Workshop on Enhancing Exports' Competitiveness
Though Value Chain Finance

Supported by the Indian Trust Fund, Ministry of Finance, Government of India

Background Paper Series 1-7

Background Paper 6[1]

Sources of Funding and Support System for Value Chain Finance: Lessons from Asia

Venue: South Africa,
Date : November 15-16, 2012

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Abstract

This paper is based on the premise that the role of funding is paramount to achieve growth in the agricultural sector and thus help in poverty alleviation. The paper analyses the sources of funding and support systems for agricultural value chain finance in Asia and presents a comparative analyses of various approaches for financing.

The author critiques the various approaches of financing agricultural value chains and the role it plays in promoting the value chains to enhance its competitiveness. Based on the analysis of the case studies and best practices, the author has developed a conceptual framework of conditions in which a typical approach works and recommends variety of options that can be used to scale up value chain finance in Africa.

The author uses the Asian experiences to examine the implications for value chain finance in Africa and concludes with the roles that various stakeholders viz. government, donors, financial services providers, upstream actors of value chain as well as producers should be playing to develop an effective value chain to promote export competitiveness.

The author has also covered peripheral but important issues that should be considered to ensure efficacy of agricultural value chain finance such as risk management and role of mobile money

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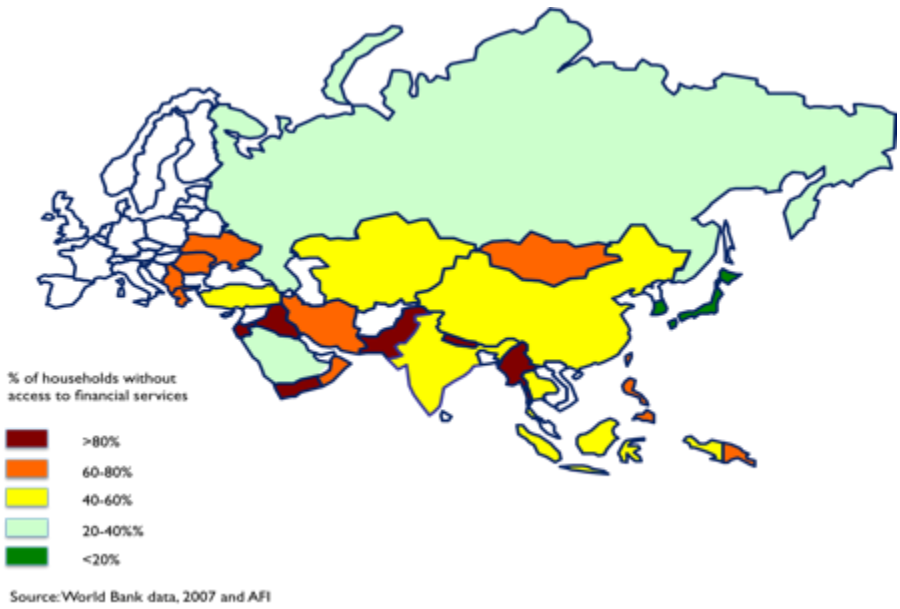
1. Introduction and overview

Almost 5 billion people live in Asia, which is about two-thirds of the world's population. Asia is home to over 800 million people who subsist on less than $1 a day (IFAD, 2011), contributing to about two-thirds of world's poor. The poor are disproportionately concentrated in the rural regions of Asia with over 80% of poor living in villages and peri-urban geographies (ADB). Around 70% of the region's poor depend on agriculture as the primary source of livelihood (FAO) contributing to around a quarter of the gross domestic product (GDP) of Asia (ADB). With the emergence of knowledge and service based economy, agriculture as a sector is loosing its sheen. Developing economies are realising a higher percentage of their GDP from the services and industry sectors. However, with rising prices of food grains and increasing trend of inflation worldwide, there is a renewed interest in agriculture. Governments across the world realize that enhanced focus on agriculture is required to make it an effective means of fighting poverty, as large masses of people in developing economies are dependent on agriculture for subsistence. Growth in agriculture GDP has far reaching impact on incomes of the poor as compared to growth in any other sector[2]. There is an enhanced interest in using integrated value chain approaches for agriculture to enhance its effectiveness and to positively impact the poor. The paper focuses on Asian experiences and examples to explain striking cases of successes and failures. Some of the components from successful initiatives will in all likelihood enrich prospective initiatives in Africa while some of the cases of failures will underline challenges and pitfalls in agriculture value chain finance and will potentially enable stakeholders to avoid those mistakes.

1.1 Financial exclusion in agriculture sector in Asian countries

An estimated 600 million[3] adult people in Asia – nearly one-tenth of the world's adult population and nearly one-sixth of the Asian population – do not have access to quality, affordable, secure, formal financial services such as savings, credit and insurance. Around 90% [4] of the financially excluded population is



[2] WDR 2008 observes, "For the poorest people, GDP growth originating in agriculture is about four times more effective in raising incomes of extremely poor people than GDP growth originating outside the sector."

[3] Boston consulting group estimates, 2007

[4] FAO STAT 2007 data

dependent on agriculture as their primary source of income.

Figure 1 Financial exclusion in Asia

Amartya Sen (2000) convincingly argued that poverty is not merely insufficient income, but rather the absence of wide range of capabilities, including security and ability to participate in economic and political systems. Approximately, 500 million adults, dependent on agriculture, lack access to affordable, quality and full-range of financial services that can be a potent means for them to move out of poverty. Lack of access to mainstream financing translates into high costs for poor producers in agriculture value chains, as they have to depend on higher priced informal financial services to meet their financial needs. Financial exclusion also leads to social exclusion, especially for communities with limited access to financial products, particularly in rural areas.

The causes of financial exclusion in agricultural sector can be broadly summarised as:

Table 1 Causes of financial exclusion

Supply-side (Value chain actors)	Demand-side (financing institutions)
▪ Stagnating productivity, decline in cropping intensity and yield ▪ Fragmented base of producers ▪ Disguised unemployment and low labour productivity ▪ Lack of irrigation potential ▪ Inadequacy of post harvest management practices leading to wastage of commodity ▪ Lack of considerable investment in infrastructure ▪ Inadequate integration of value chain. ▪ Insufficient cash flow information and poor record keeping by producer and poor financial management ▪ Seasonality in businesses leading to suitability of non-standard and irregular repayment schedules ▪ Lack of collateral due to lack of or poor quality of farm assets and non enforceability of security due to lack of land and property rights ▪ Volatility in prices of commodities and poor market opportunities for crops ▪ Inadequate or lack of access to extension, seed, irrigation, fertilizer, etc. ▪ Inability of clients to prepare viable project proposals	▪ No branches or limited network in rural areas ▪ High covariant risk correlation when lending to farms: all borrowers are affected by the same risk, such as low market prices and reduced yield due to weather ▪ Underdeveloped communication and transportation infrastructure ▪ Small size average farm, low population density, higher loan servicing costs due to limited volumes and high information costs ▪ Lack of collateral or adequate security ▪ Lack of technical knowledge at the bank level to evaluate and analyse the creditworthiness ▪ No specialized product offered by the financial intermediaries to better meet the financing need of the agricultural sector ▪ High transaction costs due to wide client dispersion and less developed infrastructure

Source: Langenbucher 2005 and IBA 2011.

The consequences of financial exclusion are far-reaching as lack of access to finance means that the poor deal entirely in cash, are susceptible to irregular cash flows and do not have access to any form of risk mitigation mechanism. For the poor producers, lack of avenues to borrow means recourse to informal sources such as local moneylenders and pawn brokers, which results in the poor being charged exorbitantly high interest rates, limited funds available against security and difficult payments terms. Further, as the poor do

not have avenues to save, in cases of any lifecycle shocks, they are unable to repay the loans and loose on the property pledged to informal lenders. Thus, financial exclusion gives birth to the problem of credit inter-linkage with the few assets that are owned by marginal farmers and is a serious concern among low-income households, especially those in rural areas. Lack of financing in agriculture is a vicious cycle, producers are not able to realise the full potential and hence produce lot lesser than they can, hence the total value creation is less. It impacts those who serve in the input stages as they will sell less seedlings, fertilizers and chemical; the processors as they will have less produce to process; and traders will have less to sell which spirals into the markets and consumption, thus effectively adding to the inflationary trends. The net effect on the overall economy is reduction in GDP. Expanding access to finance to the financially excluded poor, dependent on agriculture, creates employment, causes economic growth, supports poverty reduction efforts and increases social cohesion, thus impacting an increase in GDP and the condition of the overall economy.

1.2 Value chain finance to achieve the goal of financial inclusion in agricultural sector

Agricultural finance is more than just finance; financial services need to be linked or integrated with other services including input supply, post harvest and storage, processing, marketing, research and technology, training and extension, among others. Value chains in agriculture play a vital role as an approach to minimising costs and risks of financing the agriculture sector. Thus, value chain finance is a potent tool for banks and financial institution to design tailor-made financial services needed by the agriculture sector. The benefits of value chain financing approach to expand access to finance to the agriculture sector are, reduced transaction costs; improved product quality and delivery; safer, longer lasting relationships between players; and provision of a general framework to facilitate communication, problem solving, efficiency and improved market competitiveness

Value chain finance offers an opportunity to expand the financing space for agriculture, improve efficiency, ensure repayments, and consolidate value chain linkages among participants in the chain. The specific opportunities that financing can create within and to a value chain are driven by the business model and the relative roles of each participant in the chain. In some Asian countries, wholesalers are typically the drivers of the value chain for rice. In some other countries, it is the millers. Hence, financial institutions adopting an efficient approach find it sensible to lend to wholesalers and milers and through them to downstream players in the value chain.

1.3 Value chain finance approach to enhance export competitiveness

Value chain finance as an approach has tremendous scope of enhancing the export competitiveness for any product. Value chain approach enables players and stakeholders enhance the value within any chain through improvement in its performance by enabling core business strategy development including core competencies, comparative and competitive advantage, outsourcing, vertical and horizontal integration, and utilising best

practices. Value chain approaches help to carry out product and process innovations to enhance value of produce thus benefitting the stakeholders of the chain.

Value chain approach focussed on the net value added instead of just overall revenue and gross physical output, helps identify cost build-up and value accretion, as well as the distribution of burden or benefit in both, which is used to increase the efficiency, reduce costs and enhance competitiveness.

Continual nature of enhancements along the value chain results in improved productivity and profitability, thus, making a firm more competitive. From producers to consumers, an integrated value chain, with reduced risks and increased access to markets and information helps the value chain stakeholders to reduce costs and risks along the production chain and thus maximize the value of any given product, with the least possible cost to the producer, and the most benefit to the poor.

Table 2 Impact of lack of access to finance on the value chain

Lack of credit for the	Impact on the Processsor	Producer	Input provider
Processor	▪Cannot secure sufficient volumes ▪Cannot hold stocks in order to operate most efficiently	▪Delays in milling and processing, resulting in storage costs and potential sales losses	▪Producers cannot create high quality goods, so lack incentives to utilize inputs
Producer	▪Volume shortfalls resulting in running factory inefficiently. ▪Lack of economies of scale ▪Difficulty in obtaining standard grades ▪High cost of capital per production unit ▪Limited capacity to absorb fixed costs associated with processing	▪Suboptimal production mix. ▪Adopts low risk, low yield production pattern. ▪Asymmetric price information causes producers to be price takers at the farm gate. ▪Limited use of inputs lowering yield and quality	▪Reduced demand for inputs by producers
Input provider	▪Volume shortfalls resulting in running factory inefficiently ▪Lack of economies of scale ▪Difficulty in obtaining standard grades ▪High cost of capital	▪Has to buy inputs expensively due to the high costs of inputs, uncertainty regarding sales volume, and high risk associated with selling on credit	▪Provide inputs expensively due to the high costs of inputs ▪Difficulty maintaining adequate stock, uncertainty regarding quantity to be sold.

