collateral management, structured finance and credit support techniques should be part of a banker's arsenal.⁴⁴

Key challenges and enablers to sustainable finance⁴⁵

Expanding access to rural finance is a process that includes a combination of factors, including a supportive economic policy and regulatory framework; appropriate financial and nonfinancial products; and mechanisms, processes, and technology applications that can deliver products and services, improve transparency and accountability, and reduce costs.

- **Policy and legal environment needed for sustainable access to finance**

The policy environment that enables markets for financial services to develop is one in which minimal government interventions are carried out on a commercial basis, allowing markets to function freely. This will provide an opportunity for financiers to provide cost-effective and appropriate financial services without being encumbered by the government. It will also allow the provision of increased risk management services and ultimately lead to greater availability of financial services.

Failure to enforce appropriate rules and regulations can immensely limit the effectiveness of an ICT-enabled product that could have made finance accessible to a large number of peo-

ple. Conversely, a legal framework and enforcement of regulations eventually lead to lower but sustainable interest rates by reducing transaction costs and risks and increasing competition.

- **Infrastructure Costs and Shared Platforms**

Infrastructure that allows electronic financial transactions between institutions and individuals, such as high-speed Internet and mobile phones, must be available at affordable prices. Investments in technology can be leveraged by financial intermediaries within a community to provide additional services on the same platform. Sharing infrastructure such as power, telecommunication, data networks, hosting, application support, or data management drives down the cost of technology, making it affordable to deliver financial products and services to rural areas. Leveraging infrastructure can also be applied in the development of warehouses for collateral-based systems, weather stations for the development of index-based rainfall insurance, and physical infrastructure to facilitate improved functioning of the supply chain.

The high investments in infrastructure require the participation of both the public and the private sector to ensure ownership on both sides.

- **Technical Assistance and Capacity Building**

Building the capacity to use and adapt ICTs to facilitate financial services is important not only for the staff of banks and financial service providers but for borrowers and, in some cases, for governments.

Borrowers need to be educated about ICT-enabled instruments for

risk management and insurance to select the correct tool or combination of tools that better match their risk.

Finally, governments will, in some cases, require assistance in capacity building or creating an appropriate legal or regulatory framework. Such assistance may include, for example, support in drafting appropriate legislation and regulations.

Technological innovations can increase operational efficiency and lower costs of operating in rural areas, while improving financial services available to rural clients. New channels for delivering financial services facilitated by ICTs, new players, and greater competition enable service providers to offer a larger suite of financial products and services and acquire better financial information, some of which is useful to government regulation and policy development. These financial products and services provide flexible payment options and more convenient access to client accounts, reduce branch infrastructure and employee costs. A major advantage of their use in rural areas with poor infrastructure and communications is that financial transactions can be conducted entirely offline with all account information stored in the chip.

The key to success related to agricultural value chains finance are: (i) continuous market-based information on the chains is important for all those involved; (ii) Partnerships based on mutual interests with interrelated systems reduce risk; (iii) Reduced transaction costs; (iv) Finance within or toward the chain is an essential element to strengthen the AVC; (v) Structuring of financial products appropriate to the chain and its stakeholders is fundamental.⁴⁶



Glossary

Agricultural finance

Financial services from commercial banks, microfinance institutions and other financial institutions and

Biometric Card

Biometric cards. Identification cards with a microchip or barcode that contains information on the physical characteristics of the holder. These cards can help prevent fraud and identity theft by providing a more accurate means of identification.

Business Model

A business model is the set of protocols and systems that govern how a company generates revenue and earns a profit. The product or service that a company sells is part of its business model, as is the way that it keeps its customers satisfied and coming back for more. Business models address profitability as well as sales revenue, describing the ways that a company invests capital in order to generate income, by creating and selling inventory, or creating a business location that attracts paying customers.

The chain actors

They are individuals or organizations that produce the product or buy and sell it. The farmer produces the crop or the stock of its products and sells them to the trader in exchange for cash. The trader bulks the products from several farmers, cleans and sorts it and sells to the processor. The processor processes, seals them in packages, puts them in cardboard boxes, and sells them to the retailer.

The retailer displays the packages on supermarket and sells them to consumers. Chain actors actually own the product at some stage in the chain. At each stage of the chain the value of the product goes up, because the product becomes more convenient for the consumer. Besides value, costs are added at each stage in the chain, including cost of processes till it gets to the consumer. Costs also arise through losses that occur along the chain.

Chain liquidity

Short-term loans from suppliers or buyers within the value chain,

Cloud computing

A model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. Cloud computing permits organizations without the resources to invest in extensive computing power to rent this service from a provider and access it remotely.

Collateral

Cash and commodity flows which can be predicted from past relations or contracts can replace or enhance traditional collateral; also in tightly integrated chains the collateral of the strongest partners can be used for attracting finance, which can also be a benefit to others in the chain.

Collateral managers

These offer a variety of services for ensuring the integrity of (public or field) warehouses, and the quality of commodities, in one location.

Commodity

A commodity is a tangible good (usually a raw material, metal or basic agricultural products) that has value and can be exchanged in international trade.

