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Risk and finance in the coffee sector: Progress report on the joint study by the ICO and the World Bank

Background

1. In September 2012, the Core Group agreed that three studies looking at risk and financing in the coffee sector would be developed by the World Bank in collaboration with the ICO. The studies will identify risks and constraints at different stages of the value chain; determine their impact on the availability and cost of finance; and propose, to the extent possible, potential remedial measures that could mitigate these risks. They will be directed at three different audiences: coffee producers, coffee trading enterprises and policy-makers. The Executive Director circulated a concept note about the studies in December 2012, requesting Members to provide assistance and data to the consultants appointed by the World Bank to prepare the studies (see document ED-2146/12). In March 2013, the Core Group considered document CG-7/13 outlining the approach being taken to the studies and the likely contents.

2. The attached progress report has been received from the World Bank together with the following Annexes (available in English only). The objective of the report is to enable Members to offer comments, suggestions and additional information which can be used in the development of the final outputs. Subject to further information being provided, the final report will be circulated in summer 2014 and considered by the Council in September 2014.

Annex 1 – Production and primary processing risks
Annex 2 – Intermediate trade and export risks
Annex 3 – Lending Issues Identified
Annex 4 – Country Specific Coffee Sector Information
Annex 5 – General Explanation of Coffee Value Chain
Annex 6 – Sample Case Studies

Action

The Core Group is invited to consider this document.

Joint Study

RISK AND FINANCE IN THE COFFEE SECTOR

PROGRESS REPORT ON THE JOINT STUDY BY THE INTERNATIONAL COFFEE ORGANIZATION AND THE WORLD BANK

Briefing note to the September 2013 meetings of the International Coffee Organization (ICO)

THE WORLD BANK

Ministry of Foreign Affairs of the Netherlands

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

INTERNATIONAL COFFEE ORGANIZATION

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1. Background

The World Bank, together with the ICO and its Members, are developing a typology of global best practices on agricultural finance and risk management for the coffee sector. This is expected to identify risks and constraints at different stages of the value chain; determine their impact on the availability and cost of finance; and propose, to the extent possible, potential remedial measures that could mitigate these risks. This interim update is meant to briefly outline progress to date and to report on some of the initial observations made. The objective of this document is to provide ICO Members with an opportunity to offer comments, suggestions and additional information where appropriate or where requested, which shall be utilized in the development of the final outputs.

2. Progress to Date

To date a large number of potential sources of relevant information, both public and private, have been approached. The response so far suggests that while there are a number of well publicised government interventions in some countries (including price support mechanisms)[1], the majority of initiatives identified to date that target small and medium producer's access to finance emanate from NGO's, socially oriented lenders and other industry players, often as part of the overall promotion of sustainability in the supply chain but, also a result of endeavours to improve the security of supply generally. At this stage it is obvious that many gaps remain in data and information about on-going initiatives to tackle coffee sector risk and inadequate funding, especially at the national or macro level. Going forward further effort will be required to secure data from coffee producing countries regarding on-going activities and programs they may have in place.

Additionally the range of issues related to risk and finance in the coffee sectors identified thus far, in conjunction with vastly differing country environments, makes it clear that no single approach is likely to provide all of the answers. There are likely to be a multitude of potential approaches to tackling the issues of risk and insufficient access to finance which bring together a range of different funding options including: public, commercial, social, and equity as well as a similarly wide range of strategies and techniques for addressing coffee sector risks.

[1] *To note that unless the possibility exists to hedge or sell the product forward, the provision of funding to withhold stocks in expectation of later price rises of course leaves farmers entirely exposed to price risk. Brazil's Cedula de Produto Rural or CPR (to be reported on in the final study report) provides an interesting answer to this but then Brazil of course avails of a highly sophisticated futures trading environment – see http://siteresources.worldbank.org/INTARD/Resources/RFI_final.pdf*

3. Rationale for This Work

As agreed at the September 2012 meeting of the Core Group of the ICO's Consultative Forum on Coffee Sector Finance, the objective of this study is to identify risks at different stages of the value chain; to determine their impact on the availability and the cost of finance; and to propose, to the extent possible, potential remedial measures that could mitigate these risks. Managing risk within the value chain is expected to improve the availability of finance and to reduce the cost thereof because in most cases neither potential borrower nor lender fully understands the risks attached to different stages of the coffee value chain. The result is that lenders are hesitant to lend and borrowers are hesitant to borrow. Compounding these issues is that because risk is often not properly understood by those within the supply chain it cannot be mitigated by those actors operating within the supply chain.

Initial research conducted to date has confirmed that risk remains one of the primary undefined costs for those lending to the coffee sector, and appears to play a key part in reducing the amount of financing made available to coffee sectors globally. This is especially true for the production stage of the supply chain. As yet there are few and limited quantification methods for risk as it relates to agriculture, yet quantifying and managing risk could catalyse greater access to finance. By integrating risk management into their credit evaluation processes, banks would get a better picture of the risks their clients and indeed the supply chain as a whole face, something that would potentially improve access to credit and at the same time strengthen their own portfolios. In addition lenders would be better able to price risk appropriately, charging greater risk premiums to those actors managing risk least effectively, while rewarding those actors managing risk most effectively. This means that managing risk has significant benefits not only for the risk profile of the borrower but also for the ability of financial institutions to lend. **Improving the identification of major risks, and the means for managing such risks, across all the stages of the supply chain will enable supply chain participants to tackle risks hence improving their attractiveness to lenders, while similarly enabling lenders to better understand the risks facing the coffee sector will enable them to better assess the creditworthiness of their clientele.**

4. Compounding Considerations

Other issues need to be considered in tandem with risk. In discussing access to finance for supply chain participants, risk is by no means the only, or in some cases the primary barrier for expansion of financial services to coffee. This is particularly so in situations where an enabling environment (appropriate legislation, regulation, policy, support, information) is

lacking. This can lead to the overstating of certain risks and higher finance costs. Issues related to risk and finance are also made more severe when traditional prerequisites to borrowing (financial literacy of borrowers, adequate business management, etc) are not present. This is true even though these could be addressed through relatively straightforward measures undertaken by the supply chain actors themselves, for example by extending financial literacy amongst producers or by introducing adequate accounting practices amongst collectors and traders. This report will therefore consider ways in which improvements in risk management could facilitate improved access to finance, as well as how stand-alone measures for improving access to finance would improve the bankability of clients. In summary the objective of this work is to facilitate a better understanding of risk and of the coffee sector generally, which shall ideally improve the interaction between the different parties along the finance chain and improve access to finance.

5. Initial Lessons Learned

The initial research conducted and data gathered has provided a number of interesting initial lessons. While these lessons will be expanded upon and others covered in the final report, a small selection of these lessons is detailed below.

A) Access to funding is needed across the coffee supply chain

Initial research has indicated that by far the greatest focus of governments, development agencies, NGO's and other institutions relating to insufficient financing to coffee sectors has been on smallholder producers. This is unsurprising as the production end of the coffee supply chain houses the most vulnerable groups, including many small and medium size producers. It also is perceived to be the riskiest part of the chain and hence of the least attractiveness to financiers – basically risk is greater at the productive end of the supply chain not only due to the myriad of production and marketing risks but also due to the longer tenor of such lending (loans for investment in infrastructure and pre-season operations and inputs). However, in addition to exploring the various approaches that can be taken to manage risk for these groups, focus is also required on improving financing for other supply chain segments, especially domestic operators who may struggle to access sufficient finance to operate at maximum efficiency. Initial work has shown that a range of different interventions are required for different supply chain actors, if access to financing is to be improved. The final document will highlight interventions both at the production end and for other segments throughout the coffee supply chain.

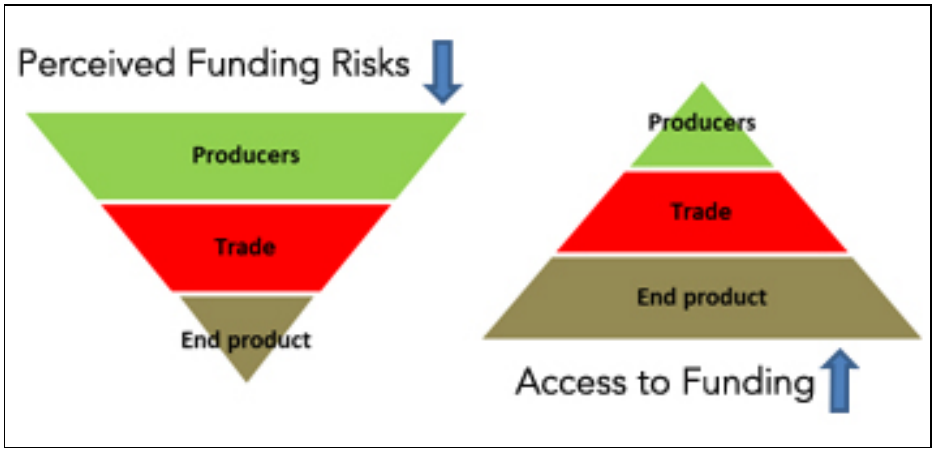
B) Finance is generally available at the least risky end of the supply chain

Added value increases as coffee moves along the value chain, most sharply at the import end – as the table on the following page illustrates. This is highly relevant as it illustrates why the origin end of the value chain faces the greatest shortage of financing (low value / high risk), while the import/retail end of the value chain (high value / low risk) receives the greatest access to affordable finance. The greatest challenges, and opportunities, for improving financing by improving the management of risk, are towards the origin end of the supply chain.

	Ex-Dock at 200 cts/lb			**Ex dock at 150 cts/lb**		
Value chain Stage	**Value Cts/lb**	**Value USD MT** (rounded)	**Value of 1 Container 18,000 kgs**	**Value Cts/lb** (rounded)	**Value USD MT**	**Value of 1 Container 18,000 kgs**
Cumulative Value = retail	511.40	11,274	202,932	417.30	9,200	165,600
Equivalent Ex Dock	**200.00**	**4,409**	**79,362**	**150.00**	**3,307**	**59,526**
Equivalent Ex Mill	157.10	3,463	62,334	110.80	2,443	43,974
Fresh cherry Ex farm gate	96.25	2,122	38,196	50.00	1,102	19,836

Arabica – All in Green Bean Equivalent or GBE. Source: ICO data (retail prices) and own calculations.

The diagram below simply visualises the issue at hand, namely that the perceived risk of lending is greatest at the production end of the coffee supply chain and least at the retail end of the supply chain – and that risk reduces as one moves up the supply chain. As such there appears to be an inverse relationship in terms of access to funding. Funding therefore becomes increasingly available as one moves up the value chain as risks are perceived to reduce.



A) It is not just risk that limits financing

Information received from industry participants suggests that in addition to limitations on financing for smallholders in absolute terms (primarily due to perceptions of high levels of credit risk), these industry participants have noted an inability of producers to access finance even when it is on offer / available. There are multiple reasons for this including lack of financial literacy, unfamiliarity with the formal financial sector, lack of representation of financial institutions in rural areas, etc. Case studies are being developed that show how educating producers in basic financial management and record keeping has the potential to significantly expand access to finance for smallholders.

B) Different types of lending carry different risks

There are significant differences between postharvest and production financing – and these differences greatly influence the level of funding available and carry very different levels of risk. As such it would be incorrect to suppose that the lack of producer finance is fully attributable to a greater perceived level of risk. Rather lenders are generally more willing to provide shorter term loans than longer term loans – and this partly explains why traditional commercial bank lending is concentrated at the post-harvest stages where funding requirements are mostly short-term. Because the two types of funding, i.e. production and postharvest, are significantly different the final report will include separate overviews of the risks at different stages of the supply chain.[2]

[2] *Because these could become quite voluminous and might duplicate information available elsewhere, they will be presented in tabular format – see Annex 1 – Production and primary processing and Annex 2 – Intermediate trade and export. Annex 3 covers lending issues*

C) Aggregation as a means for expanding producer access to finance

The most common approach to improving producer access to finance has been for smallholders to aggregate into associations and groups. There are many types of aggregation and depending on the individual situation aggregation may, or may not be an appropriate facilitator of finance. A few initial findings relating to aggregation, risk and access to finance are detailed below:

a) Promoting aggregation assumes the grouping of smallholders will make them 'bankable' but it should be recognised that this by itself does not address the issue of individual viability. Ultimately it must be recognised that to be bankable smallholders need to be economically viable.

b) The aggregation of supply assumes joint interests exist, for example, around washing stations that receive fresh cherry from surrounding catchment areas. As such many of the initiatives identified to date are built around such operations, mostly cooperatively owned. However the challenge is that aggregation of supply is much more difficult to achieve in the sundried or natural coffee sector because it is difficult to demonstrate added value over the short term. Furthermore the option to side-sell (for immediate cash) is always available and also as farmers can retain their coffee as a form of savings. As such indications are that more initiatives based on aggregation are found in the washed or mild Arabica sector than in the (much larger) sundried sector (both for Arabica and Robusta), yet the need for finance there may actually be greater, precisely because it is more difficult to find catalysts for aggregation. This raises an interesting challenge – that aggregation may be least possible as a means for accessing finance when the need is actually greatest.

c) Cooperatives by nature are collaboratively based institutions, and may require Membership approval to take day-to-day managerial decisions. At times cooperative management structures may not give management the proper ability to 'manage' the business. This can result in lengthy sales decision processes, or reluctance to invest in new risk management strategies, which prevent the enterprise from operating optimally and hence reduce its ability to attract financing. It has been argued that cooperatives may need to have segregation between management decisions and member influence to be able to operate optimally.

d) Experiences of banks when lending to coffee cooperatives and associations are not always positive, as Members are not always cohesive enough to respect their mutual obligations – leading to lending defaults. Experiences gathered to date include a farmers' organization in Uganda marketing natural Robusta which qualified for a first formal loan in 2010. This allowed it to successfully process and export some of its coffee directly, enabling it to pay higher prices to Members. Following repayment in

full a larger loan was granted for the 2011 season, also with good results. A still larger facility was granted for 2012, part of which was then used to provide cash advances to Members. But failure by a substantial number of Members to supply the promised coffee and not repay the advances, plus the apparent default of a client, caused the organization to fall into arrears and as of mid-2013 the loan had only partially been repaid. The full case study will feature in the final report. Issues faced by some Latin American cooperatives during 2010 and 2011 are another example when they were forced to default on fixed price forward sales commitments because, after coffee prices rose sharply, Members refused to supply coffee at the price that was agreed earlier. Both examples above illustrate clearly that aggregation is not always a perfect solution to improving access to finance.

e) Different approaches are being tested to try and avert such situations in future. In the meantime however the experience unfortunately reinforces the perception that lending to groups of small producers, or directly to small producers, for crop intake, processing and marketing is risky which raises questions around how to channel lending to small growers for (re)planting and working capital. In this respect it is worth noting that achieving adequate levels of business ethics and individual respect for contractual obligations, let alone being able to implement complex risk management solutions, in such organizations takes much longer than is often suggested.

f) It is too simplistic therefore to simply argue that aggregation is an automatic means for improving access to finance, rather the effectiveness of aggregation varies group by group and may, or may not, include improved access to finance through shared sales and lending. However, there are cases where successful aggregation does facilitate such access and these are usually in tandem with access to risk management techniques and other improvements. These cases reinforce the point that the two issues, improved risk management and access to finance, are closely intertwined and mutually reinforcing both for individual lending and group financing. Cooperatives and other types of farmers' organizations should also understand however that handling marketing and finances requires modern management which in turn requires professional managers. Managers who are selected on merit and not because they are Members or because they are linked to or promoted by prominent Members. A case study from Costa Rica (Annex 6) is an example not only of what can be achieved but also of how long it takes.