Lack of credit for the	Processsor	Impact on the Producer	Input provider
	per production unit ▪Limited capacity to absorb fixed costs associated with processing		

Source: Rural Finance Innovations; Topics and Case Studies, 2005, World Bank

2. Types of value chain finance

Value chain finance can be of three types:

- Self-finance value chain finance
- Direct informal "within chain" value chain finance
- Indirect formal financial services "from outside the chain" value chain finance

2.1 Self-finance value chain finance

Self-finance value chain finance is the financing mechanism wherein the farmers/producers finance the production by themselves. Under this financing mechanism, they usually utilise the retained earnings or savings and/or borrow from friends and family to finance the production. In most such mechanisms, the exploitation of producers by intermediaries and other players in the value chain is minimised; however due to limited amount of financing available, the producers' potential to realise full production and value from the production process is also minimised.

2.2 Direct informal "within chain" value chain finance

Direct value chain or within chain finance refers to the financing arrangement whereby actors of the value chain finance the activities of chain. In such a financing mechanism, the input suppliersextend credit support to the producers in kind such as seeds, fertilisers, equipment etc. The producer in turn repays to the input suppliers either in kind (grains, agricultural produce) or in cash (obtained from the sale of the produce) at the time of harvest. In cases, this kind of financing mechanism can be of intricately complex in nature where the aggregators and processors extend credit support to the input suppliers who further extends credit support to the producers. The direct value chain finance consist of short term loans to ensure a smooth flow of products and to keep the activities going and the value chain functioning. This arrangement largely rests on the trust between the input suppliers and the producers. More

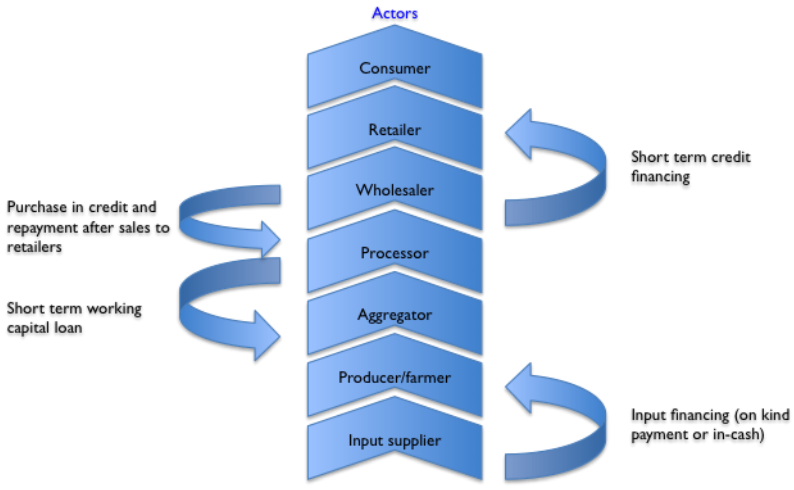


Figure 2 Illustration of direct informal "within chain" finance

actors from amongst the value chain may become a part of the financing mechanism depending on the market conditions and their ability to extend finance as also their risk taking capacity. In such a financing arrangement, the actors of the value chain are involved in financing players / activities in the chain, and hence it is called “within chain” finance. As most of the financing can be of an informal nature, such a mechanism is also refered to as ‘informal value chain finance’.

Table 3 Pros and cons of within chain finance

Pros	Cons
▪Low costs to the producer as lenders charge nominal interst on the borrowings ▪Low risk as parties trust each other ▪Tailor made financing based on producers' requirements ▪Improved chain efficiency as the producer gets a guaranteed buyer (in cases where the loan repayment happens in kind) ▪Alternative financing mechanism for producers lacking access to formal credit ▪Expanding product sales through better yields via improved inputs	▪Producers have obligation to sell the produce as soon as the harvesting is done to repay to the input suppliers. Usually just at the time of harvesting, the prices are low due to high supply levels and thus producers realise lesser value. ▪Producers are not extended the benefits of cash discount for purchase of inputs ▪Producers run the risk of dependency on the lenders ▪No access to long-term loans for investment and equipment financing ▪Lack of transparency in the arrangement.

2.3 Indirect formal financial services "from outside the chain" value chain finance

Indirect formal financial services "from outside the chain" is a financing arrangement whereby financial institutions, non-actors in value chain, finance the chain. The financial institutions become supporters of the chain in one-to-one relationships with players in the chain. As different levels in the value chain require varying scales of financial services, the nature / type of financial institutions involved in the chain also varies with the level of the chain. In such a financing arrangement, as external formal financial institutions are involved in financing the value chain, it is called "oustide the chain" finance or formal finance. The indirect finance may take various forms such as loans, savings, insurance and/or remittances. This mechanism usually is a longer-term financing mechanism as compared to direct finance and it generally involves larger amounts of money.

The key benefits of such a mechanism is that the financing is transparent in nature and risks of exploitation are considerably less. However, there are limitations in this mode of finance such as: high transaction costs, lack of information of creditworthiness of different players, lack of flexibility in designing tailor made solutions and inadequacy of formal finance.

Indirect value chain finance is a response of formal financial institutions to the limitations of financing within the chain, which offers limited opportunity of capital

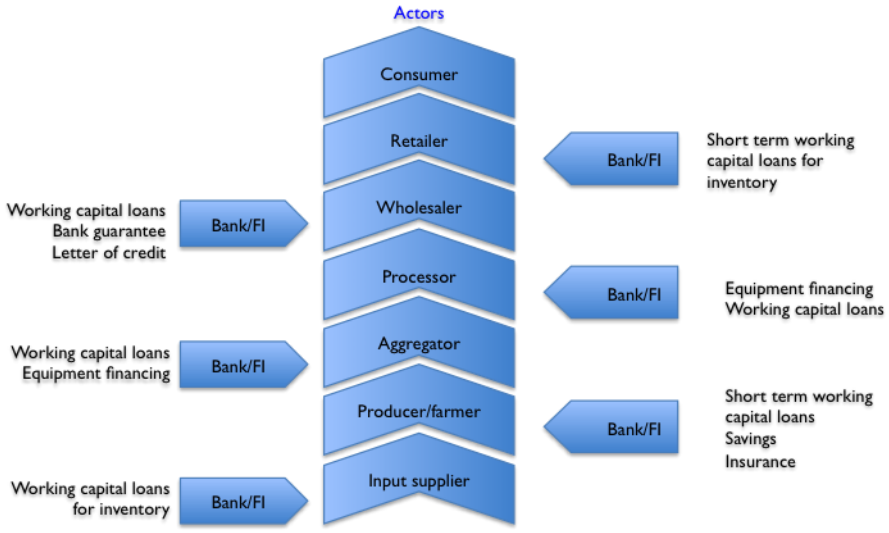


Figure 3 Illustration of indirect formal "outside the chain" finance

infusion to allow the chain to grow and expand. Further, as the informal financing is mostly short-term, seasonal, cyclical and focussed, the churn of capital is lower as compared to formal finance and hence does not allows the value chain players to fully realise the potential. Lack of long-term loans limit the producers, processors and other actors in the chain to build assets. Thus, formal value chain finance offers the players access to external financing whether from banks or from non-bank financial institutions to expand and strengthen the chain by freeing up resources. Formal financing may happen at any level or stage of the value chain such as production, aggregation, processing and distribution.

In the Asian context, most of the financing by banks and financial institutions happens at the upstream level of the value chain wherein the financial institutions advance loans to the chain leaders such as processors and wholesalers who in turn bring in liquidity in the chain. However, off late due to government and donor interventions, innovative financing mechanisms have been developed to cater to the needs of the producers as well.

Table 4 Pros and cons of outside the chain finance

Pros	Cons
▪Medium to long term financing for inputs, supplies, investment and equipment financing ▪Tailor made repayment schedules to suit the needs of producers and other value chain actors ▪Transparent mechanism as financial institution/bank keep transactions on record ▪Market-based structure results in less monopolistic or predatory relationships ▪More efficient due to unbundled services ▪Access to greater range of services - (including savings, transfers and investment credit)	▪High cost of lending to the producers ▪Time consuming as banks/financial institutions carry out their due-diligence ▪Requires collateral to stand as security of the loan ▪Financiers have less access to information about value chain (information asymmetries) ▪Less ability of financiers to enforce credit contracts *(through loan agreements)*

2.4 Comparative analysis of direct and indirect value chain finance

Table 5 Direct versus indirect value chain finance

Type of value chain finance	Role	Pros	Cons
Direct	Borrower	▪Alternative for producers without access to formal credit due to lack of collateral ▪Repayment schedule can be adjusted to the agricultural cycle. ▪Relatively low nominal interest rate (if at all existing) ▪Provides access of farmers to value chains with secure market channels ▪Expanding product sales through better yields via improved inputs.	▪Limited to short-term working capital. No access to long-term loans for investment. ▪Can prevent commercialization of producers (e.g. establishing processing cooperative). ▪Limitation of choices for selling of produce. ▪Lender obtains access to producer's credit history. ▪Full cost (incl. transaction costs and impact of lower sales price) is unclear and may be higher than external credit

Type of value chain finance	Role	Pros	Cons
		▪Access to technical services, seeds, inputs and supplies ▪Secured product prices	▪Monopolistic/unfair pricing for the produce ▪Large producer bias
	Financier	▪Cost effective screening of creditworthiness ▪Helps ensuring required supply of raw materials for profitable operation ▪Reduced repayment risk as proceeds from sales are channelled through the processor and may be retained there	▪Cannot expand beyond the liquidity of the financier (which is often limited) ▪Lending may be sub-optimal use of scarce capital and distract from investments ▪Lending may distract from the core business ▪Risk of side selling of produce by producers to third parties instead of honouring the purchasing agreement
Indirect	Borrower	▪Freedom to choose source of inputs. ▪Also available for longer-term investment capital. ▪Can complement commercialization option of producers (e.g. establishing processing cooperative)	▪Higher nominal rate of interest compared to trader credit. ▪Loan product may not match production time frame. ▪Does not comprise access to inputs and tech- nical assistance. ▪Need to provide collateral. ▪Need to invest savings to obtain access to credit
	Financier	▪Diversification of lending from saturated markets ▪Cross selling various products such as insurance and savings	▪Credit may be diverted to activities unrelated to the value chain ▪High transaction costs of multiple small loans ▪Need to evaluate and obtain collateral ▪Producers may not be using inputs properly

Source: Business Models for Value Chain Finance through Cooperatives, Roshan Shrestha and Carl E. Krug

2.5 Financing mechanisms and instruments

2.5.1 Aggregator Credit

Aggregator credit is a direct informal financing mechanism where the aggregator finances the production activity by advancing a loan to the producer that is repaid after harvest, in kind. Under this arrangement, the aggregator secures product procurement by financing the production. This is beneficial to the producers as well as they get readily accessible finance for production and have a guaranteed buyer for the agricultural produce. Usually such a financing mechanism is for a short-term and is seasonal in nature. In more complex mechanisms, such as *Mentha Arvensis* farming in Uttar Pradesh in India, the processors have access to formal finance (being a large scale enterprise). These processors finance the aggregators with short-term working capital loans to secure a pipeline for raw material

procurement. In such cases, the processors play a dominant role by infusing short-term capital as seasonal credit relationships and ultimate demand for product flow generates from them. The aggregators manage the risks associated with this kind of financing arrangement by tweaking the prices paid to the producer. As the producers are under obligation to pay, to a large extent the prices paid are lesser than the market rates. Although this model is exploitative to the producers, they agree to go with the aggregators due to the long-standing relationships with aggregators and an assurance of further advances for the next crop or production cycle. As aggregators are familiar with the producers, credit assessment is easy for the aggregators. Aggregators have greater understanding of the risks involved, awareness of business environment and market conditions to mitigate the risks of lending to the producers.

The benefits of such an arrangement is easy, flexible and timely access to credit by the borrowers, assured buyers for the produce, low requirement to borrow and efficient processing of loans. To the producers, however the disadvantages are costs associated with borrowing, lower bargaining power in determining the sale price and short term, seasonal nature of loans.