Contract farming

The most common value-chain approach, is a transaction between buyers and agricultural producers that is governed by a contract that may stipulate product and quality attributes, production methods, and/or the commitments for the future sale (e.g., timing, location, price).

Credit support agencies

They provide all of these services, but can also secure the goods as they move through a supply chain, even if they are being processed. The agency controls the entire transaction from end to end, from the time when the bank releases funds, to the time when the loan is repaid in full. Credit support is generally provided along the supply chain.

Financial Inclusion

The delivery of affordable financial services to disadvantaged and low-income segments of society. Research on financial exclusion and its direct correlation to poverty has made the availability of banking

and payment services to the entire population without discrimination a prime objective of public policy.

Freight forwarders

Often offer collateral management services as an extension of their logistics operations. Their open cargo insurance policies often cover such services. The collateral management will be in the forwarder's own warehouse.

Index-based insurance

Insurance that substitutes individual loss assessments with an indicator that is easy to measure (such as weather) as a proxy for the loss. Weather indices have been used in insurance products protecting against drought and loss of inputs. Vegetation has been used in livestock insurance products as an indicator of livestock losses.

Inspection agencies

They will inspect the quality, quantity and/or weight of goods, often on demand of a financier. The inspection company will not provide any guarantee on the continuing presence of the goods. Same for monitoring services.

Household

All the persons, kin and non-kin, who live in the same dwelling and share income, expenses and daily subsistence tasks.

Price

The amount of money required for the exchange of a good or service to take place. Prices are an important source of market information, providing the incentive for market actors' decisions. There are different types of prices:

Farm-gate price: the price a farmer receives for a product at the boundary of the farm, not including transport costs or other marketing services.

Wholesale price: the price of a good purchased from a wholesaler.

Wholesalers buy large quantities of goods and resell them to retailers. The wholesale price is higher than the farm-gate price because of the marketing margin.

Retail price: the price of a good purchased from a retailer by a consumer. The retail price is higher than the wholesale price because of the marketing margin.

Import parity price: the price paid for an imported good at the border, not including transaction costs incurred within the importing country.

Export parity price: the price received for an exported good at the border, including transaction costs incurred within the exporting country.

Smartcard

A pocket-sized (usually plastic) card with embedded integrated circuits containing volatile memory and microprocessor components. They include credit cards, identification cards, and the SIM cards used with mobile phones. As discussed in this sourcebook, one of their most influential roles has been to extend the use of mobile phones in financial transactions such as purchases of subsidized inputs, conditional cash transfers, agricultural credit, and agricultural information services.

Value Chain Model

A value chain model describes the ways that a company tailors its products and services to meet the needs of current and prospective customers. Every business needs to meet the needs of its clients, and companies achieve this objective by creating useful products, providing services that generate savings for customers or by offering products or services that bring pleasure or ease pain. The value chains of truly successful products and services give customers multiple reasons to buy.

Value Chain

The set of actors (private, public, and including service providers) and the sequence of value-adding activities involved in bringing a product from production to the final consumer. In agriculture they can be thought of as a 'farm to fork' set of processes and flows (Miller and da Silva, 2007).

Value Chain Analysis

Assessment of the actors and factors influencing the performance of an industry, and relationships among participants to identify the driving constraints to increased efficiency, productivity and competitiveness of an industry and how these constraints can be overcome (Fries, 2007).

Value Chain Finance

Financial services and products flowing to and/or through value chain participants to address and alleviate driving constraints to growth (Fries, 2007).

Warehousing companies

These may provide warehousing services to third parties. There are some risks here (what is the security that the company provides against the risk that goods disappear?), but with a good legal and regulatory framework, a warehouse receipt issued by a reputable warehousing company can be a good collateral for any form of transaction.

Acronyms

AEZs	Agri-Export Zones
ACDI/VOCA	Agricultural Cooperative Development International Volunteers in Overseas Cooperative Assistance
ATM	Automated Teller Machine
AVCF	Agricultural Value Chain Finance
B2B	Business-to-business
B2P	Business-to-person
BCNM	Business correspondent network manager
CARE	Cooperative for Assistance and Relief Everywhere
CGAP	Consultative Group to Assist the Poor
EU	European Union
G2P	Government-to-person
GIS	Geographic Information System(s)
GPRS	General Packet Radio Service
ICT	Information and Communication Technologies
ICT4D	Information and communication technologies for development
IVR	Interactive Voice Response
KACE	Kenya Agricultural Commodity Exchange
MFI	Microfinance institution
MFS	Mobile financial service(s)
MIS	Management Information Systems
MIs	Microfinance Institutions
MNO	Mobile network operator
NBFIs	Non Bank Financial Institutions
NGO	Non-Government Organizations

Revolutionising Finance for Agri-Value Chains

OLPC	One Laptop Per Child
P2B	Person-to-business
P2P	Person-to-person
PDA	Personal digital assistant
PIN	Personal identification number
POS	Point Of Sale
RFID	Radio-frequency identification device
RITS	Relationship Information Tracking
SMS	Short Messaging Services
USSD	Unstructured Supplementary Service Data
VCF	Value Chain Finance

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