D) The entry of alternative (socially oriented) lending institutions

Socially oriented lending institutions, often together with industry, are playing an increasing role in the facilitation of producer access to finance.[3] Whether such initiatives by themselves can generate the required resources for the sector as a whole is unlikely as cumulatively they still are small. In addition such lenders and their approaches are somewhat fragmented, with differing focuses and areas of interest. Other than the Rabobank Rural Fund that uses partner banks most socially oriented lenders provide direct lending. However there are exceptions where an in-country banking presence has been created, for example by Opportunity International. Additionally interesting developments are taking place with the use of mobile phone technology improving access in remote areas to financial services. This is especially common in Africa and is driven in part by private sector initiatives and socially oriented lenders. And FAST Financial Fairs (FFFs) initiated by the Finance Alliance for Sustainable Trade (FAST) bring together socially oriented lenders and sustainable SMEs to discuss opportunities for financing.[4] [5]

E) Smallholders are not the only industry participants with a shortfall in funding

Funding is an issue not only for smallholders and producers generally, but equally so for other stakeholders such as collectors/traders, primary and export processors, and exporters themselves. For example, stand-alone domestic enterprises often struggle to gain access to appropriate risk management tools and consequently also cannot easily or at all obtain adequate or reasonably priced finance. This places them at a distinct disadvantage when it comes to competing with larger players who may avail of international support and represents a genuine challenge in that in some instances the in-country playing field may not be level.

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[3] *For example, Alterfin, Oiko Credit, Progreso, Responsibility, Root Capital, Rabobank Rural Fund and Shared Interest who are grouped informally as CSAF or Council on Smallholder Agriculture Finance.*

[4] *To date 9 FFFs have been held in Latin America and Africa with a 10th scheduled for Nairobi, Kenya in September 2013. FAST assists candidate borrowers by providing resources online and consultants to help prepare the documentation necessary to meet the lenders' initial requirements to enter into such discussions. To date USD 21.5 mln, spread over 23 loans, has been invested as a result.*

[5] *To note also that Fairtrade International's newly established Access Fund commenced granting both trade finance and long term loans in 2013, so far limited to cooperatives in Latin America but with the intention to expand to Asia and Africa. Of interest is that such loans can also be made in the borrower's local currency, thus avoiding the exchange rate risk carried by foreign currency loans. This too will be reported on in the final report - meanwhile visit http://www.fairtrade.net.*

6. Way Forward / Next Steps

Going forward this work will involve additional data collection from a wide range of governmental and non-governmental sources. This will also include the contracting of a number of specific case studies related to national, regional and specific risk management interventions and financing programs. Following the completion of data collection, analysis will take place to distil key learning that can be utilized to illustrate how risks might be better managed in the coffee sector and access to finance might be improved. The results of this analysis will be presented in a final report which is expected to be circulated around June 2014 in time for it to be reviewed at the September 2014 ICO Council Session. However delivery is dependent upon the willingness of external parties (both private and public sectors) to share further information with the report team.

Again, member countries and other stakeholders are requested to offer comment, advice and additional information where available, specifically on examples that they may have relating to methodologies and practices used to encourage lending to coffee sectors in their countries, and alternative means for reducing coffee sector risk and raising the ability of banks to offer and provide financing.

Indicative Timeline:

Activity	**Description**	**Est Delivery Date**
Data Collection	Further requests for data from government, private sector, NGOs and other relevant organizations.	November 2013
Identification of Case Studies	Identification of risk and finance case studies from a range of coffee producing countries (multiple typologies).	October 2013
Case Studies Undertaken	Case studies contracted and undertaken with finalized outputs received.	February 2014
Analysis / Synthesis	Analysis / synthesis undertaken by the project team.	April 2014
Draft Report Produced	Draft report produced and feedback received.	May 2014
Final Report Produced	Final report produced.	June 2014
Final Report Distributed	Distributed by ICO at September 2014 meeting.	September 2014

7. Annexes

Notes:

The appendices are included to add significant detail to the work that has already been undertaken with regards to this report. The case studies are illustrative of the practical examples, both relating to risk management and improving access to finance, that will continue to be gathered and utilized to draw lessons from.

While a significant volume of country-specific coffee information is publicly available, this is generally on an individual, country-by-country basis, making easy comparison difficult. Therefore individual country highlights are presented, also in tabular format in Annex 4. This presents an initial draft that will be expanded as more information comes to hand. Here too member countries are requested to provide additional information where required.

Although often referred to in literature it is not always easy to visualise the coffee value chain itself. Yet understanding the value chain is important for both producers and lenders if one is to visualise the coffee sector as a whole. Annex 5 therefore presents a general explanation of the coffee value chain that in due course will be expanded to illustrate actual consumer markets. [6]

[6] *A value chain 'consists of a series of activities that add value to a final product, beginning with the production, continuing with the processing or elaborating of the final product, and ending with the marketing and sale to the consumer or end user'. A value chain approach can, in some cases, streamline costs and potentially minimize risk to those in the chain. The integrated chain offers those operating in it (suppliers, producers, processors and marketing companies) access to goods and services that facilitate the procurement and sale of goods. See*http://www.fao.org/ag/ags/agricultural-finance-and-investment/value-chain-finance/en/

ANNEX 1 – PRODUCTION AND PRIMARY PROCESSING RISKS

Types of Risk and/or factors impacting grower incomes	Probability	Impact	Potential Mitigation Measures	Required Support Environment	Macro linkages	Value Impact
Production – Field						
Climate Change Impact	Confirmed	Variable to Considerable	GAP and adequate information	Good farmer organization and education	Sustainability Programs	Higher costs Lower incomes Withdrawal from coffee farming
Severe weather events, i.e. droughts, floods etc.	Probable	Considerable to Catastrophic	GAP and Early Warning Systems	Weather stations and insurance	State supportive	Severe sudden losses Switching to other crops
Erratic Rainfall	Probable	Moderate to considerable	GAP and Early Warning Systems Irrigation	Weather stations and insurance Finance irrigation equipment. Water availability.	Varieties research State supportive	Higher costs Lower yield and quality Switching to other crops
Unseasonal Rainfall during flowering	Occasional	Variable				Lower yield
Excessive rainfall	Occasional	Variable	GAP, drainage. Control of fungus diseases	Weather stations and insurance Renewal finance	Varietal research Replace traditional cultivars	Higher cost
Planting unselected varieties	Occasional	Variable to considerable	Research and Extension Services	Experimental and demonstration farms/plots	Sustainability programs Trade support	Lower yield, quality and income
No suitable (selected) planting material	Occasional	Variable	Private or public seed production/ nurseries	Finance purchase of planting material. Subsidize cost.	Good sector organization. Private initiatives. NGO's	Lower yield, quality and income
Insufficient or inadequate irrigation	Occasional	Variable to considerable	GAP and Irrigation equipment	Finance irrigation equipment	State supportive Availability of water	Erratic flowering/maturation Lower yield, quality and income
No or insufficient fertilization	Occasional	Variable to considerable	GAP. Production of compost/mulch	Experimental and demonstration farms/plots. Input finance.	Good sector organization	Lower yield, quality and income. Weak plants
Incorrect fertilization	Occasional	Variable	GAP, Research and Extension Services	Good farming education. Access to soil analysis and fertilization advice.	Sustainability programs	Higher costs. In extreme cases water pollution

Types of Risk and/or factors impacting grower incomes	Probability	Impact	Potential Mitigation Measures	Required Support Environment	Macro linkages	Value Impact
Pests/Disease	Probable	Moderate to catastrophic	GAP, Research and Extension Services. Early Warning Systems	Adequate funding of Research and Extension Sanitary harvesting	State supportive Sustainability Programs	Higher cost. Lower yield, quality and income, at times severe. Switching to other crops
Ageing Tree Park	Probable to frequent	Variable to considerable	GAP Adequate Research and Extension Services	Good farming education. Access to appropriate seed and seedlings. Renewal finance Spread replacement	Good Sector Organization Sustainability Programs Informed banking system.	Higher risk of Pest/Disease outbreak and contamination. Lower yield, quality and income. Failing coffee industry.
No renewal strategy, i.e. no pruning or replanting cycle.	Occasional	Variable	GAP. Reliable long-term land ownership. On-farm nurseries	Availability of appropriate seed and seedlings. Renewal finance	Long-term State policy. Sustainability programs	Higher risk of Pest/Disease outbreak and contamination. Lower yield, quality. And income. Failing coffee industry
Poor erosion control, shade management, weeding etc	Probable	Variable	GAP, Training, Demonstration Plots, Extension	Good farming education	Sustainability programs	Lower yields, quality and incomes.
Theft	Occasional	Variable	Trade controls	Good Sector organization	State intervention	Direct loss
No or Poor Quality Inputs	Occasional	Variable to considerable	Farmer organization Trade Controls	Sector organization. Seasonal finance. Use of mulch, compost, waste and manure	State supportive	Lower yield and quality
Input Price Volatility	Probable	Variable	Farmer organization	Sector organization. Bulk buying, direct import. Storage	State supportive	Inability to plan. Variable production costs.
Inadequate Yields	Probable	Variable	GAP. Adequate Research and Extension Services Demonstration farms/plots	Adequate funding of Research and Extension. Farmer education.	State supportive. Sustainability Programs.	Low farmer incomes. Switching to other crops
No or expensive labour	Probable	Variable	GAP and Tree Management. Mechanization	Extension and Farmer education Investment Finance	Sustainability Programs	Reducing farmer incomes

Types of Risk and/or factors impacting grower incomes	Probability	Impact	Potential Mitigation Measures	Required Support Environment	Macro linkages	Value Impact
				Good farm management		
No (affordable) Finance	Probable	Variable to considerable	Access to Micro Finance, Savings and Loans, etc	Good Farmer organizations	Good Sector organization. State, Trading and Banking Sector supportive	Excessively high costs or, unable to invest. Often unable apply inputs or harvest when required = lower yields, quality and income
No Formal Land Ownership	Probable	Variable	Formalised ownership structures, not only title deeds	Good Sector organization. Micro Finance Schemes and other NGO support	Informed banking sector. State intervention. Cadastral survey	Limits access to finance, yet formalized land tenure not necessarily an effective security. Also results in breaks in plantings and investment. Impedes long-term strategy
Production – Harvesting & Processing						
Harvesting errors	Occasional Probable	Moderate to considerable	Separate green cherry and floaters. Quality control. Remuneration according to quality.	GAP and training.	Sustainability programs	Lower quality and value
Poor on-farm storage	Probable	Variable	GAP Training Investment	Good Farmer organization. Extension Services Investment finance	Good Sector organization. Sustainability Programs	Lower quality, theft. Risk of ingress of pests, mould, contamination etc. Lowers value.
No or unreliable electricity supply	Occasional	Considerable	Generating equipment. Improved State infrastructure	Sector lobbying Investment finance	State intervention	Higher cost. Loss of income.
No or limited water	Occasional	Moderate to considerable	Limit water consumption. Switch to dry or semi-wet processing. Farmer education	Sector organization	Sustainability programs	Lower quality, value and income
Unseasonal rainfall – drying	Probable	Moderate to considerable	Early Warning Systems Covered drying	Weather stations	Sector organization	Higher cost Lower quality and

Types of Risk and/or factors impacting grower incomes	Probability	Impact	Potential Mitigation Measures	Required Support Environment	Macro linkages	Value Impact
			surfaces, or drying equipment	Investment Finance		value. Risk of mould.
Theft	Occasional	Variable to considerable	Trade controls Insurance Secure mills and stores	Good Sector organization	State intervention	Direct loss
Poor or erratic Quality	Occasional	Variable to considerable	Research and Extension Quality controls and standards. Price according to quality. Manual or mechanical sorting	Good Sector organization Farmer education Investment finance	State supportive. Sustainability Programs	Lower value, at times severely so. Risk of mould and insect infestation
Processing errors	Occasional	Variable to Considerable	Research Training Extension Services Quality control	Good Farming organization Investment finance	Sustainability Programs	Can destroy quality and value. Risk of default and loss of reputation.
Outdated or inappropriate equipment	Occasional	Variable to considerable	Training Extension Services	Investment finance	Equipment manufacturers	Lower yield, quality and income
High water consumption	Occasional to probable	Variable to considerable	Adapt process techniques and equipment. Water recirculation Demonstration mill	Investment finance	Equipment manufacturers Sustainability programs Legislation	Impact on environment
Water pollution	Occasional to probable	Variable	GAP. Farmer education. Training. Water sanitation	Good Sector organization Investment finance	Sustainability programs Legislation	Impact on environment and human health
Waste management	Occasional	Variable	GAP. Training.	Good Sector organization	Sustainability programs Legislation	Impact on environment

Types of Risk and/or factors impacting grower incomes	Probability	Impact	Potential Mitigation Measures	Required Support Environment	Macro linkages	Value Impact
Poor Roads/Lack of transport	Occasional to Probable	Variable to considerable	Infrastructure investment	Good Sector organization Investment finance	State intervention	Higher costs. Limits market access. Fewer collectors often results in lower farm gate prices.
Production - Marketing						
Poor or Erratic Quality	Occasional	Variable to considerable	Quality Control Trained staff Standards GPP (Good Processing Practices)	Good Sector organization	Sustainability Programs	Fewer buyers, reduced values
Excessive Moisture Content	Occasional	Variable to considerable	Training Standards. GPP. Remuneration according to MC	Farmer education Moisture meters	Sector organization	Lower quality and value
Limited (farm gate) competition	Occasional to Probable	Variable	Good farmer organization Transport facilities and Establish collection centres. Price information	Good sector organization	Trade support, Education	Low prices. No quality premium. In extreme cases: exploitation of farmers.
Excessive (farm gate/Collectors/Exporters) competition	Occasional	Variable	Farmer education.	Good sector organization Supervision/monitoring	Sustainability programs	Unrealistic price promises. Quality destruction. Defaults
Lack of Working Capital/Crop finance	Probable	Variable to considerable	Well organized Audited Accounts Good Reputation	Good Sector organization. Security pledges that can be realized.	Informed banking sector. State and buyer support	Unable guarantee supply = less buyer interest, lower price
Poor Roads/Lack of transport	Occasional to Probable	Variable to considerable	Infrastructure investment	Good Sector organization Investment finance	State intervention	Higher costs. Limits market access. Shipping delays = lower revenues.