2.5.2. Input Supplier Credit

This kind of direct informal financing mechanism rests on the trust equation between the input supplier and the producers. Under this mechanism, input suppliers advance agricultural inputs such as seed, chemicals and equipment to producers and agree to be repaid at harvest or any mutually decided point in time either in kind (agricultural produce) or in cash (generated from the sales of produce). Towards the cost associated with such short-term loans, the input suppliers do not offer cash discounts to the producers on purchase of inputs. The benefits and disadvantages of such an arrangement are similar to the aggregator credit model discussed above.

Similar to the models discussed above, there are two other models wherein other value chain players finance the producers. These models are: marketing company credit and lead firm financing. In ***marketing company credit*** financing arrangement, a marketing company, processor or other company provides credit in cash or in kind to farmers, aggregators or other value chain enterprises. The mode of repayment is most often in kind. Upstream buyers are able to procure the produce and lock in purchase prices and in exchange, producers and others in the value chain receive access to credit and supplies and secure a market for selling their products.

In ***lead firm financing*** arrangement, a lead firm either provides direct finance to value chain enterprises including producers, 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.

Lead firm financing model is also known as contract farming. These services differ from aggregator, input supplier and marketing company credit wherein the farmer produces crop or raw material under a buyback agreement and all requirements at the production stage are financed by the lead firm. Apart from inputs and working capital, the lead firm financing extends to other domains of the production cycle such as extension services, high quality crop seeds, technology transfer, training and supervision of production. Lead firm plays a more central role in the production cycle and has a strong grip on production. This is usually done as the lead firm is concerned about the relaible supply of good quality raw material.

An example of such a mechanism from India is the case of Potato farming for Pepsico. Pepsico's subsidiary manufactures and sells Lays', a multi-million dollar potato chips brand. Thousands of farmers from Bihar and West Bengal states of India are under a contract farming arrangement with Pepsico to supply high quality potatoes for chips manufacturing. Pepsico supports these farmers through seeds, technology, chemicals, enhancing awareness for good quality production and process supervision.

In India, the National Agricultural Policy envisages that private sector participation will be promoted through contract farming and through land leasing arrangements, which will in-turn allow accelerated technology transfer, capital inflow and assured market for crops, particularly for cotton, oil seeds, sugarcane, milk, poultry, fruits and vegetable processing. Large scale organic farming to raise the share of the nation in the global markets is also one of the methodologies for increasing share in global markets.

In view of the importance given for food and agro processing industries, a lot of corporates are going for contract farming to source the raw material from farmers. Though contract farming is practised on a large scale, it is still to be legalised. Government is mulling the creation of proper legal and institutional framework so that corporates who are undertaking contract farming are able to enter into agreements and source, required finance from the banks and financial institutions. This will also to a great extent neutralize the deficiencies of fragmented holdings and ensure fair returns to small and marginal/tenant farmers.

Some more examples of region and crop specific models of contract farming from India are - Tomato cultivation in Punjab, Haryana and Rajasthan; Mushroom in Haryana; Sunflower in Andhra Pradesh and Karnataka; Gherkins in Karnataka; and Fruits and vegetables in Tamil Nadu, Andhra Pradesh and Maharashtra.

2.5.3 Warehouse Receipts Financing

This is an innovative mechanism of direct informal finance whereby producers or other value chain enterprises in possession of produce may safekeep their produce at a certified warehouse. This certificate acts as collateral to access a loan from third party financial institutions. The credit risk mitigant in such a financing arrangement is the marketable produce stored at an independent warehouse where the lender has a charge till the loan is fully repaid.

Warehouse receipts financing is a highly sophisticated financing mechanism as compared to the aggregator credit, input supplier or lead firm financing models as the warehouse where the commodities are stored are neutral, independent and third party entity in the arrangement. The warehouse assure producers and lenders of security, safe storage and reliability of commodity on which the lender places a lien so that it cannot be sold without the proceeds first being used to repay the outstanding loan. Producers are assured of the ownership of the commodity unless they default on the loan and can use the mechanism to sell to buyers offering better prices by transferring the receipt to the buyer, repaying the loans; subsequently the buyer can take delivery of the commodity at the warehouse. Taxes, storage fees, loan principal and interest are deducted before delivery is made by the warehouse. Warehouses are also insured to protect depositors and lenders against losses due to disasters or criminal activity. Warehouses may purchase insurance policies or build up an indemnity fund to cover the cost of such losses.

The benefits of such a mechanism to the producer is the ability to increase both yields and average prices for the produce; access reliable, safe and quality storage thus reducing post harvest losses (due to spoilage and pest infestation); and sell their produce some time after the harvesting season (during which prices are lower due to abundant supply) and get a higher price. The key disadvantage of such a model is the reliability of warehouse certification.

In 2008, ICICI Bank in India suffered huge losses due to connivance between warehouses and producers. In this case, warehouses issued receipts to the producers on poor quality commodity placed in the warehouses, which were used to borrow money from the bank. However, once the producers defaulted and the bank possessed the commodities, it found that the commodities were not even one-tenth of the market value as certified by the warehouses.

2.6 Comparisons of features of prevalent financing mechanisms

Table 6 Prevalent value chain finance models from Asia

Attribute	Aggregator financing	Input supplier financing	Marketing company financing	Lead firm financing	Warehouse receipt financing
Actors involved	Producer (borrower) Aggregator (lender)	Producer (borrower) Input supplier (lender)	Producer (borrower) Marketing company (lender)	Producer (borrower) Lead firm (lender, aggregator and processor) Value chain supporters such as technology service, extension services providers	Producer (borrower) Bank, formal financial institution or informal lender (lender) Warehouses (storage and receipt issuance)
Financing mechanism	Advances against purchase of produce	Advances in form of input supplies against purchase of produce or cash repayment	Advances against purchase of produce	Advances, input supplies and services against buy-back agreement for produce	Post harvest loans against stored commodities in a certified warehouse
Inter-relationship	Trust based	Trust based	Formal contracting	Buy back agreement contracting	Warehouse receipts based
Risk mitigation	Loan to the producers against aggregator's perception of market, production capacity and risk appetite	Advances by input suppliers based on long standing relationships with the producers	Credit risk mitigated by formal contracting and purchase agreements	Buy back agreement in force Regular monitoring and supervision of production processes	Loans backed by commodities stored in a third party, independent warehouse that certifies the market value
Costs associated	Lower purchase prices than the market	No discounts on purchases. At times a nominal interest charged.	Pre-fixed purchase prices for the produce	Pre-fixed purchase prices for the produce	Costs for warehouse storage added to the lending costs
Benefits	Easy, tailor made financing Assured buyers for the produce	In kind loan hence loan misutilisation is checked	Assured buyers for the produce	Value added services	Increased yield due to storage facilities Reduced post harvest losses Price benefits
Disadvantages	Seasonal, short term loans Limited bargaining power of producers	Limited financing availability Does not meets other needs of the producers such as lifecycle	Limited bargaining power of producers	Limited bargaining power of producers Small producers not suitable for such arrangements	Poor implementation and connivance of warehouses with producers to certify low quality commodities

Attribute	Aggregator financing	Input supplier financing	Marketing company financing	Lead firm financing	Warehouse receipt financing
		Less opportunities to enjoy price benefits			

2.7. Structured finance

Based on the objectives, there are five classes of structured finance namely, regular finance, recievable finance, physical assets collateralisation risk mitigation products and financial enhancements. Under each classes, the mechanisms and instruments are:

Table 7 Structured finance instruments

Class	Products
Regular finance	Term loans Farmers' finance cards Overdraft Credit line Equipment, assets and vehicle finance
Recievables finance	Trade recievables finance Factoring
Physical assets collateralisation	Repurchase agreements (Repos) Financial leasing (lease-purchase)
Risk mitigation products	Forward contracts Futures
Financial enhancements	Securitisation Credit guarantee

2.8 Regular finance

In the Asian context, regular finance is the most widely used mechanism to finance agricultural value chains.

Term loan

Most agricultural finance is done using the instrument named as term loan. Term loans for agricultural finance are of short or long term duration wherein the banks and financial institutions allow the borrower to repay regularly or in bullet/baloon payments.

Farmers' finance cards

Farmers' finance card is a financial product similar to a credit card to facilitate short term credit accesss to the farmers/producers from financial institutions. This financial product helps the farmers to finance the input and production cycle needs such as seeds, fertilizers pesticides and also withdraw some cash to meet their production related requirements.

Overdraft

An overdraft is a type of account where the accountholder is allowed to withdraw even after his account balance reaches zero. Banks often offer this account to producers to help them in managing their operating expenses. The limit of the overdraft is predefined by the bank. The borrower is charged interest only on the overdrawn amount. An overdraft account offers a very convenient option for managing liquidity requirements for running a business.

Credit line

Credit line is a financial instrument offered by banks, which essentially provides the borrower with an entitlement to avail the required amount of credit at his/her convenience

within a predefined credit limit. The borrower pays interest only for the amount actually withdrawn during the time period. This product provides very high flexibility to the borrower in managing his routine operational expenses. Credit lines can be both secured and unsecured depending on the bank's policy and borrower's credit worthiness.

Equipment, assets and vehicle finance

Under this instrument a business entity can pledge its balance sheet assets (Equipment, property, receivables, inventory etc.) to avail quick loan from a financial institution. This is a very convenient method for fulfilment of any short term liquidity requirements of a company. The assets work as a security for the lending organisation. Further, under similar arrangements, the borrower purchases an asset financed by the bank which the bank owns as a security till the loan in repaid completely.

3. Comparative analysis of financing instruments

Table 8 Comparison of all financing instruments

Mode	Sources	Facilitators	Security/ Collateral	Mechanics	Implications
Self-financed through savings	Producer	None	Not applicable	Producers use retained earnings and savings to finance the production cycle	Savings are by far the cheapest option to finance the production cycle. However it limits the potential of the producer. Hence, financial institutions intermediation through savings-backed loans and savings-history based loans might work the best.
Direct finance - Aggregator (or) Input supplier (or) Marketing company credit	Aggregator (or) Input supplier (or) Marketing company	Aggregator (or) Input supplier (or) Marketing company	Trust on the producer(s)	The upstream actors of the value chain finance the production cycle and received repayment in kind or cash from the producers on harvest	This kind of informal arrangement exists within the value chains. Although these mechanisms provide easy, tailor made and flexible financing to the producers, these are usually short-term, seasonal loans. However, as the relationship rests on trust between lender and borrower, usually this limits the producers to realise the full potential of the value chain by the producers. There is high probability that such arrangements are exploitative to the producers. This financing arrangement can be at the starting point for any primary level capital infusion in any value chain however it runs the risk of limited expansion constrained by the intermediaries' liquidity. Also, as the intermediaries' core function is not financing, the lending may be sub-optimal and it may distract the intermediary from the core business.
Direct finance - Lead firm financing	Lead firm	Lead firm	Contract and buy-back agreement	Lead firm finances the inputs, technology and services in return of guaranteed supply of raw material	Lead firm financing or contract farming provides a win-win opportunity to the producer and the lead firm. While the lead firm assures regular supply of raw material, the producers save the hassle of arranging for input, services and technology. However, mutually beneficial this arrangement is, in

Mode	Sources	Facilitators	Security/ Collateral	Mechanics	Implications
					practical situations it is mostly restricted to high-value crops and to large-farm holdings producers. These issues can be countered by aggregating producers under a producers' company or a cooperative who can collectively produce high-value crops and may contract with lead firm as a single entity.
Direct finance – Warehouse receipts financing	Value chain actors (or) financial institutions	Warehouse	Warehouse receipts (collateral)	Formal or informal lenders finance the producers in lieu of the commodities stored and certified by an independent warehouses	Warehouse financing is a post harvest financing mechanism where in the producers benefit from price rise after a significant amount of time has passed since the harvesting. However, there are concerns around acceptability of warehouse receipts as collateral, high costs of investment and running without guarantee of utilization of the warehouse as well as higher costs through observance of legal obligations. Also, this kind of financing arrangement is difficult to access by small-scale producers due to high costs of warehouses and high minimum volume for storage. Under this arrangement, there is no provision of technical assistance as compared to lead firm financing. This kind of arrangement can be implemented through strengthening linkages between buyers and producers through formation of cooperatives or producers' company and enabling smallholder farmer cooperatives to produce high value crops as well as promoting financial institutions in designing complex financial transactions such as loans based on warehouse receipts.
Indirect finance – term loans	Financial institutions and banks	Not applicable	Secured using hard collateral	A traditional form of lending where the producer pledges	Land tenure and property rights constrain access to finance to producers under this mode of financing. Lack of accurate credit history of the producers'

Mode	Sources	Facilitators	Security/ Collateral	Mechanics	Implications
				property in lieu of a term loan	forces banks and financial institutions to rely on collateral based lending.
Indirect finance – farmers' finance card	Financial institutions and banks	Not applicable	No collateral, welfare mechanics	Pre-approved credit for inputs, production costs etc.	Farmers' finance card brings in a lot of benefits to the producers such as flexibility of borrowing, longer term (3 to 5 years as compared to a one-year term loan), insurance for crops etc. thus enhancing the export competitiveness of the produce. However, banks and FIs have faced high (up to 60%) default rates in such financing mechanisms.
Indirect finance – Overdraft	Financial institutions and banks	Not applicable	May be applicable	Individuals can withdraw up to a certain level of fund to manage the working capital. Pre-approved fund limits allow them greater flexibility	Overdraft is a complicated financing arrangement for the producers as the banks undergo an intense credit assessment procedure, which takes time. It is more suitable for upstream actors such as aggregators and processors
Indirect finance – credit line	Financial institutions and banks	Not applicable	May be applicable	Individuals are offered a line of credit and they can borrow cash as needed within the credit line	Line of credit supports short-term working capital loan and hence is not suitable entirely to the producers, however for upstream actors such as aggregators, processors, wholesalers, and such a product helps meet the cash needs.
Indirect finance – Equipment, assets and vehicle finance	Financial institutions and banks	Not applicable	Secured by asset purchased	Borrowers purchase an asset financed by the bank and the asset is secured as lien till the loan is repaid completely	Banks and FIs base the decision to finance the assets on the credit worthiness of the borrower and hence such a financing arrangement is suitable only to the upstream actors of the value chain such as aggregators, processors etc.

Source: Agricultural value chain finance strategy and design, Calvin Miller

4. Overview of main sources and systems for AVCF in Asia[5]

Summary of sources and systems for financing in Asia

Table 9 summary analyses of main sources and systems for financing in Asia

Value chain element		Sources of financing (← increasing degree of formalisation)						
		Banks	Cooperatives	MFIs	Value chain actors	Informal financiers	Family and friend	Self financed
Producers	Input Supplier							
	Small and marginal producers							
	Large farm owners							
	Agricultural enterprises							
Agents/Aggregators								
Processors								
Wholesalers								
Retailers								
Exporters								

Legend

	Never used		Rarely used		Some times used		Frequently used		Mostly used

4.1 Examples of indirect finance and within chain support systems

Creating win-win situations for producers and corporate in the Philippines[6]

The Strategic Corporate-Community Partnership for Local Development Program (SCOPE) is a value chain financing approach in the Philippines jointly implemented by the Philippine Business For Social Progress (PBSP) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. SCOPE supports Philippine-based companies to engage communities and marginalized groups in income-generating activities that are related to the companies' core businesses. SCOPE facilitated linkages between coffee farmers and the

[5] Sources include APRACA FinPower Publication: 2008/1: Financial Access and Inclusion in the Agricultural Value Chain; Conference proceedings Southeast Asian Regional Conference on Agricultural Value Chain Financing; Mercy Corps report on value chain financing in Nepal

[6] http://www.pbsp.org.ph/index.php?option=com_content&view=category&layout=blog&id=60&Itemid=155

Figaro Coffee Company in Luzon and the Visayas regions of the Philippines. The company provided technical support to the farmers to grow organic coffee and supported them in certification of their produce. The company benefitted by securing sustainable supply of organic coffee and the farmers benefitted from increased income as well as learnt the application of sustainable agricultural practices.

In another instance, seaweed-processing company MCPI supported the development of seaweed farming communities to increase quality and volume of their produce to become reliable suppliers to the company. MCPI benefitted from sustained supply of seaweed and ensured that the produce meets internal quality and volume requirements. Farmer benefitted from the training in new seaweed farming technologies, steady income through a reliable market for their produce and ensured pick-up of even small volumes by MCPI.

Aggregator credit, Dadani system in Nepal

Dadani system is a very prevalent method used by cultivators in Nepal to access credit. In this system cultivators obtain credit from their traders or merchants under a commitment of selling their harvest to the lender at a predetermined rate. The traders often exploit the farmers by fixing rates, which are much lower than the market prices. The farmers agree to these conditions, as there is dearth of institutional credit facilities in Nepal. Farmers often use this credit for consumption purposes and the loan amount is not invested in improving the production. This practice results in farmers getting trapped in a continuous debt cycle.

Fair trade for Thai rice farmers

Green Net along with Progressive Farmers association of Thailand (PFA) and Swiss based Fair trade organisation (FTO) started a Fair trade value chain project for the benefit of small-scale rice cultivators. The objective was to provide small-scale farmers with a bigger pie of the total value generated by the entire value chain of rice. The support starts with PFA providing low interest loans to small farmers for the purchase of fertilizers, agri inputs and also buffaloes. Green Net promotes sustainable agricultural practices and fair trade marketing services to small farmers. The rice produced by farmers under the project is exported to a number of countries in Europe and USA as a fair trade product. This project has benefitted around 3,500 small-scale farmers.

Lead firm financing of Potatoes: A case of PepsiCo in W. Bengal (India)

Potato is amongst the most important cash crops in the state of West Bengal in India. The state produces a third of the total potatoes produced in India. A vast majority of the farming population in West Bengal depends on potatoes for their subsistence. In recent past these potato farmers have faced problems due to bumper production of potatoes, along with heavy competition from states like U.P. This had resulted in a fall in the prices of potatoes from 2009 to 2011, which made it difficult for the cultivators to recover even their production cost. The situation had resulted in a trend with farmers opting for contract farming (with PepsiCo) to reduce the price risk. These farmers also included many who had earlier refused to enter into contract farming with PepsiCo. According to data from 'West Bengal Cold Storage Association' the area under contract farming for PepsiCo had increased by

over two-and-a-half times and the number of farmers had increased by over 50% from 2009 to 2012.

Under the contact farming agreement PepsiCo supports farmers by providing them with high quality seeds, technical support, crop insurance, supervision and loans. In return PepsiCo procures the produce once it is harvested at pre-decided rates (subject to the produce meeting the minimum quality standards of PepsiCo). This helps the farmers to warrant a minimum return for their produce and also saves them the trouble of arranging finance, transport and warehousing for their produce. PepsiCo on the other hand gets an assured supply of high quality raw materials at a reasonable price. Eyeing the success of PepsiCo other companies like “Gee Pee Foods” (the makers of Pogo brand of chips and flakes) have also entered into contract farming in West Bengal.
(Sources: Times of India and Economic Times analysis)

Self-finance, cooperative model of agriculture financing from Nepal

Nepal has seen development of a very innovative mechanism of value chain financing in agriculture. This mechanism is based on a cooperative model of agriculture financing through formation of Savings and Credit Cooperatives (SSCs). These SSCs are funded by the savings from the members and are managed by the farmers themselves. These SSCs provide credit to their members for procurements of agriculture inputs, marketing and sales. Most of the SSCs operating in Nepal have been quite profitable in their operations. This has been achieved by strict control on administrative costs and access to low cost and sustained savings from members.

After restoration of democracy in the state, the cooperative movement has received a boost. The democratic government has passed the Cooperatives Act, 1992 which has provided legal status to cooperatives in the country along with establishing a three-tiered cooperative system with Nepal Federation of Savings and Credit Cooperative Unions Ltd. (NEFSCUN) as the apex body.

Direct financing to institutional value chain financing in Lao PDR for rice

Rice production in Lao provides a very interesting case where primary producers have benefitted from direct value chain financing in a market with underdeveloped institutional credit financing for agriculture. This case shows how primary producers can graduate from receiving no credit to direct credit and later to institutional credit.

In Lao, contract farming has gained popularity since the enactment of modern economic mechanism in 1986. Under contract farming, agriculture-based companies could sign a contract with the primary producers to ensure supply of raw material. This contract required companies to help farmer with in-kind credit (inputs like quality seeds and fertilizers) and technical assistance. In return, farmers were required to sell their produce to the company at a predefined rate, which was generally at a premium over market rates. Interestingly, a study conducted by FAO suggests that farmers who had cultivated land under contract farming in Lao were able to access more institutional credit than farmers without a history of

contract farming. The likely reason that explains this trend is the change of farming practices to contract farmers from subsistence farming practices and later to commercial farming practices, which are more capital intensive.

Example of Value chain upgradation in Lao PDR: Coffee

Coffee from Lao usually has a high demand in western countries especially Europe. In Lao, mostly small producers grow coffee in the Boleven plateau. Before liberalization the supply chain of coffee in the country consisted of numerous middlemen at different levels. Producers used to sell their yield to pick up agents and to receive cash payments. These pickup agents collected coffee on behalf of local collectors who aggregate the beans and sell it to wholesalers. Wholesalers used to get their inventory certified for quality by the Ministry of Commerce and then get into agreements with exporters for its sales. Most of the export used to occur through middlemen in Thailand taking away a lot of value generated in the value chain. In this scenario, the primary producers were the worst sufferers as they received lowest portion of the total value generated in the value chain.

This scenario has changed drastically in 2007 when the government introduced a number of reforms in the sector. These included: development of large scale farms and processing units owned by the government, allowing involvement of private players and opening of new coffee growing areas and establishment of direct trade linkages with the European markets. These developments have completely changed the value chain for coffee in Lao. Now the ownership of the coffee from harvest to final export remains under one firm thus reducing the number of players within the value chain. This allows these firms to share a larger portion of value created with the primary producers.

4.2 Examples of direct finance and outside the chain support systems

MFI warehouse receipt financing from Philippines

In the Philippines, TSKI, a local MFI has developed FIDA, a program intervention to address the situation of the poorest of the poor, which are the marginalised rural farmers, with a farm lot of 0.5 to 2 hectares, who do not have access to formal financial services and farm facilities. TSKI has introduced a warehouse receipt financing mechanism known as the Quedan system. In such a mechanism, TSKI offers a loan of up to 80% of the market value of the produce stored at a certified warehouse.

(Source: Author's experience with TSKI)

India's experience with Kisan Credit Card

The Government of India introduced Kisan Credit Card scheme to be implemented by banks during 1998-99. The scheme was designed by the National Bank for Agriculture and Rural Development. The credit card aims at adequate and timely support from the banking system to the farmers for their short-term production credit needs in cultivation of crops, purchase of inputs in a flexible and cost effective manner.

Under this scheme, the farmers are issued a credit card-cum passbook incorporating the name, address, particulars of land holding, borrowing limit, validity period and it serves both as an identity card as well as facilitates the financial transactions. The card is usually valid up to 3 years and subject to annual review.
(Source: KCC Review Study)

Agriculture credit guarantee scheme for small and marginal farmers in India[7]
Government of India is mulling the development of a credit guarantee scheme for small and marginal farmers in India as the banks and formal financial institutions are wary of lending to this class of farmers. Usually, such farmers have small, fragmented landholdings and lack access to collateral to cover for the loans from financial institutions. It is estimated that about 40% of the farming community in the country fall into the category of 'Tenant' farmers, Sharecroppers and agricultural labourers - the group owns very small and uneconomical land holdings, often without proper records and accesses credit from non-institutional sources. Lack of formal financing forces them into the clutches of informal lenders and within chain finance actors. Thus, Government aims to establish a credit guarantee fund so that formal financial institutions and banks can extend advances to small and marginal farmers. The scheme mirrors the Credit Guarantee Fund Trust for Micro and Small Enterprises and is being envisioned to replicate the success of a guarantee fund for MSMEs in India.