Types of Risk and/or factors impacting grower incomes	Probability	Impact	Potential Mitigation Measures	Required Support Environment	Macro linkages	Value Impact
No or insufficient market information. Inability to interpret market behaviour	Probable	Variable to considerable	Trained staff 'know' coffee…. Decent communications	Good Sector and Farmer organization	Trade support, education	Lower prices, wrong decisions
Production–Prices						
Prolonged external price falls	Remote but possible	Catastrophic	Improve yields Improve quality Reduce costs Research and Extension	Good Sector and Farmer organization	Informed banking sector. State and buyer support. Sustainability Programs	Impossible to 'manage'. Destruction of assets. Increased poverty. Farmer withdrawal.
Unstable internal prices	Highly Probable	Considerable	Forward sales Risk Management	Good Sector and Farmer organization	Informed banking sector. State and buyer support	Unstable incomes Inability to raise finance or plan investments
Day to day external price volatility	Highly Probable	Considerable	Trained staff 'know' coffee…. Decent communications Risk management	Good Sector and Farmer organization	Informed banking sector. State and buyer support.	Inability to time sales. Often no relation to domestic market situation and increases chances of exploitation by intermediaries.
No clear farm gate pricing models or formulas	Highly Probable	Moderate to considerable	Training, regulation, transparency, communication. Extension.	Good Sector and Farmer organization	Final buyer/exporter support. Use of electronic media.	Farmers may be cheated on weight, moisture content, conversion ratios, defects and price.
Exchange rate volatility	Probable	Moderate to Considerable	Decent communications Risk management	Good Sector and Farmer organization	Informed banking sector. State supportive.	Increases domestic price volatility. Strengthening local currency = lower sector revenues
Production - General						
No clarity around real cost of production	Probable	Moderate	Farmer organization. Farm	Good Sector and Farmer organization.	State supportive. Sustainability programs and other NGO initiatives.	Not managing costs. Inability to make informed comparisons and

Types of Risk and/or factors impacting grower incomes	Probability	Impact	Potential Mitigation Measures	Required Support Environment	Macro linkages	Value Impact
			accounting. Training			investment decisions.
No Financial Literacy/ do not understand difference between revenue and profit.	Probable	Moderate	Farmer organization. Training	Good Sector and Farmer organization.	State supportive. Sustainability programs and other NGO initiatives.	Uninformed investment decisions. Potential for financial loss if not exploitation.
Inadequate Research and Extension Services	Possible	Considerable	Identify priorities and set strategies. Provide resources.	Good Sector organization	State intervention. Sustainability Programs	Falling volumes and quality. Over time can mean becoming 'irrelevant' in market terms, followed by farmer withdrawal. Pest and disease outbreaks.
Interest rate risk	Possible	Variable	Strong industry representation Lobbying	Good Sector organization.	State supportive. Informed banking system Final buyer support (occasionally)	Rising interest rates impact directly on farm gate prices as all along the value chain pass this cost back. Can disadvantage domestic operators. Less investment.
No (neutral) price information	Probable	Variable	Easily available neutral price and market information	Training on how to analyze/interpret information Provide formal, i.e. neutral channel via Internet and Mobile Phones	State supportive. Good Sector organization.	Exploitation by middlemen. But information excesses can be equally problematic.
No long term investment finance	Probable	Variable	Good farmer organization. Extension Services	Good sector organization. Demonstrate cost/benefit of crop rejuvenation	State supportive. Informed banking system. Sustainability programs.	Many unable to even afford annual replanting of small numbers of trees. Lower yields and falling quality. Increasingly uncompetitive
No weather related insurance	Probable	Variable to considerable	Lobbying by Sector Organizations	State intervention	Insurance or banking companies	Loss of income. If severe (which entirely possible) may result in farmer withdrawal.
No more suitable land	Occasional	Variable to considerable	Land restructuring. Switching from other less profitable crops.	Restricting speculative land ownership	State supportive Legislation	Stagnating or decreasing yield

Types of Risk and/or factors impacting grower incomes	Probability	Impact	Potential Mitigation Measures	Required Support Environment	Macro linkages	Value Impact
No owner succession	Occasional	Variable to considerable	Education Decent levels of income	Farmer organization Training	Agricultural colleges	Stagnating or decreasing yield. Probably reduces access to finance.
No crop differentiation	Occasional	Moderate	GAP and adequate information	Good farming education	Agricultural colleges. Sustainability programs	Exclusive dependence on coffee
Individual coffee holdings too small to be viable	Probable	Variable	Land consolidation	Appropriate government and sector strategy	Realistic sustainability approaches	Coffee reduced to subsistence and/or opportunistic farming only.

ANNEX 2 – INTERMEDIATE TRADE AND EXPORT RISKS

Sector	Probability	Impact	Potential Mitigation	Support Environment	Links	Value Impact
Domestic Collection Marketing						
Erratic quality Adulteration	Possible to probable	Variable	Quality control Trained Staff Reward 'quality'. Extension Services	Sector regulation Standards Farmer training	State supportive Sustainability Programs	Reduced values. Risk of rejection.
Unseasonal rainfall - drying	Probable	Moderate	Early Warning Systems Extended drying surface, drying trays, covered drying beds, mechanical drying equipment	Weather stations Investment finance	Informed banking system. Final buyer/exporter support	Lower quality. Risk of rejection.
Excessive (farm gate) competition	Occasional	Variable	Reward 'quality'. Honest weighing and pricing. Farmer training. Supervision/monitoring.	Extension Services	Good Sector organization. Sustainability Programs	Quality destruction. Risk of grower default.
Poor roads/lack of transport	Occasional to Probable	Variable	Infrastructure improvement. Up-country collection centres. Grouped transport by farmer organizations	Good Sector and Farmer organization. Investment finance	State intervention Final buyer/exporter support	Higher costs Limits market access.
Inadequate storage	Occasional to Probable	Variable	Trained staff GAP. Suitable storage facilities Training	Investment finance	Informed banking system. Final buyer/exporter support	Damage and/or loss of quality, ingress of pests. Higher insurance and finance costs or, inability to raise finance.
Poor intermediate processing	Occasional to Probable	Variable	Trained staff Good supervision Understand 'quality' Avoid poor quality cherries and wet parchment.	Sector regulation. Good Sector and Farmer organization	Final buyer/exporter support. Sustainability programs.	Quality and value destruction. Unnecessary losses.
No, or not transparent MC/quality/weight assessment. No, or not transparent bonus/penalty policy	Possible to probable	Variable to considerable	Standards. Communication Training of farmers/collectors/traders, i.e. in cupping	Good sector and Farmer organization. Formal structures for complaints and mediation	State and regulatory support	Mistrust. No interest in 'quality'. Declining interest in coffee farming.

Sector	Probability	Impact	Potential Mitigation	Support Environment	Links	Value Impact
Poor or no traceability	Possible to probable	Variable but in time can become Considerable	Training. Good Farmer organization. Good storage facilities	Good Sector organization. Extension Services.	Trade support. Sustainability programs.	No feedback to farmers. No recognition by buyers and end users. Eventually value destruction.
Theft	Occasional	Variable to Considerable	Secure storage Insurance	Good Sector organization Trade controls	State intervention	Direct loss. Possibly inability to insure/raise finance.
Day to day (external) price volatility	Probable	Considerable	Trained staff 'know' coffee… Decent communications. Risk management training	Links with final/export buyers. Access to (neutral) market information	Informed banking system. Final buyer/exporter support	Trading back-to-back least risky but, not always possible, lower margins. Alternatively take more risk. Needs discipline, limits etc..
Lack of market information/ inability to interpret market behaviour	Probable	Variable to Considerable	Trained staff 'know' coffee… Decent communications	Links with final/export buyers. Access to market information	Informed banking system. Final buyer/exporter support	Trading 'blind' = speculation if no internal discipline and exposure limits.
Major price moves	Possible	Variable	'Know' your growers and your buyers.	Links with final/export buyers. Access to market information	Sector regulation	Growers and/or buyers default on earlier commitments.
Prolonged external price falls	Remote but possible	Variable	Specialize on 'quality' Diversification… Join sustainability standards	Links with final/export buyers. Access to market information	Informed banking system. Final buyer/exporter support	Low prices = lower margins. Increased quality problems. More risk if stock holdings increase
Lack of working capital	Probable	Variable to Considerable	Well organized, disciplined trading Audited accounts Track record	Security pledges that can be exercised.	Informed banking system. Final buyer/exporter support	High cost of funding. Unable to attract volumes =less buyer interest=lower prices/margins.
Interest rate risk	Possible	Variable	Strong industry representation Increase turnover speed. Improve efficiency	Good Sector organization Final buyer/exporter support.	State supportive Informed banking system	High domestic interest rates increase costs and reduce turnover/buying capacity =lower farm gate prices. Can also disadvantage domestic operators.

Sector	Probability	Impact	Potential Mitigation	Support Environment	Links	Value Impact
Non-payment or buyer default	Possible	Variable	Valid contracts. 'Know' your buyers	Good Sector organization Credit insurance	State and Regulatory support	Fewer traders can mean reduced competition at farm gate
Export Marketing Environment						
Erratic quality Inferior quality Adulteration Unfit for human consumption	Possible to Probable	Variable to Considerable	Know your domestic counterparts. Quality Control Reward 'quality' through transparent purchasing procedures. Refuse to accept substandard coffee. Employ qualified staff.	Good Sector organization Standards	Sector regulation Sustainability Programs	High cost of processing. Reduced to producing bulk or commodity quality = lower value, higher risk. Possible export default if suppliers deliver sub-standard coffee.
Inefficient export Processing	Possible	Variable	Trained staff who 'know' coffee and keep proper records Adequate equipment Monitor…	Good Sector organization Standards Self-regulation Investment finance	Sector regulation	Excessive weight loss and quality destruction. Can hide fraud/theft. Limits markets. Loss of value.
Inadequate shipping opportunities. Port congestion	Possible to Probable	Variable to Considerable	Infrastructure investment	Good Sector organization. Decent port structures. Investment finance	State supportive	Shipping delays, transshipment = higher costs. Puts off buyers, especially roasters. Limits markets and reduces flexibility
Overregulation Bureaucracy	Possible to Probable	Variable	Strong industry representation. Streamline procedures. Self-regulation	Good Sector organization. Sensitization programs.	State intervention	Limits competition. Adds indirect or 'invisible' costs that in the end reduce farm gate prices.
Counterpart cum Reputational risk Defaults	Possible , both internal and external	Variable to Considerable	Know your domestic counterparts. Good Sector organization.	Sector regulation. Formal dispute resolution procedures	State supportive. Appropriate, effective legal framework offering redress	Quality claims and defaults put off many buyers, especially roasters. Increases cost of doing business. If severe lowers price potential.
Theft and Fraud	Occasional	Variable to	Know your domestic counterparts.	Sector	State	Increases the cost of doing

Sector	Probability	Impact	Potential Mitigation	Support Environment	Links	Value Impact
		Considerable	Good internal monitoring. Insurance	regulation.	supportive Appropriate, effective legal framework offering redress	business and reduces farm gate prices.
Excessive export costs and taxes	Possible	Variable to moderate	Strong industry representation. Open monopolies to competition. Follow best practices	Good Sector organization. Regulation Lobbying	State intervention	In the end all coffee is priced 'landed roasting plant'. Deducting all costs and margins gives the farm gate price…
Corruption	Possible	Variable	Strong industry representation	Good Sector organization. Regulation	State intervention	See above…
Lack of affordable trade finance	Possible to Probable	Variable	Well established Audited accounts. Acceptable balance sheet. Security… Collateral management	Good Sector organization. Final buyer support.	State supportive. Informed banking sector.	Limits competition and can lower farm gate prices. Can disadvantage domestic operators.
Interest rate risk	Possible	Variable	Strong industry representation Increase turnover speed. Improve efficiency	Good Sector organization Final buyer support.	State supportive. Informed banking system Access to external financial markets	High domestic interest rates increase the cost of doing business =lower farm gate prices. Can also disadvantage domestic operators.
Currency risk	Probable	Variable to Considerable	Access to risk management mechanisms. Monitoring Discipline	Good Sector organization. Enabling regulatory regime.	State supportive Informed banking system Access to external financial markets	Inability to manage currency risk requires higher margins = lower farm gate prices. In worst case scenarios can eliminate some actors thereby reducing competition. Can disadvantage domestic operators.
Country Risk	Possible	Moderate	Strong industry representation	Good Sector organization Long-term policy	State intervention. Informed banking sector	Increased country risk raises the cost of finance = lower farm gate prices
Insufficient clarity on contractual rights and	Possible to	Variable	Training, seminars etc.	Good Sector	State	Impact can range from simple

Sector	Probability	Impact	Potential Mitigation	Support Environment	Links	Value Impact
obligations	Probably			organization.	supportive. Informed banking sector	errors and inconveniences to almost catastrophic losses
Inadequate, inefficient or non-existent Sector Organization/representation	Possible to Probable	Variable to considerable	Understand and promote the common interest. Demonstrate the impact 'invisible costs' have…	Good Sector organization, able to analyze constraints and make strong representations	State supportive. Informed banking sector. Enlist help of final buyers	Without credible representations the revenue impact of constraints remains hidden.
Export Marketing - Price Risk						
Day to day external price volatility	Highly probable	Considerable	Trained staff who 'know' coffee… Good communications. Internal trading limits and discipline. Risk management.	Good sector organization. Access to affordable risk management solutions. Enabling regulatory regime.	Informed banking sector. Possible State support and help from final buyers.	Often no link with domestic market situation. Increases risk. Complicates purchase and sales decisions. Hedging means margin calls… Options not always the answer… Lack of access to risk management instruments disadvantages domestic operators.
Basis or Differential risk	Highly probable	Considerable	Trained staff who 'know' coffee… Good communications Internal trading limits and discipline. Understand local markets and how PTBF contracts work.[1]	Good sector organization. Training and information sources.	Informed banking sector. Possible State support and help from final buyers.	Cannot be 'managed' other than by limiting exposure = internal discipline. Impact can be severe.
Speculative risks	Possible to Probable	Moderate to Considerable	Trained staff. Trading limits. Position reports. Unfortunately it is possible to 'hide' short sales until the coffee has to be bought… [2]	Training and information sources.	Informed banking sector.	Over-trading or speculative positions can lead to defaults and bankruptcy. Affects sector reputation.
Quality and Value risk	Possible	Variable	Quality control. Does quality of purchases, arrivals or stocks match sales? Know coffee, i.e. learn how to cup.	Sector regulation.	Informed banking sector. Collateral	Incoming quality doesn't match what is sold or, is

[1] PTBF = Price To Be Fixed contracts = at the time of sale only the differential is set with the applicable futures price left open for 'fixing' at a later date through an agreed arrangement. Combining the two then provides the final sales price.
[2] Short = enter into the sales commitment now and purchase the required coffee later. Long = buy coffee now and resell at a later date.

Sector	Probability	Impact	Potential Mitigation	Support Environment	Links	Value Impact
				Standards.	management	unusable. Can mean having to buy new stock and sell unfit stock = huge losses.
Counterpart risk Domestic	Possible	Variable	Know your suppliers. Set individual exposure limits for forward commitments. Daily reports on everything!	Sector regulation.	Informed banking sector. Enabling legal environment.	Default by domestic suppliers can in turn result in defaulting on sales commitments.
Counterpart risk External	Possible	Variable	Know your buyers. Set individual exposure limits on both forward sales and outstanding payments. Daily reports on both. Look for changes in payment behavior. Documents for collection via banking system etc.	Access to information sources (although credit reports not always helpful or even accurate).	Informed banking sector	Default by end users is rare but can happen. Potential impact huge as no payment and now unsold coffee afloat or in an overseas port.