Under the scheme, guarantee will be for an amount of up to 75 per cent of the principal of credit extended to the borrower. Other charges such as interest, commitment charges, service charge or any other levies, expenses debited to the loan account shall not qualify for the guarantee cover. Guarantee only to the extent of 75 per cent will be provided to ensure that banks remain interested in the healthy performance of the borrower and in the recovery of the loan.

Agriculture value chain financing in The Philippines: Problems and innovative solutions
Agricultural sector in Philippines (especially small and marginal farmers) are highly dependent on informal sources for their credit requirements. Even after government's attempt like subsidising credit for agriculture and fixing minimum agriculture lending quota (for banks), the availability of institutional credit to small and marginal farmers did not improve. The main reasons for this problem were: the discomfort of banks in issuing credit to borrowers with insufficient collateral and the higher transaction costs involved with smaller loans. This resulted in a major chunk of bank's credit quota earmarked for agriculture benefitting large farmers whereas the small and marginal farmers remained neglected. For small and marginal farmers the situation became worse due to shortage of credit supply in the informal market against an increasing demand for credit. In the

[7] http://rbi.org.in/scripts/PublicationReportDetails.aspx?UrlPage=&ID=659#F16

Philippines, a majority of the informal lenders are traders and millers who avail their funds from banks and then lend to small borrowers. This restricts their funding capability to the amount of loan sanctioned to them by the banks.

To overcome these challenge in provision of institutional credit 'One National Bank' started a programme called the 'One rice programme' for rice cultivators. Under this programme, credit facility was clubbed with technical assistance and marketing linkage facilities to reduce credit risk. This methodology gave the bank more confidence in lending to small borrowers. This programme has helped the rice farmers improve the quality and quantity of their produce and 'One National Bank' in developing a healthy loan portfolio in agriculture.

Another innovative approach to deliver institutional credit to small farmers has been used by 'The Quedan and Rural Credit Guarantee Corporation' (Quedancor) in its 'Tomato financing programme'. In this programme, Quedancor finances the tomato producers under an agreement, which directs them to sell a part of their produce to National Food Corporation (NFC). Quendancor also offers financial assistance to NFC for purchasing the produce from tomato farmers. This arrangement provides better repayments as farmers have an assured market to sell their yield and generate returns. It is also easier for the cooperative to lend to larger institutional player like NFC.

Lank Bank Philippines - Walking the thin line

The 'Land Bank' is a government owned entity in The Philippines that was created with a dual objective of achieving both the social and financial ends. Ever since its inception in 1963, it has remained successful in achieving this dual objective. In fact the consistent performance of Land Bank makes it very unique, as most other banks, which were created with similar mandates around the world, have not been successful in remaining commercially viable. This makes Land Bank an interesting case to study the factors that made it a success where others have failed.

The main reason behind the success of Land Bank is its unique financing model and disciplined approach. The most important features of its lending model involves diversification of its loan portfolio (within the agricultural sector) to include different types of borrowers like farmers, fisher folk, SMEs, livelihood projects, and different agribusiness projects. This helps the bank in distributing its risk across the sector. Another important feature of its unique lending model involves mandatory requirement of borrowers to have 'Production, Technical and Marketing agreement' (PTMA) with an anchor firm. Being a government owned bank it is also able to mobilise deposits both from government units and small depositors providing it with good financial strength. Other features of the model include mandating crop insurance for its borrowers to minimize possibilities of credit defaults and use of wholesale lending through conduits (includes cooperatives, rural banks and agri based enterprises) to reduce operational expenses.

(Source: Rural Finance Learning Centre)

Regular institutional credit (Case of a partially failed institution), Experimentation with Institutional credit in Nepal: Case of ADBL

Agricultural Development Bank Limited (ADBL) is a government owned entity, which was formed in 1968 to work as a frontline institution in providing rural credit in Nepal. In 1984 it also entered into commercial banking activities. ADBL used to contribute around two third of the total credit supply in the country. It had also been involved in a major poverty reduction programme (Small Farmer Development Programme or SFDP) of Nepal. Despite being such a large institution it went into trouble in year 2006 when due to a sharp increase in its non performing portfolio under SFDP, which raised questions on its financial health. During that period ADBL also fell short of its targets in the field of agriculture financing. These conditions forced the authorities to limit the outreach activities of ADBL in their effort to restore the organisation. Despite these limitations and spotty financial performance ADBL is still the largest bank of Nepal in terms of total branch coverage.

Institutional value chain financing in Vietnam

In Vietnam, formal financial institutions play a major role in providing value chain finance to agriculture. The five largest banks of Vietnam collectively hold around three fourth of the total market share in terms of institutional credit. The 'Vietnam Bank for Agriculture and Rural Development' (VBARD) is the leading bank in the country and is also the pioneer in financing agriculture value chains. VBARD provides institutional credit to players at different levels in the value chain, ranging from primary producer to large millers.

For financing primary producers, VBARD used multiple channels to reduce credit risk and transaction costs. In case of farmers and entrepreneurs who are able to provide sufficient collateral VBARD offers direct individual loans. For small size loans VBARD uses 'Joint liability group' method to reduce transaction cost and minimise credit risk for unsecured lending. VBARD also uses services from mass organisations to target borrowers without any collateral. Under this system loans are sanctioned to "guarantee groups" which are formed from amongst members who are answerable to the mass organisation. To increase its outreach through all these channels VBARD deploys Mobile-banking units, which carry loan officers to remote areas for processing loan applications.

Bank-led Agri value chain financing in India

State Bank of India (SBI), the largest public sector bank in India is the pioneer in the field of agriculture value chain financing in the country. Stated below are two examples of how SBI finances the value chains of Coles tuber and cut flowers:

- In case of Coleus tuber (a medicinal plant) SBI offers credit facilities to players at each level of the value chain. At the producer level SBI offers loans based on the cultivation requirements. The amount is calculated based on the land under cultivation and cost of cultivation per acre. This loan can be provided both in form of cash or kind (agricultural inputs like fertilizers). For intermediaries including aggregators and primary processors SBI offers credit in form of 'term loans' or 'working capital loans'. Further at top of the value chain SBI provides export credit to the final processor/exporter and also facilitates line of credit to importers abroad.

- To finance the value chain of cut flowers in Tamil Nadu, SBI has entered into a contract with Tanflora (World's fourth largest producer of export quality roses). Under this contract SBI provides direct finance to the growers/farmers supplying roses to Tanflora for procurement of cultivation inputs. SBI also finances the processing activities undertaken by Tanflora under its 'Produce marketing schemes' or 'crop loan'. This credit comes in handy as the cut flower business has longer repayment cycles, which increase the working capital requirement of processors and exporters like Tanflora.

(Source: APRACA Report)

Mentha cropping by farmers with small land holding (less than 2 ha) in Uttar Pradesh, India – Value chain aggregation and financing by an MFI in India

Cashpor Micro Credit is a microfinance institution providing access to finance to low-income households in two states of Uttar Pradesh and Bihar. Most of the clients of Cashpor are from rural areas who are engaged mostly in agriculture practices and farming. These clients have very small landholding and usually are engaged in subsistence farming. Cashpor aimed to support these small landholders enhance the value of their efforts by shifting to a better yielding and high value crop. Cashpor finalised mentha (Mentha arvensis) as a crop for farmers in its operational area based on the analysis of geo-climatic conditions, irrigation facilities and the skills required to produce.

With support from value chain specialists, Cashpor embarked on the ambitious plan of linking 843 farmers in first phase to mentha processing company and developing value chain linkages to ensure that the value is distributed equitably. Cashpor selected the farming sector since most of the clients were dependent on farming and it was not fruitful effort as the clients produced low value crops such as wheat and rice, largely for consumption. Considering the value generation at the producer level and its impact on poverty reduction, mentha emerged as the best bet.

The poverty reduction potential of the mint value chain is high in terms of contributing higher value to the producers for the efforts that they put in and a large number of clients of Cashpor rely on agriculture for employment and income. Mentha is one of the most demanded cash crops by pharmaceutical and cosmetic industry. The recent demand supply gap has spurred the prices of mentha to 16 times of the price last year. These changes have been prompted by a rapid growth in demand for mentha due to increase in use of mentha in FMCG products and medicines.

Cashpor, a socially driven MFI supports poor clients as well as marginalised households by financing them to take up economic activities. Thus, the core focus of this intervention was to develop an inclusive programme to enhance participation of poor and marginalized populations of Uttar Pradesh and Bihar into mainstream markets. Farming was a natural choice as the people already were skilled in farming and had land as assets which pooled together could provide enough bargaining power to producers and create direct linkages with processors and markets. Cashpor assessed the systemic constraints and played the role of facilitator to address the bottlenecks such as finance, know-how and technology for

sustainable change and wider impact.

Before participation of poor farmers in the value chain, mentha was grown by farmers with large cultivable areas and used to reach processors through various intermediaries. Hence a lot of value was lost to intermediaries and neither the producer nor the processors used to benefit. Farmers with small landholdings never participated in the value chain as the cost of installing a distillation unit (mentha being a perishable product), with such a small landholding did not made any economic sense. Further, there was no financing available to procure the distillation unit. Cashpor analysed the areas where it operated and assessed that there were villages where Cashpor serviced clients who had contiguous landholding. It also found out that for every 16 producers if there was a distillation unit, the economics made sense. On the buyer side, Cashpor collaborated with Sharp Mentha India Limited and agreed to supply in bulk directly to their manufacturing plant. Sharp Mentha reciprocated by agreeing to buy at a contracted rate (significantly better than the spot price) and send their engineers and scientist to train and install distillation units. Cashpor developed a cash-entrapment financing product to front finance distillation units.

The effort led to a strong non-exploitative value chain model and had far-reaching impact on the lives of farmers who were part of the programme.

Indirect value chain finance, Institutional finance (Through an MFI), Case of partnership between an MFI and Donor agency (Mercy Corps) in Nepal

Mercy Corps is UK based development agency, which works in eastern and far western Nepal to support spice cultivators. During its support programme, Mercy Corps realised the need for financial services to support spice cultivators. As most of the banks and MFIs were not ready to enter into this market, Mercy Corps had to enter into a special agreement with an MFI named Nirdhan Utthan Bank Ltd. (NUBL). Under this agreement NUBL was required to provide financial assistance to a certain percentage of farmers supported by Mercy Corps and in return Mercy Corps had to cover the operational losses of NUBL (incurred towards activities under the agreement) for a period of three years. The technical support from Mercy Corps and financial support from NUBL have proved to be complementary in improving the agriculture productivity and returns for the farmers. NUBL was able to support over 480 farmers in the first year of partnership, and this number has increased since then.

Institutional financing of agricultural value chains in Malaysia

Malaysia envisions becoming a developed nation by 2020 and one of the important sectors to contribute to the growth story is agriculture. To catalyse the growth of agriculture sector, the government has commissioned Bank Pertanian Malaysia (BPM), a development financial institution to support the agricultural sector through appropriate financing mechanisms. BPM was established by an Act of Parliament on 1st September 1969 and commenced its operations on 1st January 1970. As a statutory body, the Bank is responsible to arrange, provide, supervise and co-ordinate credit for agricultural purposes in Malaysia. The idea of an agricultural bank is directly a result of the government's

decision to embark on the Muda Agriculture Project, a massive irrigation scheme for the rice bowl areas in the Muda Valley located in Kedah and Perlis in the northern part of peninsula Malaysia. Muda Agricultural Development Authority (MADA) currently administers the project.

The World Bank provided financing for Muda project and in its appraisal report, the World Bank highlighted the need for an institutionalized credit programme to finance double cropping of paddy. The report recommended that a special credit scheme be devised to support the implementation of the project and to ensure the full realization of maximum economic and social benefits. BPM was thus established as a Rural Finance Institution to specialize in the provision of credit to the agricultural sector.

BPM offers agricultural loans; deposits products through savings and time deposits and at the same time invest excess funds in allowable investment portfolio. BPM has been in operation for the last 35 years and has played a significant role in the development of the Malaysian agriculture sector. The bank assets grew from USD 2.68 million in 1970 to USD 1,340.18 million in 2003, an average growth of 8.3% per annum. Its loans asset expanded from USD 0.08 million in 1970 increased to USD 722.61 million in 2003 an average loans growth of about 10.4% a year. Deposits placed with the Bank in the forms of savings, fixed deposits and Giro amounted to USD 37.39 million in 1975 and grew to USD1,111.97 million in 2000 but declined to USD990.71 million in 2003

BPM has come a long way in carrying out its operation and functions in providing loans to the agricultural sector. The success of BPM can be attributed to government allocation and support through subsidized loans, extensive branch network covering the nation, use of ICT, and fast, efficient and quality services to its customers.

Revitalising farm sector through access to finance to cash-starved farmers [8] ***in Myanmar***

For most farmers of Myanmar credit was scarce and expensive. In 2009, the Myanmar Agricultural Development Bank (MADB), the apex agricultural bank provided around USD 10 per acre, less than a tenth of the sum needed to cover the average cost of inputs in the cultivation of rice. In that year, there were no other formal-sector lenders for farmers. Informal credit cost 6% to 10% a month, and it was not always available. These circumstances depressed input use, held down production, reduced farmers' incomes, and ultimately increased their indebtedness. The Myanmar Government's response to this situation has been to offer more credit on better terms in the past year. The MADB has extended loans of up to USD 25 per acre to some farmers. Also, special agricultural development companies have made loans to farmers at rates of 3% to 5% per month. While not nearly adequate to meet the borrowing needs of Myanmar's farm sector, these measures were clear and promising steps in the right direction.

[8] Myanmar Agriculture in 2011:Old Problems and New Challenges, Ash Center for Democratic Governance and Innovation, Harvard Kennedy School

Perennial crop development project in Sri Lanka[9]

To transform Sri Lankan agriculture from subsistence level to commercial level and to create competition within the agricultural sector, the Sri Lankan government has launched a perennial crop development project. The project has a significant portion of funds allotted to research and extension activities apart from agricultural lending. The project named as "Aruna Agricultural Credit Scheme" provides financial assistance to cultivators by infusing modern technology in Sri Lankan agriculture. The Agriculture Ministry has already commenced this agricultural credit scheme in 17 districts with the assistance of the Asian Development Bank and the Central Bank. The credit scheme assists the development of the perennial crop sector in Sri Lanka excluding tea, rubber and coconut through a concessionary credit scheme and an advisory service. Loans ranging from Rs.50,000 to Rs.13 million are granted depending on the nature of the investment while 12.08 per cent annual interest rate is charged for a 10-year payback period.

Hatton National Bank, Commercial Bank, Sampath Bank, Bank of Ceylon, DFCC Bank, National Development Bank, Kadurata Development Bank and Ruhunu Development Bank are the credit facilitator of this scheme.

Agricultural bond by a microfinance institution in Bangladesh

BRAC, a Bangladeshi MFI has launched a USD 90 million agricultural bond in order to boost agricultural financing. The prime reason for BRAC to devise such a financing mechanism lies in the changing agriculture and farm sector dynamics wherein middle and large scale land owners were shifting from agriculture to other activities by passing on their land on tenancy mechanism and tenants faced problems in accessing finance due to lack of collateral. Thus, BRAC bond, a unique financing mechanism offered in collaboration with Citi Bank N.A. is the country's first 'zero coupon' bond, a financial instrument that pays no direct interest but is sold at a discount to its face value. The government has made such bonds tax-free in an effort to encourage the use of bond financing.

BRAC has raised fund from commercial banks, insurance companies other financial institutions and with its extensive microcredit network provides agricultural loans through its micro financing network.

5. Risk management in financing value chains

With the expansion of access to finance, value chains tend to become complex in nature and expose all stakeholders to different types of risks. The key risks in value chains include price, production, market and borrower risk. Poor management of risks may cause permanent negative effects on revenues and may result in dis-organisation of value chains. The risks can affect the value chain and its actors in different ways and in varying degrees. Loss of production of crop due to flood may impact the processors, wholesalers, retailers and consumers and ultimately may affect the economy.

[9] http://www.dailynews.lk/2003/01/06/new13.html

Common risks faced by formal financial institutions in financing value chains in Asia and the mitigation techniques are as following:

Table 10 Risks in value chain financing and mitigation mechanisms

Risk	Examples of risk	Risk management mechanism and examples from Asia
Market/Price risk	▪Cyclical and seasonal price fluctuations of agricultural commodities	▪Market based price instruments ▪Asset accumulation and buffer stock ▪Price fluctuation risk built into loan contract ▪Portfolio hedging ▪Future, Swaps ▪Options ▪Forward contracts ▪Minimum price forward contracts ▪Back to back trading ▪Price to be fixed forward contract ▪Long-term fixed or floating contract ▪Warehouse receipt finance ▪Market information services ▪Contract farming
Crop/Weather risk	▪Major climatic events (drought, flooding, frosts)	▪Index-based weather insurance ▪Traditional crop insurance ▪Farm level risk management ▪Tie-up with weather and crop insurers
Collateral risk	▪Risk of loss, theft or damage of collateral ▪Failure to repay loan secured by collateral ▪Inadequate collateral	▪Hypothecation and mortgages ▪Innovative structure using organised intermediate agencies to secure collateral such as warehouse financing ▪Cash flow based lending
Production risk	▪Lack of irrigation ▪Loss, theft damage of equipment. ▪Breakdown on machinery ▪Spread of pest and diseases	▪Portfolio diversification. ▪Drought-resistant varieties. ▪Linking with insurance providers ▪Crop insurance ▪Financing irrigation ▪Input, supplies and equipment financing ▪Leasing
Human risk	▪Illness or the death of family members ▪Poor agricultural, business and financial management skills	▪Life/health insurance of borrower and family ▪Diligent selection of borrower ▪Collateral coverage ▪Savings services ▪Training and technical assistance
Other risks	▪Side selling in contract farming	▪Commitment savings ▪Immediate and emergency loans

Risk	Examples of risk	Risk management mechanism and examples from Asia
		▪Integrateted support packages ▪Information systems

5.1 Examples of risk management practices from Asia:

Credit guarantee fund of China

The government in September 1983 established the Agriculture Credit Guarantee Fund with the assistance of the three major agricultural banks and the farmers' associations. Its principal objective is to provide farmers with credit guarantee services, through contracts drawn up with agricultural banks and farmers' associations. In this way, the Fund is able to facilitate agricultural lending activities.

Futures exchange in India[10]

Presently, 15 exchanges in India are in operation, carrying out futures trading activities in as many as 30 commodity items. Lately, as part of further liberalization of trade in agriculture and dismantling of ECA, 1955 futures trade in sugar has been permitted and three new exchanges viz., e -Commodities Limited, Mumbai; NCS Infotech Ltd., Hyderabad; and e-Sugar India.Com, Mumbai, have been given approval for conducting sugar futures. The futures contracts are designed to deal directly with the credit risk involved in locking in prices and obtaining forward cover. These contracts can be used for hedging price risk and discovering future prices. For commodities that compete in world or national markets, such as coffee, there are many relatively small producers scattered over a wide geographic area. These widely dispersed producers find it difficult to know what prices are available, and the opportunity for producer, processor, and merchandiser to ascertain their likely cost for coffee and develop long range plans is limited.

Managing crop failure risks in Philippines

The Philippine Crop Insurance Corporation was established in 1978, mandated to implement and manage an agricultural insurance programme for small farmers. It provides protection to agricultural producers against losses due to natural calamities, pests and diseases. The product includes rice and corn insurance, high value commercial crop insurance, livestock, asset, equipment and credit life insurance. PCIC's priority is the staple food of Philippines i.e. Rice and Corn with greater than 80% coverage of these.

Credit guarantee fund for farmers in Philippines

The agriculture guarantee fund pool was created in May 2008 that mandated all government corporations and government financial institution to contribute 5 per cent of their surplus funds to a fund pool to be utilised to guarantee loans of small farmers engaged in food crops. It offers guarantee cover to lending institutions for unsecured loans to small

[10] Risk management in agricultural commodity markets: A study of some selected commodity futures, Sahadevan K. G, IIM Lucknow

farmers and covered Upto 85% of loan extended. It includes all types of risks of default including weather, pest and diseases and other fortuitous events.

A failed product and a new product launch – Case of Agricultural Insurance from India

The Government of India experimented with a comprehension crop insurance scheme that failed due to excessive claims; this product was scrapped in 1997. The Government then introduced in 2000, a new scheme titled "National Agricultural Insurance Scheme" (NAIS) or "Rashtriya Krishi Bima Yojana" (RKBY). NAIS envisages coverage of all food crops (cereals and pulses), oilseeds, horticultural and commercial crops. It covers all farmers, both those that have availed loans and those that have not taken loans under the scheme. The premium rates vary from 1.5 percent to 3.5 percent of sum assured for food crops. In the case of horticultural and commercial crops, actuarial rates are charged. Small and marginal farmers are entitled to a subsidy of 50 percent of the premium charged- the subsidy is shared equally between the Government of India and the States. The subsidy is to be phased out over a period of 5 years. NAIS operates on the basis of area approach - defined areas for each notified crop for widespread calamities on individual basis- for localized calamities such as hailstorms, landslides, cyclones and floods. Under the scheme, each state is required to reach the level Gram Panchayat (Village level unit of management with a village headman) as the unit of insurance in a maximum period of 3 years.

Price stabilization fund for cash crops in India[11]

In 2002, the Government launched an income stabilization fund for small farmers of four plantation crops, namely coffee, tea, rubber and tobacco. The fund works as a savings account whereby the Government contributes to the account during distress years, farmers contribute during boom years and both parties share the contribution equally during normal years. The fund was envisaged to benefit some 342,000 small growers out of 1,277,000, but could only succeed in securing the participation of 45,188 growers. On studying the functioning of the fund, the Review Committee made some very pertinent and relevant suggestions, including changes in price band, quantity of Government contribution, operation of account and withdrawal and additional benefits such as personal accident insurance, etc. PSF can play the role of income mitigation instrument for small farmers if amendments are made on the basis of the suggestions of the review committee and realities on the ground.

Electronic spot exchange to manage price risk in India[12]

The present marketing system, as governed by the Agricultural Produce Marketing Committee (APMC) Act is replete with problems such as a non-transparent auction system; poor incentives for quality-consciousness; multiple layers of intermediaries; poor

[11] Risk Management as a Pillar in Agriculture and Food Security Policies - India Case Study Policy Brief, FAO

[12] Ibid.

infrastructure; informal credit linkages; significantly less buyers vis-à-vis sellers, etc., all of which contribute to creating disadvantaged transaction terms for primary producers.

As a result, the need for near-perfect physical market networks in India is becoming increasingly acute with the emergence of national-level futures exchanges over the course of the last few years, the former being a prerequisite for the effective functioning of the latter. Objectives of an electronic spot market include transparency of physical markets; better links to quality parameters; improved information availability across players' groups; reduced wastage through the creation of better infrastructure; value-added along the supply chain; and better price references for futures markets.