ANNEX 3 – LENDING ISSUES IDENTIFIED

Sector	Availability	Cost	Limitations	Impact	Potential mitigation	Support Environment	Value Impact
Production							
Longer term Investment finance	Limited to nil	?	No security and/or insecure land tenure. Not a commercial bank activity or priority.	Inability to renew or extend plantings	Good Sector and Farmer organization.	State supportive. Agriculture credit channels for longer term finance. Sustainability programs.	Declining yield and quality. Increasingly uncompetitive, becoming unsustainable. High interests
Medium Term Investment Finance	Limited to nil	?	No security and/or insecure land tenure. Not a commercial bank activity or priority.	Inability to construct or upgrade processing and storage facilities	Good Sector and Farmer organization.	State supportive. Agriculture credit channels. Sustainability programs	Unable improve quality, address food security concerns or diversify into specialty markets.
Crop Finance	Limited to nil	?	As above. Also, in cooperatives and farmer groups crop may be diverted or quality delivered may be too poor.	No inputs or untimely application. Insufficient or no labour. Forced to use informal credit channels.	Good Sector and Farmer organization.	State supportive. Agriculture credit channels. Micro-credits Sustainability programs and value chain partners.	Lower yield and quality. Forced to pay usury rates of interest.
Post-harvest							
Collection and Interior Processing credit	Limited. Ratio to own funds: lowest	Highest	Insufficient security. No formal accounts. Limited own funds. Price, quality and theft risk.	Use own funds or informal credit channels.	Good Sector and Farmer organization Adequate storage, insurance. Collateral manager. Bank has real title to goods.	Agriculture credit channels. Informed banking system Sustainability programs and supportive value chain partners. Letters of Credit…	Reduces competition whilst higher cost of funds mostly recouped from farm gate prices. Can exclude small farmer organizations.
Multiple borrowing: Where no mechanisms exist for sharing information, especially between non-financial institutions, there is a risk of multiple borrowing by farmers from different sources/lenders along the value chain. This can result in the same crop and/or collateral being							

Sector	Availability	Cost	Limitations	Impact	Potential mitigation	Support Environment	Value Impact
hypothecated against various sources of financing, leading to high levels of indebtedness among coffee farmers.							
Export							
Stock credit	Limited. Ratio to own funds: lowest	High	Must have own funds, pledgeable security. Stock rotation. Price, quality and theft risk.	No credit for speculative (unsold or unhedged) stocks.	Adequate storage, insurance. Collateral manager. Bank has real title to goods. Pre-sold to approved buyers or hedged	Informed banking system. Appropriate, effective legal framework. Access to hedging instruments. Supportive value chain partners, Letters of Credit…	Can exclude small farmer organizations from moving up the value chain. Can disadvantage domestic operators.
Export Processing credit	Limited to Adequate. Ratio to own funds: higher	High	Must have own funds, pledgeable security. Stock rotation. Price, quality and theft risk.	No credit for speculative (unsold or unhedged) stocks	Adequate storage, insurance. Collateral manager. Bank has real title to goods. Pre-sold to approved buyers or hedged	Informed banking system. Appropriate, effective legal framework. Access to hedging instruments Supportive value chain partners. Letters of Credit…	Can exclude small farmer organizations from moving up the value chain. Can disadvantage domestic operators.
Pre-shipment finance	Adequate. Ratio to own funds: higher	Lower	Must have own funds, pledgeable security. Stock rotation. Price, quality and theft risk.	No credit for speculative (unsold or unhedged) stocks	Adequate storage, insurance. Collateral manager. Bank has real title to goods. Pre-sold to approved buyers or hedged	Informed banking system. Appropriate, effective legal framework. Access to hedging instruments. Supportive value chain partners. Letters of Credit…	Can exclude small farmer organizations from moving up the value chain. Can disadvantage domestic operators by excluding potential but unknown buyers.
Negotiation of shipping	Adequate. Ratio to	Lowest	Understands the business.		Sold to pre-approved buyer.	Informed banking system. Appropriate,	Can disadvantage domestic operators by excluding

Sector	Availability	Cost	Limitations	Impact	Potential mitigation	Support Environment	Value Impact
documents	own funds: highest		Collateral manager. No errors. Must have good track record.		Documents in bank's name, providing real title.	effective legal framework.	potential but unknown buyers. Costs can be manipulated.
Different types of advance Letters of Credit	Variable	Variable	Understands the business. Collateral manager. No errors. Must have good track record.	Can be very helpful but recipient still has to conform to local bank's requirements and limitations.	Sold to pre-approved buyer. Documents in bank's name, providing real title.	Informed banking system. Appropriate, effective legal framework.	Many buyers dislike opening L/C's. Cost always calculated and deducted. But can assist especially smaller operations.

Initial List of Mechanisms and Tools for Improving Coffee Sector Finance and Regulatory / Enabling Environment Prerequisites and Requirements

General	Pre-conditions	Comment
Foreign funding	Can be freely repatriated.	No 'unexpected' regulations or controls. No taxation ambiguity.
Pre-financing in foreign currency	Against certified purchases/stocks. Insured in convertible, transferable currency. Can be directly offset against collection of export proceeds.	Ditto
Collateral	Clear, unambiguous documents of title. No prior liens or rights. Must be enforceable under local legislation = fiduciary transfer of goods and authority to sell the goods.	Clear legislation. Functioning (commercial) courts. No endless 'delays' or surprises.
Collateral Management	Collateral Manager carries appropriate liability/indemnity cover. Proceeds freely transferable or cover taken out abroad.	Recognised in domestic legislation.
Warehouse Receipts	Formally recognised as *enforceable* documents of title. No prior liens or rights. Warehousemen carry appropriate liability/indemnity cover.	Recognised in domestic legislation Functioning (commercial) courts. No endless 'delays' or surprises.
Execution of Collateral rights	Clear procedures governing default confirmation and execution. Underlying goods can be freely processed and/or exported by or on behalf of the creditor.	Recognised in domestic legislation. Functioning (commercial) courts. No endless 'delays' or surprises. Automatic trade or export license where

General	Pre-conditions	Comment
		required Buyer accepts contract execution by lending institution, i.e. contracts are pledged to the lender.
Taxation	Clarity on external lender's liabilities and rights in terms of interest income.	No 'unexpected' regulations or controls. No taxation ambiguity.
Lending limits	Provision of external funds through local banks does not necessarily release these from their own or local lending limits.	Limits (or caps) always apply to maximum exposure to the sector and to individual borrowers. Ratio of lending to pledged securities will never be 100%.
Commercial	**Pre-conditions**	**Comment**
Underlying transaction	Agreed structure. Pre-approved buyers. Fixed price, risk management or fully hedged.	Borrower has all authorizations necessary to export. All levies, taxes are paid up to date. Legal opinion confirms lender's rights.
Risk management	Hedging tools, in-built margin call financing	Access to financial markets/risk management instruments Clarity on how PTBF contracts are to be fixed Clear in-house position and exposure limits Regular reporting plus spot checks
Insurance	Full commercial all-risks cover up to/including placing on board vessel or as stipulated in the contract, pledged to lender. Suitable political risk cover.	To include exporter default due to export restrictions, riots etc.
Physical stocks as security	Pledge agreement. Stored in approved warehouses, properly marked and identifiable. No commingling.	Warehousemen carry appropriate liability and indemnity cover. Quality and weight certificates are available.
Stock values	Daily verification of market value.	Top-up clause in lending agreement if

General	Pre-conditions	Comment
		value falls. Monitoring of processing and turnover speed.
Collateral Management Agreement	Must be in place. Must include performance and indemnity insurance, including fraud/negligence by own staff.	Collateral Managers and Warehousemen should not hold pre-emptive rights to the goods. Local legislation must be clear on this.
Export documents	Always in name of or assigned to the lending institution.	Must be negotiable. No ambiguity as to how or when shipping documents come under the lender's control.
Payment Risk	Pre-approved buyers only. Pre-set individual exposure limits.	Monitor payment speeds. Look for changes in payment patterns.
Daily position reports	Provide daily overview of borrower's entire trading operation.	Quantity and type of stocks; sold or unsold; amount of stocks under processing; goods awaiting shipment/in transit to port; outstanding invoices by individual buyer; open sales contracts by type (fixed price/PTBF) and by individual buyer; does quality of stocks match outstanding sales;

ANNEX 4 – COUNTRY SPECIFIC COFFEE SECTOR INFORMATION

Country	**Industry Structure** (Estimates)	**Marketing System & Taxation**	**Risk Management Instruments**	**Finance Options**		**Production (million bags - average of crop years 2008 to 2012.)**	**Domestic Consumption (million bags - average of crop years 2008 to 2012.)**	**Exports (million bags - average of crop years 2008 to 2012.)**	**FOB Price (US Cents/lb - average of crop years 2008 to 2012.)**	**% of FOB to Growers[3]**
Brazil Regulatory Authority: Coffee Department, Ministry of agriculture	290,000 *growers;* 2.4 million ha *Av. Farm:* 8 ha. of which*:* < 10 ha 35% 10 to 50 ha 30% > 50 ha 35%	Free from any major intervention. Highly organised, 220 registered exporters; Functioning domestic coffee-futures market; Well-developed soluble coffee processing industry; & a well-developed domestic market. No export taxes; Import taxes:- Green 10%; Roasted 10%; Soluble 16%.	Freely available - many available via Funcafe	Commercial banks; Funcafe; PRONAF; ABC Program.		45.57 A: 34.33 R: 11.25	19.15	30.94 A: 27.66 R: 3.28	145.15 A: 148.53 R: 116.68	86.7 87.8 77.1
Burundi Regulatory Authority: Coffee Sector Regulatory Authority (ARFIC)	650,000 *growers;* 70,000 ha. *Av. farm:* 0.1 ha. *Of which:* < 10 ha: virtually 100%	Privatised but under relatively tight Government control. Central Auction, limited direct sales. Internal trade also tightly controlled. Export taxes - N/A; Import taxes:- Green 40%; Roasted 40%; Soluble 40%.	Very limited availability	Commercial banks (all with substantial Government stakeholding); Micro-financing institutions.		0.32	0.02	0.29	154.24	49.5

[3] Caution is required when interpreting and comparing these figures, as reported producer prices do not necessarily always relate to the same point in the marketing chain in all countries.

Country	**Industry Structure** (Estimates)	**Marketing System & Taxation**	**Risk Management Instruments**	**Finance Options**		**Production (million bags - average of crop years 2008 to 2012.)**	**Domestic Consumption (million bags - average of crop years 2008 to 2012.)**	**Exports (million bags - average of crop years 2008 to 2012.)**	**FOB Price (US Cents/lb - average of crop years 2008 to 2012.)**	**% of FOB to Growers[3]**
Cameroon Regulatory Authority: Office National du Café et du Cacao	400,000 *growers;* 226,000 ha *Av. Farm* 0.5 ha. *Of which:* < 10 ha: virtually 100%	Entirely free since 1994/95 although exports subject to tight control. Export taxes - N/A; Import taxes:- Green 5 - 30%; Roasted 30%; Soluble 30%.	Very limited availability	Commercial banks; Informal sector - comprising private moneylenders, informal traders and the Tontines (small, informal savings and loan associations).		0.70 A: 0.09 R: 0.61	0.07	0.59 A: 0.05 R: 0.54	91.16 A: 173.60 R: 83.47	64.1 62.8 64.2
Colombia Regulatory Authority: National Federation of Coffee Growers of Colombia (Federacafe).	550,000 *growers;* 780,000 ha. *Av. farm:* 1.4 ha. *Of which :* < 10 ha 70% > 10 ha 30%	Mixed -exports controlled by FEDERACAFE with limited participation by private exporters. Colombian state regulates internal prices through the National Coffee Fund. Export taxes - N/A; Import taxes:- Green 10-15%; Roasted 15-20%; Soluble 20%.	Freely available, but National Coffee Fund ensures minimum prices with Government support	Commercial banks; Banco Agario: Banco Cafeterio; Finagro.		A: 8.19	1.35	8.34	205.48	74.3
Congo, Dem. Rep of Regulatory Authority: Office National du Café (ONC)	600,000 *growers;* 30,000 ha. *Av. farm:*0.5 ha. *Of which:* < 10 ha 99% > 10 ha 1%	The industry operates in an unstable environment where the rule of law is difficult to enforce. Various regulations exist governing the industry, but most are unenforceable. Export taxes - N/A; Import taxes:- N/A	Mostly unavailable	Very few, possibly some informal sources.		0.37 A: 0.07 R: 0.30	0.2	0.16 A: 0.09 R: 0.07	93.42 A: 110.61 R: 74.01	N/A N/A N/A

Country	**Industry Structure** (Estimates)	**Marketing System & Taxation**	**Risk Management Instruments**	**Finance Options**		**Production (million bags - average of crop years 2008 to 2012.)**	**Domestic Consumption (million bags - average of crop years 2008 to 2012.)**	**Exports (million bags - average of crop years 2008 to 2012.)**	**FOB Price (US Cents/lb - average of crop years 2008 to 2012.)**	**% of FOB to Growers[3]**
Costa Rica Regulatory Authority: ICAFE (Instituto del Café de Costa Rica)	51,000 *growers;* 110,000 ha. *Av. farm:* 2.0 ha. *Of which:* < 10 ha 95% > 10 ha 5%	Tight control over exports as well as over internal industry and prices. Export taxes - 1.5%; Import taxes:- Green 9-14%; Roasted 14%; Soluble 14%.	Freely available via ICAFE or directly	Commercial banks; FINAR credit Scheme; Rural Credit Union; Microfinance institutions.		A: 1.41	0.25	1.3	185.37	79.1
Côte d'Ivoire Regulatory Authority: Conseil du Café & Cacao (CCC)	400,000 *growers;* 532,000 ha. *Av. farm: 1.3 ha.* Of which*:* < 10 ha: virtually 100%	Coffee marketing was fully liberalised in 1998. Export taxes - N/A; Import taxes:- Green 20%; Roasted 20%; Soluble 10-20%.	Very few available	Commercial banks; and Micro-Finance Institutions		R: 1.82	0.32	1.54	86.74	50.0
Dominican Republic Regulatory Authority: Codocafé	90,000 *growers;* 130,000 ha. *Av. Farm:* 1.4 ha. *Of which:* < 10 ha 75% > 10 ha 25%	Relatively free from any major controls or undue state intervention; Well-developed domestic industry. No Export taxes; Import taxes:- Green 14%; Roasted 20%; Soluble 20%.	Freely Available, but usage not widespread and mainly limited to export sector	Commercial banks; and Micro-Finance Institutions		A: 0.38	0.38	0.09	183.25	74.8
Ecuador Regulatory Authority: COFENAC	*105,000 growers;* 193,000 ha. *Av. farm: 1.8 ha.* Of which*:* < 10 ha 80% > 10 ha 20%	Relatively free from any major controls or undue state intervention. Sizeable soluble industry mainly for export. Export tax: 2% of FOB value. Import taxes Green 10-15% Roasted 15-30% Soluble 30%	Freely Available	Commercial banks;		0.89 A: 0.48 R: 0.41	0.22	1.15 A: 0.46 R: 0.69	111.79 A: 121.24 R: 105.49	98.2 130.9 76.4

Country	**Industry Structure** (Estimates)	**Marketing System & Taxation**	**Risk Management Instruments**	**Finance Options**		**Production (million bags - average of crop years 2008 to 2012.)**	**Domestic Consumption (million bags - average of crop years 2008 to 2012.)**	**Exports (million bags - average of crop years 2008 to 2012.)**	**FOB Price (US Cents/lb - average of crop years 2008 to 2012.)**	**% of FOB to Growers[3]**
El Salvador Regulatory Authority: Consejo Salvadoreno del Cafe (CSC)	24, *growers;* 155,000 ha *Av. Farm:* 6 ha. *Of which:* < 10 ha 25% > 10 ha 75%	Relatively free from any major controls or undue state intervention. No Export taxes; Import taxes:- Green 10-15%; Roasted 15%; Soluble 15%.	Freely Available, but usage not widespread and mainly limited to export sector.	Commercial banks;		A: 1.37	*0.15*	1.34	165.06	62.5
Ethiopia Regulatory Authority: Ministry of Trade	1.1 million *growers;* 520,000 ha. *Av. Farm: 0.5 ha.* Of Which*:* < 10 ha 95% > 10 ha 5%	Liberalised but remains under relatively tight Government control. Central Exchange, limited direct sales. Internal trade also tightly controlled. Export Taxes N/A Import Taxes N/A		Commercial Banks; Oromia Cooperative Bank.		A: 6.86	3.29	2.78	169.01	58.5
Guatemala Regulatory Authority: ANECAFE (Asociación Nacional del Café de Guatemala)	90,000 *growers;* 270,000 ha. *Av. Farm:* 3 ha *Of which:* < 10 ha 30% > 10 ha 70%	Relatively free from any major controls or undue state intervention. Export taxes - N/A; Import taxes:- Green 15%; Roasted 15%; Soluble 15%.	Freely Available	Commercial Banks;		A: 3.70	0.34	3.64	168.59	85.4
Honduras Regulatory Authority: IHCAFE (Instituto Hondureño del Café)	87,000 *growers;* 265,000 ha. *Av. Farm:* 3 ha. *Of which:* < 10 ha 85% > 10 ha 15%	Relatively free from any major controls or undue state intervention. Export taxes - N/A; Import taxes:- Green 10-15%; Roasted 15%; Soluble 15%.	Freely Available	Commercial Banks;		A: 4.44	0.32	3.83	167.96	75.5

Country	**Industry Structure** (Estimates)	**Marketing System & Taxation**	**Risk Management Instruments**	**Finance Options**		**Production (million bags - average of crop years 2008 to 2012.)**	**Domestic Consumption (million bags - average of crop years 2008 to 2012.)**	**Exports (million bags - average of crop years 2008 to 2012.)**	**FOB Price (US Cents/lb - average of crop years 2008 to 2012.)**	**% of FOB to Growers[3]**
India Regulatory Authority: Coffee Board of India	221,000 *growers;* 360,000 ha *Av. farm:* 1.6 ha. *Of which:* < 10 ha 70% > 10 ha 30%	Liberalised and relatively free from any major controls or undue state intervention. No Export taxes; Import taxes:- Green 100%; Roasted 100%; Soluble 30%.	Freely accessible, a number of which including insurance (both life and crop), as well as a price stabilisation scheme are provided by the Coffee Board.	Commercial Banks; Micro finance institutions: Plus interest rate subsidies are available via the Coffee Board of India; The Central Bank (RBI) through the banking network; through NABARD; and from State Governments covering the Cooperatives.		4.86 A: 1.55 R: 3.31	1.78	4.43 1.44 2.99	117.64 146.56 103.72	91.3 96.0 89.1
Indonesia Regulatory Authority: Ministry of Agriculture; AEKI (Indonesian Coffee Exporters' Association)	1.0 million *growers;* 1.3 million ha. *Av. Farm:* 1.3 ha. *Of which:* < 10 ha 95% > 10 ha 5%	Both the internal and export trade is entirely in the hands of the private sector. No Export taxes; Import taxes:- Green 0-5%; Roasted 5%; Soluble 5%.	Freely Available, but usage not widespread and mainly limited to export sector	Commercial Banks;		10.00 A: 2.00 R: 8.00	3.40	7.18 A: 1.31 R: 5.87	94.31 145.23 82.94	N/A

Country	**Industry Structure** (Estimates)	**Marketing System & Taxation**	**Risk Management Instruments**	**Finance Options**		**Production (million bags - average of crop years 2008 to 2012.)**	**Domestic Consumption (million bags - average of crop years 2008 to 2012.)**	**Exports (million bags - average of crop years 2008 to 2012.)**	**FOB Price (US Cents/lb - average of crop years 2008 to 2012.)**	**% of FOB to Growers[3]**
Kenya Regulatory Authority: Coffee Board of Kenya	600,000 *growers;* 160,000 ha. Av. Farm: 0.3 ha. *Of which:* < 10 ha 58% > 10 ha 42%	Some state control; Private exporters but sales via Central Auction and direct sales; internal market channels highly regulated. No Export taxes; Import taxes:- Green 25%; Roasted 25%; Soluble 10-25%.	Freely accessible	Commercial Banks; Coffee Dev Fund; Co-operative Bank; Micro-Financing Institutions/SACCOS (saving and Credit Cooperatives); Marketing Agents.		A: 0.67	0.05	0.60	217.67	N/A
Madagascar Regulatory Authority: Comite National de Commercialisation du Café (CNCC)	350,000 *growers;* 155,000 ha. *Av. Farm:* 0.4 ha. *Of which:* < 10 ha: virtually 100%	Liberalised and relatively free from any major controls or undue state intervention. Export taxes - N/A; Import taxes:- Green 20%; Roasted 20%; Soluble 20%.	Mostly unavailable	Mainly from Micro-finance institutions (both formal and informal); very limited finance available from Commercial banks;		R: 0.58	0.47	0.11	92.57	N/A

Country	**Industry Structure** (Estimates)	**Marketing System & Taxation**	**Risk Management Instruments**	**Finance Options**		**Production (million bags - average of crop years 2008 to 2012.)**	**Domestic Consumption (million bags - average of crop years 2008 to 2012.)**	**Exports (million bags - average of crop years 2008 to 2012.)**	**FOB Price (US Cents/lb - average of crop years 2008 to 2012.)**	**% of FOB to Growers[3]**
Mexico Regulatory Authority: The Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food, (SAGARPA); Asociación Mexicana de la Cadena Productiva del Café (AMECAFE)	300,000 *growers;* 690,000 ha. *Av. Farm:* 2.3 ha. *Of which:* < 10 ha 70% > 10 ha 30%	Relatively free from any major controls or undue state intervention. No Export taxes; Import taxes:- Green 20%; Roasted 72%; Soluble 140.4%.	Price risk management tools and facilities are made available under a programme operated by the Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food, (SAGARPA)	Commercial banks; plus AMECAFE together with SACARPA operate a revolving fund which provides credit guarantees		A: 4.49	2.29	**2.84**	172.56	73.5
Nicaragua Regulatory Authority: National Coffee Council Nicaragua- (CONACAFE)	48,000 *growers;* 120,000 ha. *Av. Farm:* 2.5 ha. *Of which:* < 10 ha 65% > 10 ha 35%	Relatively free from any major controls or undue state intervention. No Export taxes; Import taxes:- Green 10-15%; Roasted 15%; Soluble 15%.	Freely Available, but usage not widespread and mainly limited to export sector	Commercial Banks; Fondo de Desarrallo local; National development Bank (BANADES); Micro-financing through Nicargua Credit Unions; Nicargaua Rural credit Fund.		A: 1.70	0.20	1.63	171.98	43.1

Country	**Industry Structure** (Estimates)	**Marketing System & Taxation**	**Risk Management Instruments**	**Finance Options**		**Production (million bags - average of crop years 2008 to 2012.)**	**Domestic Consumption (million bags - average of crop years 2008 to 2012.)**	**Exports (million bags - average of crop years 2008 to 2012.)**	**FOB Price (US Cents/lb - average of crop years 2008 to 2012.)**	**% of FOB to Growers[3]**
Papua New Guinea Regulatory Authority: Coffee Industry Corporation (CIC)	400,000 *growers;* 60,000 ha. *Av. Farm:* 0.15 ha. *Of which:* < 10 ha 85% > 10 ha 15%	Relatively free from any major controls or undue state intervention. No Export taxes; Import taxes:- Green 25%; Roasted 25%; Soluble 25%.	Freely Available, but usage not widespread and mainly limited to export sector	Commercial Banks; National Development Bank; a small number of micro-financing schemes.		1.11 A: 1.10 R: 0.01	0.02	1.04 A: 1.03 R: 0.01	169.37 A: 169.97 R: 107.41	52.5 52.7 29.5
Peru Regulatory Authority: Junta Nacional del Café; Peruvian Chamber of Coffee and Cocoa	160,000 *growers;* 370,000 ha. *Av. Farm size:* 2.4 ha. *Of which:* < 10 ha 90% > 10 ha 10%	Relatively free from any major controls or undue state intervention. Export taxes - N/A; Import taxes:- Green 17%; Roasted 9-17%; Soluble 0%.	Freely Available, but usage not widespread and mainly limited to export sector	Commercial Banks; Peruvian microfinance institution ARARIWA; Cajas Rurales de Ahorro y Credito (CRAC);		A: 4.31	0.25	3.93	170.98	N/A
Rwanda *Regulatory Authority: National Agricultural Export Development Board (NAEB)*	*500,000 growers;* *37,500 ha.* *Av. Farm size: 0.07 ha.* *Of which:* *< 10 ha: virtually 100%*	Liberalised and relatively free from any major controls or undue state intervention. No Export taxes; Import taxes:- Green 5-15%; Roasted 30%; Soluble 30%.	Available, but usage not widespread and mainly limited to export sector	Commercial Banks; Bank Populaire, Cooperatives; Savings and Credit Associations plus other Informal sources.		A: 0.32	0.001	0.28	181.16	N/A

Country	**Industry Structure** (Estimates)	**Marketing System & Taxation**	**Risk Management Instruments**	**Finance Options**		**Production (million bags - average of crop years 2008 to 2012.)**	**Domestic Consumption (million bags - average of crop years 2008 to 2012.)**	**Exports (million bags - average of crop years 2008 to 2012.)**	**FOB Price (US Cents/lb - average of crop years 2008 to 2012.)**	**% of FOB to Growers[3]**
Tanzania Regulatory Authority: Tanzania Coffee Association	400,000 *growers;* 120,000 ha. *Av. Farm size:* 0.3 ha. *Of which:* > 10 ha 90% > 10 ha 10%	Liberalised, but both internal and external trade subject to Government regulation. Central Auction, but direct sales permitted. No Export taxes; Import taxes:- Green 25%; Roasted 25%; Soluble 10 -15%.	Available, but usage not widespread and mainly limited to export sector	Commercial Banks; Savings and Credit Cooperatives (SACCOs); micro financing schemes run mainly by NGO's.		0.83 A: 0.53 R: 0.30	0.06	0.81 A: 0.52 R: 0.29	138.47 A: 169.32 R: 83.15	47.4 48.5 45.5
Thailand Regulatory Authority: Thai Coffee Exporters Association	*No. of growers: N/A* 52,500 ha. *Av. Farm siz: N/A* Of which*:* < 10 ha: virtually 100%	Relatively free from any major controls or undue state intervention. Export taxes - N/A; Import taxes:- Green 40% in quota, 90% out of quota; Roasted 40% in quota,90% out of quota; Soluble 49%.	Available, but usage not widespread and mainly limited to export sector	Commercial Banks; Agricultural bank; Micro-finance available through the Village fund scheme		R: 0.80	0.5	0.23	102.93	N/A
Uganda Regulatory Authority: Uganda Coffee Development Authority	500,000 *growers;* 320,000 ha. *Av. Farm size:* 0.6 ha. *Of which:* > 10 ha 99% > 10 ha 1%	Liberalised and relatively free from any major controls or undue state intervention Export taxes - N/A; Import taxes:- Green 25%; Roasted 25%; Soluble 10-25%.	Available, but usage not widespread and mainly limited to export sector	Commercial Banks (including the Centenary Rural Development Bank Ltd); Micro-financing agencies.		3.03 A: 0.61 R: 2.42	0.14	2.96 A: 0.68 R: 2.28	91.34 A: 129.78 R: 79.88	76.1 65.6 79.2

Country	**Industry Structure** (Estimates)	**Marketing System & Taxation**	**Risk Management Instruments**	**Finance Options**		**Production (million bags - average of crop years 2008 to 2012.)**	**Domestic Consumption (million bags - average of crop years 2008 to 2012.)**	**Exports (million bags - average of crop years 2008 to 2012.)**	**FOB Price (US Cents/lb - average of crop years 2008 to 2012.)**	**% of FOB to Growers[3]**
Vietnam Regulatory Authority: Vietnam Coffee and Cocoa Association (VICOFA)	500,000 *growers;* 570,000 ha. *Av. Farm size:* 1.1 ha. *Of which:* < 10 ha 85% > 10 ha 15%	Tight control over exports as well as over internal industry. No Export taxes; Import taxes:- Green 16-20%; Roasted 35%; Soluble 43%.	Extensive Government support including price and input subsidies.	Commercial Banks; Agribank;		A: 0.12 R: 20.39	1.4	18.08	A: 158.57[4] R: 85.9	94.9

[4] Based on limited data.

ANNEX 5 – GENERAL EXPLANATION OF COFFEE VALUE CHAIN

1, Introduction

Coffee like all other commodities progresses through a number of stages as it travels along the supply or marketing chain from seed to cup. However, not all coffee follows the same route, some coffees by-pass a number of stages along the chain while other coffees pass through additional stages on the path to the consumer. Furthermore, with the improvement in logistics (both international and domestic), a number of stages that existed in the past have now been eliminated. Nevertheless, because coffee is only occasionally consumed by people who actually grow it and it is a product which requires roasting/ processing, packaging and brewing before it is consumed, it is inevitably handled by a number of different intermediaries along the supply chain. At each and every one of these stages, costs are incurred either directly or indirectly and as a result, value is added. And whenever there is a change in value or whenever the coffee is held for any length of time there are risks (most of which are identified in the risk matrix contained in ICO document CG 7/13), and while some risks can be insured against, all need to managed.

The coffee supply/value chain starts at the farm gate, where the majority of farmers sell their coffee. Some farmers sell their coffee as fresh cherry, others sell dried cherry, some process their coffee through to parchment and then sell, while many larger farmers process their coffee through to green bean. In a few exceptional cases (in Hawaii for example) some farmers roast their coffee and either sell direct to consumers (especially recently via the internet) or to wholesalers, but this is the exception rather than the rule. The further up the supply value chain the grower sells his coffee, the greater the percentage of the final value of the product he retains, but equally the greater his costs.