The model of electronic spot exchange is highly scalable because of its standardized operation, high level of technology-orientation and the potential availability of private investments. India is piloting this system though SAFAL National Exchange (SNX) in Bangalore, which in a matter of seven months has been scaled to thirteen additional districts. The model presents the electronic platform to be directly accessed by authorized brokers. Both buyers and sellers transact through these brokers. The presence of an electronic exchange absorbs counter-party risks and ensures the open dissemination of prevailing price levels. In addition, the auction system is technology-driven, where the parties involved enjoy complete anonymity. Scalability of this model is relatively easier because it attracts authorized brokers with investments to extend the technical infrastructure. Electronic Spot Exchanges are here to stay and provide huge marketing support to farmers.

6. Suitability of approaches and conditions for operations of main types of value chain financing

While there are options of financing any value chain either using a direct or indirect financing approach or a combination of these approaches, the selection has to be based on a rigorous, analysis based approach to identify and service financing opportunities on the basis of minimum risk and maximum return. Some of the determinants for identifying the suitable approaches are:

a) Input needs and extensions services ranging from specific (can only by supplied by specific shops) to generic (can be bought anywhere)
b) Product type based on whether the product is an unorganised local staple (millets and castor oil seeds from India); organised local staple (wheat and rice from India); captive global buyer product (potato); or exportable cash crop (Cashew).
c) Aggregation point based on whether the product is not at all aggregated or aggregated at the level of local traders and markets, agents, warehouses, processors, or cooperatives/associations.
d) Value chain power ranging from government regulated no power produces to buyer power and supplier power produces.
e) Number of producers ranging from small numbers located in wide dispersion to aggregated large number of farmers.
f) Market characteristics including limited formal markets, organised local markets, export markets.
g) Crop characteristics as demonstrated by price incentives for quality, perishable post-harvest, durable post-harvest, no price incentives for quality.
h) Financial attractiveness dependent on the creditworthiness of the stakeholders of the value chain and the profitability of the investment.
i) Risks associated with the value chain such as supply risks, production risks, sales/market risks, price risks and human risks.
j) Availability of finance as determined by existing funding sources and current funding practice in the value chain including formal and informal finance. This when compared with financing requirements gives the financing gap.
k) Need for range of financial services as determined by the needs of value chain actors for financing ranging from credit, savings to insurance and remittance.

To design approaches for value chain intervention, "*build on what exists"* maxim rules as the market players have stabilised a system that however inefficient it may be, exists on the ground. Building new approaches from scratch may result in stakeholder dissent leading to market distortions and disturbing the existing trust-based relationship between the actors of value chain. It is also seen that the successful interventions in value chains have built on existing situation, realities and relationships in product markets. Also, practically not every value chain can be done away with the intermediaries, and thus the key consideration in expanding access to value chains should be the complementary role of financial services within value chains rather than solely within the context of financial systems.

7. Examples from Asia explaining the suitability of approaches

Table 11 Choosing suitable approaches for value chain finance – examples from Asia

Attributes	Cut flowers, Bangladesh	Coleus tubers crop, India	Potato, India	Cocoa, Indonesia	Rice, Lao PDR
Input needs and extension services	Specific	Specific	Generic	Specific – government intervention	Generic
Product type	Exportable perishable crop	Exportable cash crop	Organised local staple	Exportable cash crop	Organised local staple
Aggregation point	Aggregators and exporters	Farmer cooperatives and processors	Local markets	Local collectors	Millers
Value chain power	Aggregator and exporter power	Supplier power	Light buyer power	Aggregator power	Buyer power
Number of producers	Small numbers	Small numbers in close geographies	Many	Large number of smallholders	80% of population
Market characteristics	Export markets	Export markets	Organised local markets	Export markets	Limited formal markets; government regulated
Crop characteristics	Perishable post-harvest	Price incentives for quality	Durable post-harvest	Price incentives for quality and perishable product	No price incentives for quality
Financial attractiveness	High	Profitable value chain as returns for producers are greater than 40%	Medium, producers lack collateral, other actors are creditworthy	Profitable however producers lack physical guarantee or valuable assets	Medium and smallholders are credit worthy
Risk analysis	Low risks	Low risks	High price and market risks	High risks of infestation, price fluctuation, poor	Medium risks

Attributes	Cut flowers, Bangladesh	Coleus tubers crop, India	Potato, India	Cocoa, Indonesia	Rice, Lao PDR
				quality	
Availability of financing	Lack of formal financing. Trader credit prevalent	No formal financing available. Huge financing gap	Informal financing prevails. Exploitative in nature	Trader credit resulting is depressing procurement prices	Aggregator credit
Need of range of financial services	High, exporters need export credit finance	Sophisticated financial products needed such as export credit and credit line	Term loans, savings for producer	Input and production loans Emergency loans to meet lifecycle needs	Input and production loans Emergency loans to meet lifecycle needs
Intervention	Formal financing to exporters to promote contract farming and for export credit finance	Indirect financing by specialised bank	Bank financing to aggregators, as they are credit worthy and risks in financing the producers is very high. Contract farming is also a feasible option	Formal financing for traders and exporters to connect with producers directly Warehouse financing for harvested crop to safeguard poor producers to sell prematurely and lose on opportunity	Warehouse receipts financing Loans to farmers in lieu of collateral

8. Options for scaling up value chain finance in Africa

Alternative one: Expand access to formal finance to upstream value chain players
To expand access to finance to the producers who produce unorganised and organised local staple, operate in informal, unregulated or organised local markets, the formal financiers can either support them through short-term trade finance either to traders and aggregators or directly to the producer cooperatives/groups/association (if present). This model works for situations characterized by high levels of smallholder aggregation to traders and aggregators. To diversify the formal financiers can choose several staple crops, replicate the financing model and scale.

Alternative two: Expand access to lead firms to establish and scale-up captive value chains
Several lead firms are working or are willing to secure procurement of quality raw material and are willing to invest in input supplies and production stage technology awareness to the producers. Financing such lead firms results in effective growth of value chain as the markets are secured, lead firms pay fair pricing for the produce and the model is not exploitative. Also, commercial lender can provide finance to smallholders through these lead firms financing schemes, focusing on markets where buyers already provide finance or technical assistance to smallholders and there is cash entrapment mechanism is in place.

Alternative three: Innovate new financial products and services
The formal financial institutions can build on the existing value chains by innovating new products and financial services to meet other financing needs, such as working capital, longer-term financing of equipment, and warehouse receipt financing.

Alternative four: Finance directly to the producer
For the value chains which are unorganized, such as that of local staples with dispersed producers and few points of aggregation, the demand for finance by the producers can be met by reaching the producers directly. Banks can employ services of microfinance institutions to reach such producers. Alternatively, banks and financial institutions can develop technological solutions to finance unserved populations in rural areas efficiently and effectively using technologies such as mobile banking.

9. Conclusions and Recommendations

The agricultural value chains since time immemorial have been struggling to enhance productivity and export competitiveness constrained largely due to limited financing option available. The upstream actors of value chain are the predominant players in expanding access to value chain in Asia. Traditional value chains seldom cause equitable distribution of wealth. Neither the producer nor the end user benefit and the intermediaries exploit the value chain. Producers being the downstream actors of the value chain are unorganised, lack capital, technical skills, infrastructure, market information and bargaining power in accessing the market. Most of the Asian markets are localised and fragmented. Markets are unregulated and there are no minimum prices, no product differentiation, no control on quality standards and few players (mostly intermediaries) dictate the terms and condition of the trade. The intermediaries' control on various stages of the chain results in artificial price inflation that is exploitative to both the producers and the end-users of produce.

Several innovative mechanisms such as lead firm financing has been successful in linking the producers directly to the end-users thus benefitting the end-users in terms of price of produce as well as the producers. However, such models are limited only to large producers. There is a strong value proposition and potential for lead firm financing to enhance value for producers and end-users through access to markets, technical assistance and credit. Examples such as PepsiCo in India demonstrate the potential of lead firm financing schemes. However, there are examples from Myanmar, Indonesia, Lao PDR and Vietnam wherein the lead firm financing mechanism failed because of the issues of weak contract enforcement and lack of availability of finance.

Government support to farm and agricultural value chain financing have shown varied results as in case of India, programmes such as Kisan Credit Card has been hugely successful in providing accessible, flexible and affordable credit to farmers, however banks and FIs have been facing default problems. Though this innovative product gained popularity, a long-run comprehensive integrated policy is required to meet the credit demand and to push the agricultural production in the economy. In Asia, we have observed variety in the government support, while in countries such as Indonesia, the government support has been minimal, and there are cases from India, Vietnam and Philippines where the government support has been extreme. While there are issues with either approach, nonetheless the role of government is paramount to determine the level of financing in the agricultural value chains.

Private sector financing, as in case of India, post financial sector reforms have not yet yielded significant results when it comes to agricultural financing. Reforms have strengthened the performance of banks and widened the financial markets, however this has not yet translated to successes in agricultural financing. While the middle class benefitted due to relaxed interest rates in consumer finance and housing finance, banks are yet to redefine their business strategies and increase their market share in agricultural finance. Some of the banks such as HDFC and ICICI Bank have developed new strategies

of channel financing and dealer financing which has improved credit delivery and reduced the interest rate to the ultimate consumer. Even for the upstream actors, aggregators and processors have been securing the loans at a rock-bottom level of 6 per cent through the market for commercial paper. Still the producers have not gained any benefit from this lower interest rate regime, as most of the commercial banks have not shown any interest in focusing their activities to increase the share of agricultural finance. The new generation banks, such as ICICI Bank, have devised innovative supply chain solutions to agricultural finance. It is time banks understood the entire chain of value creation in farm finance. Agro-based industries, dealers, seed finance and fertilizer finance are major components in this value chain. Innovative financial solutions are essential for an effective loan delivery mechanism to support these operations.

Basing the learnings from Asian context, considering the nascent stage of agricultural value chain financing in Africa, the need is to focus on building integrated and strategic approach for value chain financing. This entails integration of finance suppliers such as banks and financial institutions into the value chains; affordable, flexible and accessible financing products design and implementation; structured technical assistance and capacity building programmes for small-scale producers; market linkages for both forward and backward needs of the value chain; enhancing information systems to safeguard producers from the risk of exploitation due to information asymmetry; and enhanced cooperation at the producers' level through cooperative movements to achieve scale of economy.

The integrated approach also should focus on carving out role for various stakeholders such as government, financial institutions, processors, and distribution channel strategically to enhance linkages with producers to ensure sustained benefits and equitable value distribution to the target beneficiaries.

Based on the study of Asian experiences in sources of funding and support systems, the key lessons learnt with implications for African value chain are as following:

1. **Governments role is paramount as facilitators:**
   The past experience in government funding to boost the agriculture sector has shown mixed results as the resource allocation is not done optimally and mostly these programmes tend to be unsustainable in nature. Often, with government financing, the design of the financial products promotes rent-seeking and free-riding behaviour of the clients. Thus, it is suggested that the government plays a role of facilitator in value chain finance in order to make it sustainable and effective in the medium to long run. Government may do so by:
   - Relaxing the policy norms; subsidising institutions and infrastructure than directly supporting the producers
   - Developing pro-growth agricultural strategies;
   - Encouraging financial services providers to actively and effectively support the agricultural sector;
   - Increasing regional integration to allow free movement of goods, capital and labour;
   - Creating a positive investment climate to attract foreign investment;
   - Increasing security of private land tenure and rights to develop, sell, transfer,

or pledge property;
- Implement effective land and collateral registers;
- Improving operation of courts, and the cost-effective and timely enforcement of creditors rights; and
- Increasing access to information through agricultural data collection and statistical analysis.

2. **Integrate finance suppliers into the value chains:**
   To enhance the export competitiveness of the value chains, it is paramount to have sustained and affordable flow of financing. While direct financing certainly has advantages in terms of flexibility, it runs the risk of producers' exploitation by the financing intermediary. Hence, the financial institutions and banks should be encouraged to offer private financing services to the agricultural sector for growth and expansion of the value chain. Governments can support lending by banks and FIs through credit enhancement programmes and risk cover through guarantees. In rural and remote locations, local financing institutions such as MFIs should be encouraged to support agricultural value chains.