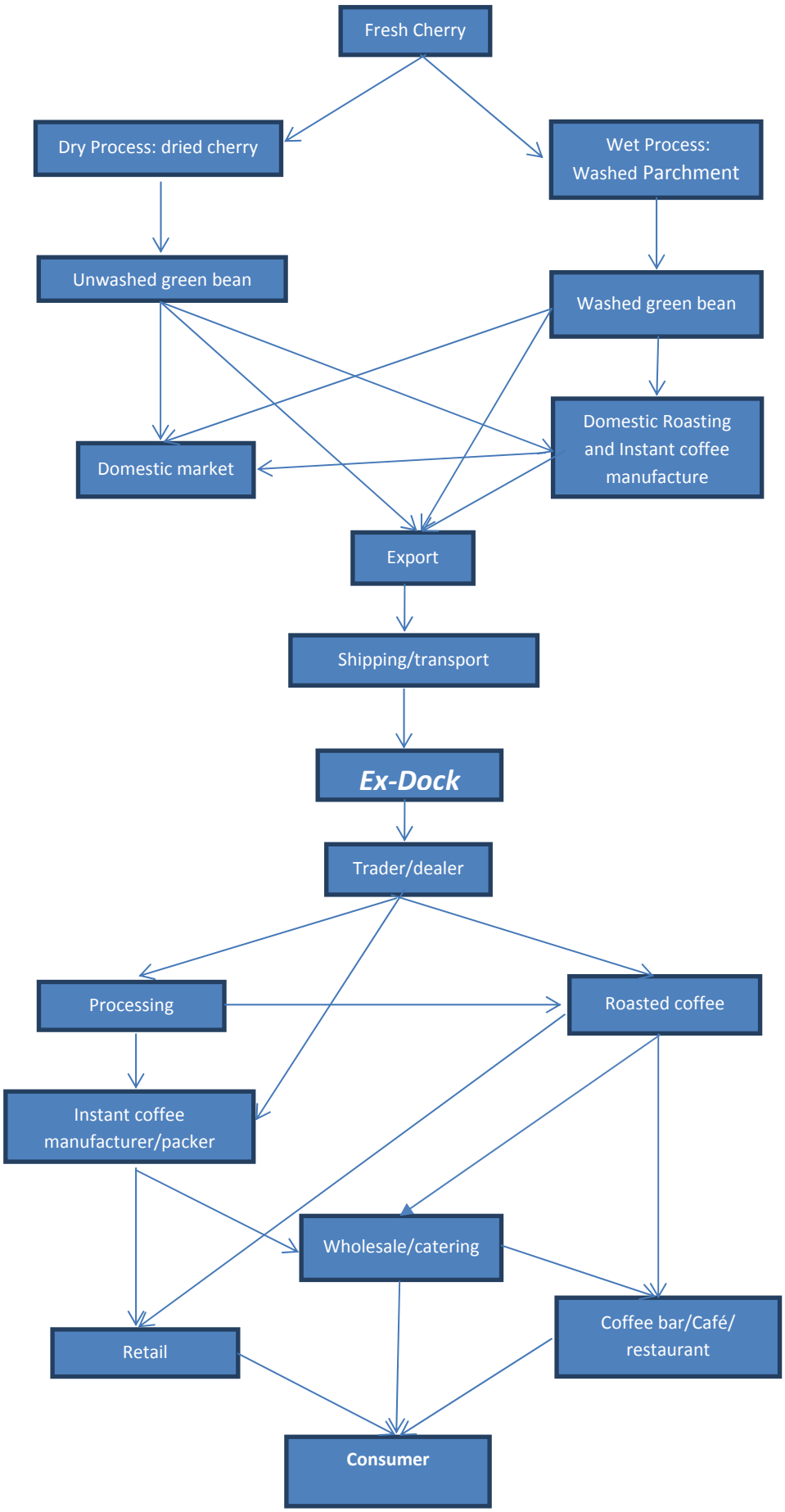
It is often argued that there are too many middlemen in the coffee industry but this fails to recognise the many stages that coffee (and similar commodities) pass through between grower and consumer. These stages include collection, primary processing, export processing, marketing, financing, transport to port, export clearing and shipping, import discharge and clearing, inland transportation to roaster, roasting, packaging, marketing, promotion, distribution/wholesale, retail to final consumer. All are necessary stages that involve third parties, i.e. middlemen, because someone has to perform these functions, obviously at a cost that, of course, includes a profit margin.

Therefore, removing the 'middle man' does not remove the 'middle function'…

Put differently, everyone who handles coffee between the grower and the end-consumer, including the roaster and the retailer, is a middleman.

The chart below shows the important stages in coffee supply chain together with the various linkages that exist. What is probably not self-evident from the chart is that fact that the value generated throughout the chain is largely determined by the price generated or referenced at the chain's centre by the two major international coffee exchanges. These exchanges (the Intercontinental Commodity Exchange (ICE) in New York for arabica and Euronext/LIFFE in London for robusta) act as the primary price discovery mechanism for the bulk of the coffees traded on world markets and essentially establish an ex-dock reference price, against which the bulk of the world's coffee is priced. Consequently the reference price established by the exchanges acts as the pivot around which the value chain revolves, in that it determines the value which flows down to producers and at the same time determines the price of coffee that flows upwards throughout the chain to the consumer.

Chart 1: Coffee Supply chain



It is true that there are some coffees, especially specialty coffees which are to an extent independent of exchange-determined prices, but in reality there are only a few such coffees, i.e. Jamaica Blue Mountain.

Consequently, as a result, the value a coffee grower creates is effectively totally dependent upon the price determined by the exchanges and over which he has little control, i.e. he is a price taker, whereas the roaster/manufacturer uses the price determined by the exchange to establish the value of his output i.e. he remains a price setter. In other words the chain is asymmetrical in terms of control over the value-creation either side of the exchange-determined price.

2, Costs

When looking at the costs incurred as well as the value added at various stages throughout the supply chain, it is important to understand that while some costs and value additions are fixed, for example transport costs and promotion & distribution costs, others are not, as they are directly influenced by the price or value of the coffee at that particular stage in supply chain. Indeed, the greater the value of the product passing through that stage, the greater the financing requirements and hence the cost of financing that particular stage and vice-versa. Furthermore, the time lag involved between production and consumption varies considerably and whenever there are time lags, the greater the opportunity for substantial value changes and hence substantial risk. Any exercise, therefore, which sets out to demonstrate the costs and value additions at each stage is, by definition, at best flawed, in that it is an attempt to take a snapshot of a process which is in a constant state of flux.

With that proviso and bearing in mind that the situation varies from country to country and from coffee to coffee, the table below attempts to identify and place a typical cost on each stage in the supply chain. It is only a simulation and should not be seen as an accurate reflection of a particular coffee or origin's coffee as it passes up through the chain. It is important that particular attention is paid to the notes incorporated into this table, as they explain the variations in costs and the assumptions that have been used in the table's compilation. The table is based upon the average of the ICO composite indicator price that prevailed through 2011 (210.4 cents/lb) and produces a final roasted coffee retail price of 530.9 US cents/lb, which according to ICO statistics is the very close to the average of the average prices reported for Germany, Finland, Portugal and the USA during 2011 (526.8 cents/lb), although it should be noted that retail prices can and do vary significantly from country to country. Indeed in 2011 the annual average retail price varied from a high of 866.9 cents/lb in Latvia to a low of 413.4 cents/lb in France reflecting the different composition of national blends as well as external costs and factors, such as taxes, high transport costs, structure of the retail market, etc.

Using this methodology it is possible to demonstrate that a 10% increase or decrease in the Ex-Dock prices (i.e. that determined by the exchanges) brings about a 7.4% increase/decrease in the retail price of the coffee but conversely it brings about a 11.7% increase/decrease in the ex-mill price for the coffee in the producing country and a 18.7% increase/decrease in the fresh cherry price. The asymmetry between the impact of increases and decreases on prices at different stages in the chain reflects the number of fixed costs that occur in a number of the sectors of the industry.

Table 1 **Indicative Average Costing from Retail Level to the Farm Gate**

(US cents/lb; 2011 prices)

Stage	Unit Cost	Cumulative Stage Value	Notes
1, Retail price		530.9	This is very close to the average retail price of roasted coffee which prevailed in 2011 in Germany, Finland, Portugal and the USA (526.8 cents/lb).
2, VAT or other such taxes	48.3	482.7	Many countries impose either a value added tax or a general turnover/service tax on coffee, although in a number of countries no such tax is imposed. In Denmark this is as high as 25%, Portugal 23%, but in Germany is 7%. For the purposes of this exercise VAT is assumed at 10%.
3, Retailers administration, costs and margin	96.5	386.1	This varies hugely from country to country and from retailer to retailer. Large supermarkets tend to operate on smaller gross margins than independent or smaller retailers can. And much will depend on the turnover the store experiences. Various studies have found that larger supermarkets operate on general gross margins of between 20% and 30% while smaller retailers will add anything up to 40% or 50%. For the purposes of this exercise, the retailers mark-up is assumed at 25%.
4, Advertising and promotion,	15.0	371.1	Estimated
5, Packaging and distribution	25.0	346.1	Estimated
6, Roasters costs and margin	79.9	266.2	Roasters margins vary according to their size and their position within the market. Larger mainstream roasters obviously operate on a smaller gross margin than smaller, medium or micro roasters can. For the purposes of this exercise the roaster's fixed costs, i.e. all his running costs plus depreciation have been estimated at 40 cents/lb plus a variable margin of 15% which would cover his financing and hedging costs as well as his profit. This may well be on the low side for many smaller roasters but is around the average for many of the medium to larger mainstream roasters.
7, Weight loss adjustment		223.7	Weight loss during roasting depends upon the degree of roast. With espresso roasts the weight loss can be as high as 22%, whereas with a really light roast the weight loss can be as low as 14% or 15%. For the purpose of this exercise the weight loss is assumed at 19%, which is the official conversion rate used by the ICO to covert green coffee to roasted.
8, Importers/traders costs and margin	11.3	212.4	As a general rule, importers work on gross margins of between $10 and $15 per bag, some obviously earn more on some deals, especially smaller deals, while on larger deals importers are obviously willing to settle for less, but for this exercise a flat rate of $15 per bag is assumed.
9, Transport ex-dock to warehouse/roaster	2.0	210.4	Estimated
10, EX-DOCK PRICE		**210.4**	This is the price of coffee landed and cleared through customs ready for distribution to the roaster's warehouse. It the price which most closely resembles the Futures market spot price. Interestingly in this exercise the ex-dock price cited here is virtually identical to the 2011 average of the ICO composite indicator price (210.39).
11, Warehousing & Customs clearance	4.0	206.4	In many importing countries coffee is stored in bonded warehouses in free port areas until it is required. This delays paying any import duty or other levies due on the coffee, which obviously saves money. It also makes the process of re-exporting coffee to other destinations easier. For green coffee most countries allow duty free entry but processed coffees face a range of taxes and levies. In this exercise the coffee being imported is green so charges and levies relate mainly to storage costs but there are also costs in administering customs clearance. These costs have been estimated.

Stage	Unit Cost	Cumulative Stage Value	Notes
12, CIF Price		**206.4**	This is the price landed in the imported country but before customs clearance.
13, Freight – origin to importing country	3.4	203.0	The cost of freight varies considerably from origin to origin with coffee shipped to destination via road, rail and sea. The bulk of coffee is shipped in containers and the cost depends very much on the distance and routes taken. From landlocked origins in Africa, coffee might travel on all three modes of transport before reaching its destination. For the purposes of this exercise transport costs have been based on the average cost of a container travelling from Central America to Europe which is currently around $1,350. It should be noted however that with the improvements in logistics and in particular the increasing size of vessels, this rate is considerably lower than prevailed even 10 years ago when the rates were nearer $2,000 per container.
14, Insurance	2.0	201.0	Based on industry norms.
15, FOB PRICE		**201.0**	This is the indicative FOB price. Interestingly it is somewhat higher than average export values reported by the ICO for all origins in 2011, but that is not necessarily surprising, in that the quality of coffee which is used in roasted coffee tends to be average or better. Low quality coffees, which tend to be used in instant coffees or in specific markets, command a lower price and thus when incorporated in national statistics lowers the overall average FOB price received by origins. In 2011 the average FOB price received by all origins was 180.04 cents/lb but the average FOB price for Colombian mild coffees was 283.29 cents/lb, the Other Milds 231.98, Brazilian Natural arabicas 201.21 and robustas 101.78.
16, Port handling charges/customs clearance	1.0	200.0	Port handling charges have been estimated but do vary significantly from country to country.
17, Export Tax		200.0	Export taxes vary from country to country but many origins suspended such taxes when prices where low at the turn of the century. Indeed most do not appear to have reintroduced them, although the legislation remains on the statues. According to the ICO a small number of origins do levy a small tax at between 1 and 3%, but in view of the fact that Brazil, Vietnam and Colombia do not levy any tax, export taxes in this calculation are put at 0%, but the heading has been included in the table as export taxes remain a potential liability.
18, Storage at port/container stuffing charges	0.5	199.5	Storage at port and stuffing charges have been estimated
19, Exporters costs and margin, including hedging and financing costs	29.8	169.7	Exporters' costs vary from country to country but one of the biggest cost any exporter faces is that financing his purchases and covering that cost in the interim until he gets paid. The costs of borrowing vary significantly even sometimes between exporters in the same country, especially if exporters are able to borrow off-shore at low interest rates,whereas borrowing from domestic lending institutions at origin tends to be many times more expensive. Exporters' fixed costs in this exercise have been estimated at 15 cents/lb, plus a variable margin of 8% which is very conservative.
20, Freight to port	1.0	168.7	Estimated
21, Grading, sorting and bulking	2.0	166.7	Estimated
22, EX-MILL PRICE		**166.7**	This is the price paid by exporters to processing mills for delivery of the coffee as green bean. In some instances the exporter will have pre-financed the purchase and the price will reflect any such arrangement. Coffee purchased at this stage may need further sorting and grading.
For Washed Coffee *(assuming an ex-mill price of 166.7)*			
23, Hulling costs and processor's costs	20.0	146.7	Estimated using trade sources.

Stage	Unit Cost	Cumulative Stage Value	Notes
and margin			
24, Weight loss adjustment		115.9	The parchment to green bean weight ratio for both robusta and arabica coffee can vary significantly as it depends upon the moisture content of the parchment coffee. Dried green beans should have no more than 12% moisture content. As a general rule recovery rates average 79%.
25, PARCHMENT FACTORY DOOR PRICE		**115.9**	This is the price the farmer receives if he delivers his coffee in parchment form to the processing mill door.
26, Transport farm gate to factory door	0.5	115.4	Estimated and obviously varies depending upon distances and location.
27, Traders margin	6.0	109.4	Estimated but this refers to roadside buyers and other agents/traders who buy direct from growers and deliver the coffee to the factory door.
28, FARM GATE PRICE – Parchment		**109.4**	This is the price the grower receives for parchment coffee sold at the farm gate or roadside.
29, Wet processor's costs and margin	10.0	99.4	Growers in many countries do not process their coffee themselves but sell their fresh cherry on a daily basis to a wet mill which processes the coffee into parchment coffee. The costs involved in running a wet mill are estimated.
30, Weight loss adjustment		19.9	Fresh cherry to parchment coffee weight ratio is generally thought to be around 5 to 1. This is not an absolute, in that recovery rates can vary, depending on the development of the crop throughout the growing season. It has been known to be as low as 6 to 1 and as higher as 4.5 to 1.
31, Transport farm gate to processing mill	0.5	19.4	Estimated
32, Trader's margin	2.5	16.9	Estimated but covers the gross margins of roadside buyers and agents who buy fresh cherry direct from growers.
33, FARM GATE PRICE - FRESH CHERRY		**16.9**	This is the derived indicative price paid to growers for fresh cherry sold at the farm gate.
For Unwashed Coffees*(assuming an ex-mill price of 166.7)*			For the purposes of this exercise, it is assumed that average quality naturals or unwashed arabicas are being sold for the same price as average quality washed arabicas. In reality there is usually a price difference between the two on any given day, but as this an indicative exercise both are considered as having equal value.
34, Huller's costs and margin	20.0	146.7	Small growers do not generally process their dried cherry into green bean themselves but sell their coffee to a dry mill which processes the coffee for them. The costs involved in running a dry mill are estimated.
35, Weight loss adjustment		73.4	Dried cherry to green bean weight ratio is approximately 2 to 1.
36, Transport farm gate to processing Mill	0.5	72.9	Estimated
37, Trader's margin	6.0	66.9	Estimated
38, FARM GATE PRICE - DRY CHERRY		**66.9**	This is the price the grower receives for dried cherry coffee sold at the farm gate or roadside.

3, The Global Coffee Value Chain

The ICO estimate that in 2011 exports of all forms of coffee from exporting countries totalled 122.836 million bags which at FOB values totalled US$24.892 billion, with a unit value in current terms of 180.04 cents/lb. Re-exports of all forms of coffee by ICO importing member countries totalled 35.012 million bags in 2011, with an estimated value at FOB at US$13.601 billion. The greater unit value reflecting that the bulk of re-exported coffee by ICO importing member countries is processed coffee. Non-member countries exported a further 6.028 million bags, but no data exists on the value of such re-exports.

In a recent study [5], the ICO analysed the overall share in the resources created along the coffee value chain in nine countries: France, Germany, Italy, Japan, Netherlands, Spain, Sweden, United Kingdom and the USA. These countries account for almost 70% of total average consumption of all importing countries during the period under study. The study, which was conducted over three separate periods found a very close correlation between the value of imports and the ICO indicator price and hence demonstrated that unit values of imports are strongly dependent on world market price levels. The study also referred to an earlier study which found that a strong correlation exists between unit values of imports and retail prices. Consequently the study found that the gross value added by the roasting sector in these countries could be calculated using the difference between the unit value of imports and retail prices. The results are shown in the table below:

Table 2 **Gross Added Value as a Percentage of the Retail Price**

Year	1975 - 1989	1990 - 2009	2000-2009
France	55.5%	63.8%	66.5%
Germany	57.3%	71.3%	74.2%
Italy	57.9%	81.6%	84.4%
Japan	81.2%	89.1%	86.3%
Netherlands	45.7%	65.8%	86.9%
Spain	50.8%	72.4%	75.1%
Sweden	48.9%	62.5%	63.1%
UK	58.3%	82.3%	85.6%
USA	42.3%	65.4%	67.2%

Source: ICO

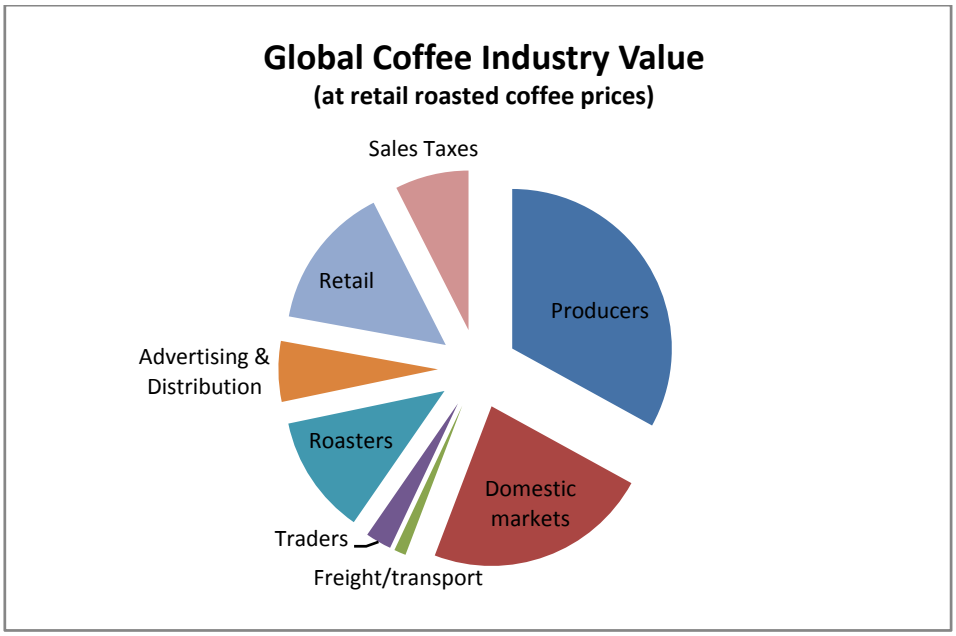
The study also found that the total gross added value obtained by the roasting industry in the nine countries was US28.8 billion in calendar year 2009, US$31.1 billion in 2008 and US$30.4 billion in 2007

Using a very similar methodology but extending it to include all consuming counties, domestic markets in producing countries, as well as the value of the green coffee generated by producers, the total value of the global coffee industry can be estimated to total somewhere in the region of US$75.4 billion, valued purely in terms of retail value of roasted coffee at 2011 prices.

Providing an accurate breakdown of the value added by each sector in this total is extremely complex as the data to undertake such a calculation simply does not exist. Nevertheless using some fairly broad assumptions, the chart below gives a reasonable approximation of the value that using this method of calculation implies. Please note that the value generated by domestic markets in producing countries is not broken down into its constituent parts in the same way as it is in importing markets. This is because very little data exists which would allow such a calculation.

[5] ICC 106-1 *Coffee value chain in selected importing countries* (February 2011)

Chart 2 **Global Coffee Industry Value**



However, as the ICO study acknowledges, this method of calculation of total gross value understates the true value of the coffee industry since it assumes that all coffee is sold at supermarket prices. If the value of coffee sold through the out-of-home segment of the market is included (and this includes the value of all other ingredients such as milk, sugar, cups, brewing equipment depreciation, retail rents and labour) then the global value of the industry balloons and can conservatively be valued at around US$175.7 billion. But even this is probably an underestimate!

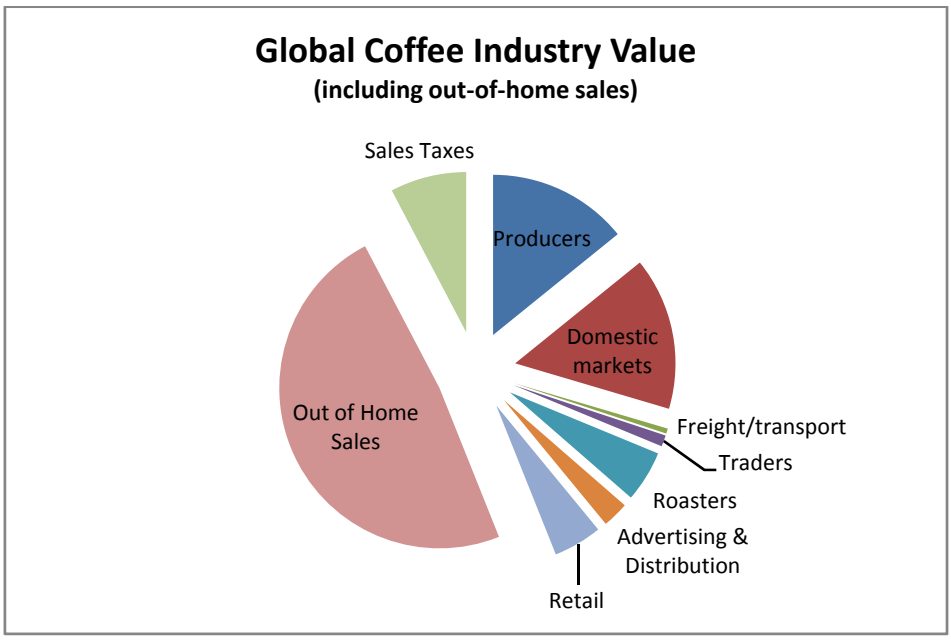
Table 3 Estimated Global Gross Value of the Coffee Industry

Country/Region	Total Consumption (million kgs -GBE)	Value calculated at roasted retail value only ($ million)	Total Gross Value including out of home sales ($ million)
Consuming ICO member countries	**4,339.3**	**46,056.5**	**126,972.9**
Of which: - France	*357.8*	*2,739.0*	*10,390.4*
Germany	*567.6*	*5,366.0*	*15,948.8*
Italy	*341.3*	*5,389.7*	*13,542.7*
Poland	*122.5*	*940.0*	*1,875.6*
Spain	*188.9*	*1,544.9*	*7,277.8*
U.K.	*175.6*	*2,379.6*	*6.091.6*
Japan	*420.9*	*5.729.9*	*20,549.8*
USA	*1,322.6*	*12,714.6*	*27,478.5*
Non-member countries	**1,390.2**	**12,177.4**	**21,697.4**
Producers	**2,556.7**	**17,187.6**	**27,070.5**
Of which: Brazil	*1,183.2*	*7,954.2*	*12,528.0*
Total	**8,286.1**	**75,421.1**	**175,740.9**

The table above shows the breakdown in the retail value of coffee by country and region. Both global values have been calculated using ICO published consumption data and retail price data for the main consuming countries, however, estimates of retail prices have had to be used for those other countries where no such data exists. Trade sources have been used to calculate the split between in home and out of home consumption, where this available, and once again, very conservative estimates have been used for other countries where no such data exists. Furthermore there is very little data on domestic markets in producing countries, in terms of retail prices or on the in-home/out-of-home split but these markets are important, especially the Brazilian domestic market, and thus must be included in the calculations. Fortunately good data exists on the Brazilian market, so there is a reasonable degree of confidence in the figures produced. The calculation also takes into account that not all coffee consumed in producing countries actually enters into the marketing chain, but is instead consumed by those who grow it, however, this is not thought to account for more than 10% of the coffee consumed in these markets. Similarly very conservative figures have been assumed for both the size and the price of liquid coffee consumed in the out-of-home market in these countries.

Chart 3 shows how the value added by different sectors is altered by including the value of the out-of-home market in these calculations.

Chart 3 **Global Coffee Industry Value**



ANNEX 6 – SAMPLE CASE STUDIES

Enabling Environment

The 2012 Latin American Coffee Rust Outbreak: "Black Swan" or "New Normal" – with thanks to Dr P S Baker, CABI

Coffee Leaf Rust (CLR, *Hemileia vastatrix*) is a serious fungal disease of Arabica coffee, which famously destroyed the Ceylon (Sri Lanka) coffee industry in the 19th century.

The disease reached Latin America in the 1970s, becoming ubiquitous by the late 1980s. Despite sporadic outbreaks and upsurges however, the disease never quite lived up to its earlier notoriety and many farmers controlled it sufficiently with either routine calendar sprays or occasional 'just-in-time' sprays.

This situation now seems to have changed. Colombia suffered a serious outbreak in 2009-10 which coincided with a severe and enduring 'La Niña' event. And whereas previously the rust was never problematic above 1600 m above sea level, these high-quality Arabica zones now came under attack.

The 2012 outbreak appears to be a similar but much more widespread event, ranging from Mexico in the north to Peru in the south with increased attacks also reported in the Dominican Republic and Jamaica. The wide extent and severity of the outbreaks caught almost everyone by surprise and it seems now certain that the 2012 outbreak is the most severe since the fungus was first discovered in Latin America in 1970 and possibly the worst since the notorious Sri Lankan event. The following reviews evidence of what happened, why and what might be done about it.

What happened?
Rust outbreaks were reported from 10 Latin American countries between the latter part of 2012 and the first quarter of 2013, and are listed in Table 1 along with available data.

Country	Total coffee area (ha)	CLR area (ha)	% Area affected	Production Losses ($ million)
Peru	415,000	178,450	43	126
Mexico	769,786	75,000	10	?
Guatemala	276,000	193,200	70	101
Honduras	280,000	70,000	25	230
El Salvador	152,187	112,293	74	74
Nicaragua	106,160	39,014	37	60
Costa Rica	93,774	60,953	65	14
Dom. Rep.	131,250	60,000	46	?
Panama	19,490	4,850	25	?
Jamaica	3,013	841	28	5

Table 1. Areas affected by CLR and losses (mostly ICO data May 2013).

Percentage area affected varies greatly from country to country, though survey methods may differ substantially between countries and it is mostly not clear what criteria were used to establish the area affected. Surprisingly though, percentage national yield losses are mostly similar, in the 15 to 20% range for the 2012/13 year. Most forecasts for 2013/14 tend to be greater, in the 30 to 50% range. Clearly all this will lead to possibly serious job losses as well.

Thorough survey data at sub-country level is mostly lacking – the most detailed mapping by Anacafé Guatemala, reveals a complex pattern of CLR attack across the country that suggests neither a random nor a highly aggregated distribution.

Anecdotal accounts (personal observations, communications and press reports) suggest that the broadest range of coffee growing conditions were attacked. Hence sun and shade coffee, organic, other certified and non-certified coffee, large and small farmers – all have been affected, though there is no indications that the resistant Catimor varieties were affected. A comprehensive breakdown by altitude, location, farming system, tree age etc. is currently lacking and this is making it difficult to establish causality.

Why did it happen?

Some facts about CLR epidemiology need to be understood: a temperature around 22°C, the presence of liquid water and darkness all favour germination, though a lower temperature (13 to 16°C) apparently favours growth of the spore tube that forces its way into the leaf. The condition of the coffee tree is also important; poor nutrition and a heavy fruit load increase the likelihood of heavy infection. When trees in sun and shade have equal fruit loads, shade favours heavier attacks, but this is confounded by the generally lower fruit loads that occur under shade through reduced flowering.[6]

Despite this knowledge however, we still don't understand why CLR became such a widespread problem in 2012. Attempts to explain what happened fall into two main camps: 1) a virulent new strain; 2) unusual weather conditions caused by climate change.

The virulent strain hypothesis: the possibility of a mutated strain of CLR as the cause of the Colombian epidemic was investigated in some detail by Cenicafé scientists in 2012[7]. They carried out quite extensive studies involving comparisons between pre and post 2008 spore samples, which included genetic marker analysis and seedling infection experiments on a range of varietals to measure virulence. They could find no significant differences and concluded that a new strain was not responsible.

It seems likely therefore that the same conclusion can be applied to the 2012 outbreak. Indeed it would seem improbable that a virulent strain could spontaneously appear over such a very large geographic area in the same year.

Furthermore, there are reports of other coffee diseases, notably 'Ojo de Gallo' (American Leaf Spot, *Mycena citricolor*) increasing in several countries. Cenicafé for instance has recorded unusually high levels of *M. citricolor* on unshaded coffee in Cesar and Cauca (Colombia)[8] and HR Neumann Stiftung technicians in Central America recently rated the disease as second only in importance to CLR[9]. It is therefore stretching credulity to suggest that two diseases are mutating to higher virulence and instead an explanation that accounts for all such changes is desirable.

The climate hypothesis: climate change as the cause of the CLR outbreaks has been widely mooted and it is a fact that the fungus now attacks at higher altitudes (up to 2000 m reported in Colombia) than a decade or more ago. Since a clear warming signal can be found in the meteorological data across the region, it is virtually certain that climate change has caused this new outbreak pattern.

[6] Avelino J., Zelaya H., Merlo A., Pineda A., Ordon M., Savary S., (2006). The intensity of a coffee rust epidemic is dependent on production situations. Ecological Modelling 197: 431–447.

[7] Yomara Rozo Y., Escobar, C., Gaitán A., Cristancho M., (2012). Aggressiveness and Genetic Diversity of Hemileia vastatrix During an Epidemic in Colombia. J Phytopathol 160:732–740

[8] Rivillas C., Castro A.M. (2011) Ojo de Gallo o Gotero de Cafeto. Bol. Téc. 37, 25pp.

[9] Baker P.S. unpublished report for HRNS.

However, this does not explain why 2012 was such a bad year, especially since it was not a particularly hot or wet year – in terms of the El Niño/La Niña oscillation, 2012 was more or less neutral. A problem for scientists is that meteorological data from the region is poor, especially considering its complex topography. Additionally, available survey data does not help to determine the extent to which the upsurge might be caused by the inexperience of farmers at higher altitudes as opposed to increased CLR aggressivity at lower altitudes.