3. **Affordable, flexible and accessible financing products design and implementation:**
   Lack of appropriate financing product and services limits the value chain players to derive the full potential of the value chains. Thus, the focus should be on design of affordable, flexible and accessible financing products. Credit through the informal sector dominates agriculture financing in Asia. High transaction costs, small amounts, high default rates, lack of policy and institutional support are major constraints in financing informal sector. To overcome the existing constraints, it is important to finance groups (producer cooperatives) instead of individuals. It is also important to reduce risk through institutional support-facilitating structured commodity financing; and provide infrastructural support, network of warehouses and warehouse receipt system and futures contract.

   Poorly designed financing product and services limits their use by value chain players and they are unable to derive the full potential of the offering. As there are multiple difference in the value chain of different agricultural products, it is not possible to have one standard offering which can serve players across different value chains. Thus, financial institutions should focus on developing customised products based on the needs of the players in a specific value chain. This task requires an in-depth understanding of the value chain and the relationships between different players within it. This understanding will also allow lenders to accurately measure the value generated by the entire value chain as a unit and thus help in more accurate estimation repayment potential of different players.

4. **Structured technical assistance and capacity building programmes for small-scale producers:**

One of the biggest problems a bank faces in lending to small scale agricultural producers is high credit risk and non-availability of any collateral. To overcome this challenge banks all around the world have tried different innovative methods and techniques. One of the most successful techniques is clubbing credit product with a technical assistance and capacity building programme (Example: 'Land Bank' and 'One Nation Bank' in Philippines). This method ensures that producers are using the most optimal cultivation techniques and agricultural inputs which reduce the chances of crop failures and subsequent defaults. This provides financial institutions with greater confidence in lending to this sector, and also reduces the provisioning requirements for this loan.

This method of lending is equally useful for the borrowers as they receive both the credit and much needed technical guidance. It has been well demonstrated in past that such inputs improves the overall agricultural productivity and returns to the farmers.

5. **Market linkages for both forward and backward needs of the value chain**

There is a need for lending organisations to recognise the entire value chain of any commodity as one interdependent unit. This will help them to understand the nature of support required to enhance the value generated by the whole unit. This discovery will be very helpful for banks as they are often involved in financing players at multiple levels of the value chain through different types of credit products. Thus any input which helps the value chain in improving its overall productivity will reduce the risk for the bank across all the credit products offered to different players in the value chain.

One of the most important and well recognised inputs which can achieve this is improving the market linkages of the value chain at both of its ends. At the producer level it will involve ensuring their access to suitable technical assistance (including technical advice, soil testing etc.), good agricultural inputs, suitable equipments and timely credit.

At the level of trader/exporter it involves providing them with marketing links to buyers around the world, provision of timely line of credit needed for export and facilities for quality certifications.

Another area where additional impetus has to be pursued are risks management for the producer and the produce through health insurance and weather/crop insurance. At the level of producers, health hazards jeopardise the activities of producers by causing opportunity loss and additional financial burdens. If the producer is the bread-winner and he/she falls ill, it reduces the crop yield and also leads to to starvation of the family. Thus, health insurance would to protect the producers and save them from losing on opportunity costs and savings financial burdens. To reduce the losses from the vagaries of the weather, it is

important to create awareness of various insurance products and bringing all crops in all areas under insurance cover.

6. **Enhancing information systems to safeguard producers from the risk of exploitation due to information asymmetry**
   Primary cultivators in underdeveloped countries have been traditionally been exploited by middleman by being paid lower rates for their produce as compared to the rates prevailing in the market. In most cases cultivators agree on the rates offered by middleman as they are not aware about the prevailing rates in larger markets. This situation can be improved only if there is some means to inform the primary cultivators about the prevailing rates of different products on a regular basis. In many parts of the world different approaches have been tried to solve this problem. Example: i) Kissan (farmers) call centres operated by KVKs use mobile phones as a medium to disseminate information to farmers. ii) In case of the widely recognised ITC's e-choupal model Information and Communications Technology (ICT) has been used to disseminate the same information.

   Information systems like these can be beneficial in multiple ways. Apart from acting as a safeguard from exploitation the same system can also be used to dissipate useful information like weather forecasts, farming techniques, updates crop infections to name a few.

7. **Enhanced cooperation at the producers' level through cooperative movements to achieve scale of economy**
   A majority of farmers in most of the developing Asian countries have small land holdings. These farmers owing to the size of their operations are not able to benefit from the economies of scale. This puts them at a disadvantageous position when compared to the large scale farmers. One of the traditional approaches which have been useful in filling up this gap is cooperative farming. Cooperative farming allows small scale farmers to pool their resource and invest in better quality inputs and collectively owned equipments. This helps the cooperative members to improve the productivity of their small land holdings. Through cooperative small scale farmers also get the benefit of better prices for their inputs and superior rates for their produce. This happens as cooperatives have better bargaining and negotiating power than individual farmer owing to their larger scale.

10. Potential role of mobile money in agricultural value chains in Africa

The World Bank in "Building Competitiveness in Africa's Agriculture - A Guide to Value Chains Concepts and Applications[13]" observes that "seventy-five per cent of the world's poor live in rural areas and most are involved in agriculture. In the 21st century, agriculture remains fundamental to economic growth, poverty alleviation, and environmental sustainability".

It goes on to add "For many years and until quite recently, agriculture fell out of favour with development practitioners, receiving only 4 per cent of official development assistance and 4 per cent of public expenditure in sub-Saharan Africa (SSA) (World Development Report [WDR] 2008). However, as exemplified by the 2008 WDR dedicated to Agriculture for Development, the development community has refocused on agriculture as an effective means of fighting poverty, and we may expect the above pattern to be reversed. The 2008 WDR notes, "[f]or ***the poorest people, GDP growth originating in agriculture is about four times more effective in raising incomes of extremely poor people than GDP growth originating outside the sector.***"

Heike Höffler & Gladys Maingi from the Promotion of Private Sector Development in Agriculture (PSDA) GTZ / Ministry of Agriculture present that:

National and international buyers of food products are becoming more concentrated: nearly 40% of the world's coffee is traded by 4 companies and 80% of Latin American banana exports are controlled by 3 firms.

The number and size of modern value chains, and thus jobs, will increase in developing countries with economic growth; already in more prosperous transforming and urbanized countries, the industries and services linked to agricultural value chains often account for over 30% of GDP.

Modern agricultural value chains usually offer wage and self- employment with better pay and working conditions than in traditional agriculture. Although women constitute only 20-30% of agricultural wage workers worldwide (though more in some Latin American and African countries), they often predominate in high-value industries for export or domestic supermarkets, such as fresh fruits, vegetables, flowers, poultry and seafood.

All of these points towards the need for increased emphasis on agriculture and agriculture value chains in the overall development paradigm. However, agricultural value chains are complex in nature and the number of producers involved as also intermediaries such as middlemen, input suppliers, aggregators and processors add to the complexity. While agriculture value chains have progressed over the years with better quality of seeds,

[13] Webber Martin C. & Labaste Patrick; The International Bank of Reconstruction and Development / The World Bank, 2010

fertilizers and more sophisticated processing and packaging, the transfer of value in the chain continues to be in cash.

Over the years, a number of efforts have been made to enable the agriculture producers to increase productivity and move up the value chain. However, one of the key bottlenecks experienced by any value chain linkage initiative within any value chain is the exploitative role of intermediaries. Intermediaries play a variety of role in value chains, that of aggregators, providers of credit or agri-inputs and act as the link between the producer and the market. Efforts to enhance value realisation for the producer are limited by the ubiquitous presence of intermediaries who have emerged as crucial links between the producer and the processor.

One of the means by which this hold of intermediaries can be reduced and the primary producer can be brought up in the value chain is to introduce electronic channels for the transfer of value in the chain. The role of mobile money will be especially pronounced in value chains with a few aggregators and a large number of dispersed producers. An m-money system can potentially allow the processor, market or the customers to link up directly with the farmer and allow for direct transfer of value. The farmer will be able to access cash as and when needed and can potentially procure inputs utilising the same channel; linking up providers of seed, fertilizers, fodder etc. depending upon his needs. Some of the potential benefits of a functional m-money initiative linked to predominant agri-value chains are presented below:

10.1 Importance of mobile money in agriculture value chains[14]

For the agricultural value chains, mobile money integration bring with it lots of benefits to the producers. Subsequently, the spill over effect will positively impact the rural economies as well. The players within the value chain can transact information and money seamlessly and can derive much more benefits such as:

- Low cost of transaction: As the transactions are digital, real-time and cashless in nature, the cost incurred is lesser as compared to cash transactions.
- High security of the transactions: Digital mobile money ecosystems provide high security of the transaction and that of the money in high theft-risk countries such as Kenya
- Solving the “last mile” problem: High presence of mobile money agents in Kenya ensures that the last mile problem is resolved in an efficient and effective manner
- Seamless integration of buyers and sellers: Mobile money allows seamless integration of buyers and sellers for exchange of cash and information.
- Reduced leakages: In contrast to cash transaction, mobile money ensures more direct approach to payment and hence reduces the opportunities for leakages along the value chain.

[14] Mas Ignacio, Mobile Money in Agriculture in Tanzania, 2011

- Enhanced immediacy and increased frequency of the transactions: Quick, low-cost and high security features of mobile money may trigger immediate payment from the buyer to the producers. As there is a direct channel of moving money, the payment from the buyer to the producer can be in tranches or more frequently than the cash where the buyer accrues to make one lump sum payment to reduce the cost of transaction.
- Improved economics for value chain players: Overall, due to reduced cost of the transaction, frequent and immediate payments, the cost economics favor all the players of the value chain.
- Accountability: Mobile money transactions have a digital trail and hence offer higher accountability than the cash transactions.

The positive externalities of mobile money usage by the producers would result in development of rural economies. Local options for accessing liquidity ensure increased commercial activity as mobile money agents spread to smaller, more distant villages. The likelihood of money being used locally increases if the payment recipients (for sale of crop or from relatives from urban areas) can access their money locally.

Thus mobile money will spur the fuller financial inclusion at the village level. The mobile money accounts can be used as a medium for financial service providers to offer higher-level financial services to other wise unserved and underserved rural population predominantly engaged in agriculture. Mobile money operators themselves might in future provide these services, or banks linked to mobile money schemes may offer them.

Ignacio Mas goes on to add “Mobile money schemes flourish when there is an ecosystem of consumers, billers, bulk payers and merchants that see value in trading with each other by electronic means, complemented by a network of agents that provide bridges between electronic money and cash. Volume is an important success factor of mobile money systems. In a healthy mobile money ecosystem, use of the system propagates primarily by viral means: people telling their friends and family, remitters drawing in recipients, larger businesses incentivising upstream and downstream partners to join them in an electronic chain of payments. In turn, growing transactional volumes incentivizes agents to multiply and spread out in order to capture cash conversion commissions.”

10.2 A priori factors for mobile money readiness[15]

As per Ignacio Mas, the ‘readiness’ of different value chains for mobile money will depend on a number of factors such as:

- *Concentration of buyers*: The number of payers will affect the potential for limited interventions to have a catalytic effect in driving new mobile money ecosystems.

[15] Mas Ignacio, Mobile Money in Agriculture in Tanzania, 2011

- *Frequency of payments*: A steady flow of payments throughout the year creates recurrent business for local *agents*. The individual transactions are smaller, which makes it easier for mobile money agents to meet liquidity needs.
- *Input finance mechanism used*: This determines the number of transactions further upstream in the value chain that can be shifted to mobile money. Under contract farming, for example, inputs are provided by buyers in kind, so there are no cash payments for inputs.
- *Socio-demographics of the farmer base*: The age profile of farmers will affect the ease with which they might adopt mobile money. Also, the physical distribution of farms (population density, distance of paved roads) and the prevalence of other economic activity within those farming communities will impact the viability of mobile money agent business models.

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