There is also a third hypothesis – *the ecological collapse hypothesis*. This suggests that increases in pests and diseases are due to increasing intensification, especially the eradication of shade. However the 2012 experience shows that shade and organic coffee farms were sometimes very heavily attacked. For example, at the PROMECAFE-WCR rust meeting in April 2013 Anacafé's Miguel Medina said: "*I don't know how organic coffee can have a future. There is nothing that works to control rust in the field and I am not seeing anyone in the market offering more to create additional incentives for organic farmers*."

Since the best data comes from Colombia, which has an extensive network of meteorological stations, the following scenario is offered, based on a description of events in Huila (Colombia)in 2010[10]:

1. A long 'La Niña winter' in 2008 and 2009 left coffee trees in poor condition because of reduced efficacy of fertilizer applications under prolonged rain and low light. But CLR levels were not excessive at this time because flowering and hence fruit loading were low.
2. In the first half of 2010 there was an intense summer period that induced heavy flowering leading to expectations of a bumper crop.
3. Wet conditions returned in the second half of 2010, with prolonged rain and high minimum temperatures (caused by heavy cloud) that produced ideal conditions for CLR proliferation.
4. Already weak coffee trees, now struggling to cope with a heavy burden of growing berries, easily succumbed to CLR attacks, shedding much of the expected harvest.

The above scenario may not correspond to the 2012 event, but it is likely that a similar concatenation of factors led to conditions ideal for CLR. A major difficulty is that unless we can determine the specific events that caused the outbreak, we will not be in a position to judge how rare they were and therefore how likely they might be to return.

What should have been done differently?
At the Guatemala rust summit in April 2013 a working group compiled the following list of shortcomings:

- Chronically insufficient economic resources to deal with the rust: most farmers make very modest profits and spraying is costly, so why do it if CLR has not been a problem?
- The problem was underestimated – some warning signs were there but were not acted upon;
- Ineffective application techniques (poor droplet size, wrong frequency & timing of applications) due to lack of training;
- Poor infrastructure – very bad roads after storms in 2010 leading to more difficult access to farms;
- Conflicting advice: technologists promote rust resistant varieties, roasters prefer susceptible varieties.

The same working group recommended the following to prioritize limited resources to deal with present situation and lower its impact in future years:

- Improve information collection: systematize, analyse, distribute and share with producers to take corrective/preventative actions;
- Develop diagnostics and monitoring for early warning;

[10] Federación Nacional de Cafeteros (2010). Prosperidad Cafetera, Informe de Comités Departementales. LXXV Congreso Nacional de Cafeteros. Bogotá, Colombia.

- Increase use of new technology e.g. cell phones and improve producers' networking capacities;
- More information and research needed on:
    - Weather: temperature, amount of rain and rain patterns, relative humidity, solar light and shade, El Niño y La Niña;
    - Levels of infection, incidence, and severity;
    - New crop varieties and more testing and improvement of quality of catimors;
    - More socioeconomic information about farmers;
    - Monitor not only CLR but other diseases;
    - Trials on farming systems: tree density changes & shade modification to increase resilience of coffee plantations;
    - More studies on rust – its genetic variety and virulence;
- Campaign to renovate plantations and promote better farming practices;
- Carry out physical and chemical soil analysis and promote better soil use and conservation;
- Create insurance programs;
- Better equipped extension services for knowledge and technology transfer;.

Widely expressed opinions were that an attitude change is now required by all stakeholders, to understand that:
- 'We are playing under new rules' – with more extreme climatic conditions than previously;
- 'We can't go on as we have been' – a greater need to be more proactive, less reactive.

Black swan or new normal?

A black swan event is a rare occurrence, such as the global financial crisis of 2008 onwards. Was the 2012 CLR outbreak a similar peculiar event, or a signal that underlying conditions have changed?

The fact that the 2012 event was presaged by the 2008-2010 experience in Colombia suggests that underlying conditions indeed may be changing and that we would be very foolish to ignore them.

We cannot be sure of the extent to which climate change may have contributed to this but there is convincing evidence that extreme weather events are now more common in Central America[11] (Fig 1) and indeed also elsewhere, including events that favour one or more pests or diseases and disrupt a normal equilibrium.

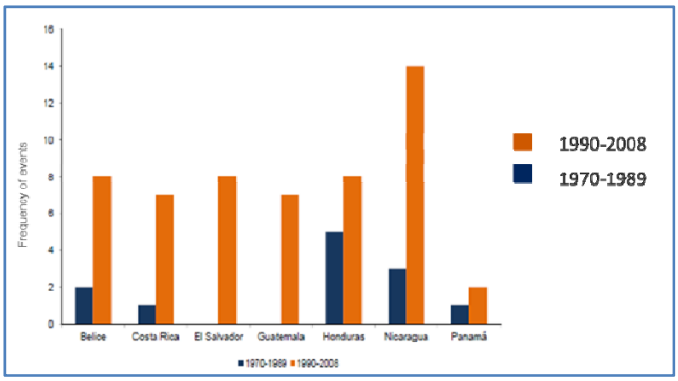


Figure 1. Number of tropical storms and hurricanes in Central American countries for two periods.

Effectively therefore farmers' risk levels have risen; it is becoming more difficult to farm in many localities because of changed weather patterns. It is especially risky for farmers of perennial crops such as coffee, which require substantial investment with a long payback period.

[11] ECLAC (2012). La economía del cambio climático en Centroamérica, Síntesis 2012. 114 pp.

Conclusions

The gravity of the outbreak, together with the large degree of unpreparedness, points to a systemic failure – that is, underlying any individual and institutional shortcomings, there has been a failure of anticipation, insight and overall management by the coffee industry.

This is surprising, given the extent to which the concept of sustainability has risen to prominence over the past 10 years. It is becoming clear that the shortcomings of this approach have been an over-concentration on micro-management of a large number of farm-level tasks and a relative failure to look at larger scale material issues such as pests and diseases, water use, land use change and overall economic farm performance.

This state of inadequacy is in turn a direct result of the history of coffee over the past generation, which has stressed market-driven measures to realise maximum value, whether through quality or some more symbolic attribute of sustainability. Unfortunately the many NGO driven initiatives to promote sustainable production have not been able to substitute for the long term support of science and technology that has historically been provided by public institutions.

This in turn has led to a weakening of research and extension services, which are ill prepared for what is now most likely an era of accelerating change. The relative collapse in the field aspects of coffee science can be seen from the decline in the number of CLR science publications (Fig. 2) which at one point fell to only three in one year; research on the medical effects of coffee consumption now greatly outweigh agronomic studies.

The coffee industry now needs to re-examine fundamental concepts about how it nurtures and protects the complex social-environmental system that supplies its raw material. Tacit and explicit assumptions of risk, stability, resilience and sustainability need to be reviewed in the light of recent events, which may well turn out to be less of a black swan, and more of a canary in the mine.

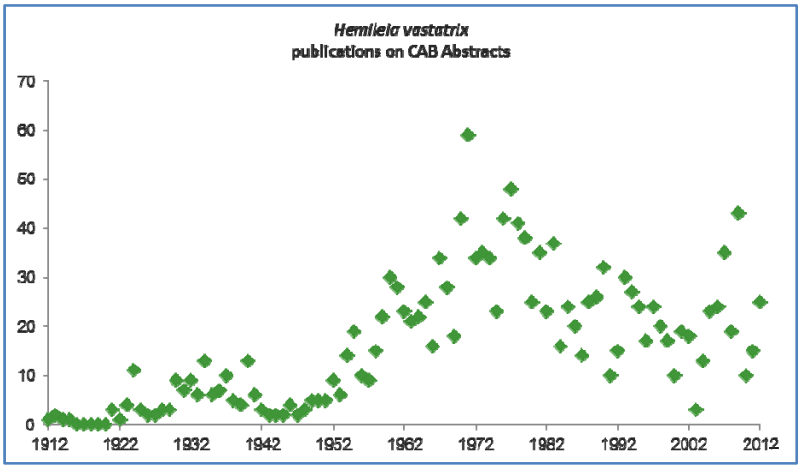


Figure 2. Annual frequency of CLR publications recorded on CAB Abstracts.

Individual Interventions
Modernizing a Costa Rican Coffee Cooperative – with thanks to Carlos Vargas & Sebastien Lafaye, Coopetarrazu, Costa Rica

Issues

Arrest declining competitiveness. Respond to increasing competition. Protect against price risk and price volatility. The case of Coopetarrazu R.L., located in San Marco de Tarrazú in Costa Rica.

Response
Stagnation, difficult trading conditions and signs of discontent amongst members around the year 2000 caused Coopetarrazu's Board to re-evaluate its strategies. It concluded that bringing in external expertise would help address these issues, even if initially costs would increase and the tradition was that managers were found in-house. However, in a relatively short period this (almost revolutionary) approach resulted in improved operational efficiency, lower costs and, eventually, better operating results.
However, subsequent to this growing competition at the farm gate, offering attractive outright cash prices, risked rendering Coopetarrazu's position untenable unless the cooperative could match this by also buying coffee outright that would however expose it to price risk. Expert advice was therefore brought in to design a risk management program, conduct training and facilitate links with banks and brokerage houses that could assist in executing actual risk management operations. Today Coopetarrazu has a well-thought out, multi-faceted strategy and, for example, the 2013 crop was profitably hedged more or less in its entirety using put options, demonstrating good market insight and decision making.

Background
In the late 1990's Coopetarrazu's competitiveness began to be eroded by quality problems, insufficient finances and a lack of market access, all of which combined to make membership less attractive. To arrest this the Board re-evaluated the overall strategy and in 2003/04 brought in high level management executives, assuming that the additional cost would justify itself through better results. As a result of a good selection procedure this was indeed the case and in time the new management gained the trust of both Board and members. It should be noted that this decision went against a well-established tradition (found in many cooperatives) that managers are selected from within the membership or have close links with leading members. The decision to engage executives who had no membership links with the cooperative therefore was not an easy one. But today Coopetarrazu has 2,750 members (80% of whom have less than 4HA planted to coffee) and total revenues of USD 60 million out of which coffee represents 55%.

However, around 2006/07 and as has been experienced in many other coffee producing countries as well, buying competition generally moved increasingly closer to the farm gate. This presented new challenges in that growers were now being offered outright cash prices which, in many instances, were (much) higher than the first payment under Coopetarrazu's traditional pricing model. This consisted of a conservative first payment on delivery, followed by periodic additional payments as coffee was liquidated with a final payment at season's end. As a result growers began to question whether the old system was worth maintaining, especially as their total payments at times came to less than the outright prices offered by the increasingly active cash buyers. Unless Coopetarrazu found ways and means to also make outright cash purchases it was likely that side selling would gain ground, coffee intake would fall, competitiveness generally would be eroded and eventually services to members would have to be curtailed. The only answer was to square up to competitors who enjoyed good access to low cost finance and availed of multiple possibilities to manage risk exposure. The decision was made to change with the

times by moving to outright purchases, assume the price risk associated with that and build a risk management program that in time would, hopefully, also facilitate access to more and less costly finance.

How was this done?

The introduction of professional management, revolutionary as it was at the time, had in fact already set the stage in that Coopetarrazu availed of good internal systems. It had managers who were familiar with modern business practices and understood that price risk management was essential but also complicated. Hence external advisers were brought in to familiarise both Board and management with the complexities of the available mechanisms and to design/implement a three step price risk management strategy, including arranging access to a futures trading account (today in Coopetarrazu's own name).

The three steps are Before, During and After the Harvest.

This is entirely logical as volumes and therefore exposure to price risk change as the harvest season progresses and so each stage should be assessed and analysed individually.

- Before the harvest local and global fundamentals are reviewed, including an estimate of the anticipated harvest, leading to the adoption of a forward looking risk management scenario consisting of purchasing put options to protect against price falls, selling coffee forward (short) basis price to be fixed (PTBF[12]) or at outright prices and, in the latter case, probably buying call options to protect against price rises after that sale (or after a forward PTBF sale has been fixed).
- During the harvest a daily position report details the overall position: long, short, stocks, break-even, total coffee intake, total sales, finances, costs… Additional decisions are made as required, taking into account both domestic (very important) and global price developments.
- After the harvest the total volume collected and sold is known, meaning decisions have to be made on any unsold volume. If no immediate sales are anticipated then again put options may be used or, as Coopetarrazu has access to a futures trading account, a futures Stop Loss Sell Order might be considered.[13]

In the last three seasons Coopetarrazu handled between 6,000 and 7,000 MT on average. This is received and processed from November to March with sales running approximately as follows: May-October: 40 to 50% of the expected crop; November-April: 30 to 40% of the actual crop and May-August the remainder, i.e. 10 to 20%. Shipping runs from January through August. Approximately 65% is exported directly; about 25% is sold to local exporters (paid in cash); and the remainder, mostly lower qualities, is sold domestically.

During the last two seasons approximately 4,000 MT on average were hedged, using options and (some) futures, through their futures account with positive results that permitted an end-of-season top-up payment to members. Most of the current season's (2013) expected harvest has been hedged in its entirety through put options at prices that compare favourably with the current market (mid 2013).

[12] NB. It is important to note here that when selling basis Price To Be Fixed (PTBF) Coopetarrazu's Board has instructed that fixing shall latest be prior to shipping. This ensures the act of fixing prices doesn't become pure speculation by 'rolling' fixations from one futures position to the next in expectation of higher prices.

[13] A Stop Loss Order is triggered when the relevant futures price reaches a certain level but it is worth noting a) that futures trading involves financing margin calls and b) that volatility caused by so-called program or flash-trading can cause price shifts that could make it impossible to execute at the stated price.

To note here that at the beginning of all this Coopetarrazu already availed of a forward looking Board of Directors and quality modern management. These realised the necessity of introducing risk management in the cooperative's day-to-day management as a permanent management tool and not as a once-off exercise. Secondly, the cooperative was first established in 1960 (!) meaning its membership is cohesive and cognisant of both the advantages and the responsibilities (!) of being members. Thirdly Coopetarrazu has an established track record, is well-known in the market and avails of reasonable own resources.

Yet it took some years until to-day's mature and multi-faceted price risk management strategy was in place, meaning that less well established cooperatives or farmers' groups undoubtedly need considerable and prolonged guidance before 'going it alone' when it comes to risk management.

Lessons learned

- To assist the learning process professional input is essential.
- Decision making processes have to be formalised, have to be disciplined and should involve more than a single person. Daily and fully inclusive position reports are a must.
- A hedging program requires its own financial resources. Otherwise there is a risk of working capital for the collection of coffee being diverted. Hedging through futures is therefore problematic in that it can result in (very) substantial margin calls that could affect overall liquidity.[14]
- Risk management is a long term strategy, meaning that even if this year's results are not optimal this does not mean we ignore risk the coming year. But understand also that not all risk can be covered – basis risk is a good example.
- Executing a risk management strategy requires qualified personnel who are able to deflect 'what if' arguments from both Board and individual members.
- Never use futures for speculation and do not carry positions 'forward'. Where possible use physical strategies, i.e. trade back-to-back.
- Understand the basics = buying coffee outright means a long position has to be protected against price falls.
- Understand the relationship between local prices and futures, i.e. know what basis risk is and constantly monitor it.
- Understand it is not possible to protect all the volume – the inventory is the most important in this respect, i.e. protect the break-even. This includes coffee under process for which the final quality is not yet known.
- Watch differentials daily – avoid selling at low differentials where possible. At times a put option may be the better option.
- When faced with uncertain supply prospects in terms of volume and quality it may sometimes be preferable to stick with put options rather than trying to sell forward.
- Banks do not necessarily understand how futures work. For some options are easier and 'cleaner', also because there are no issues around potential margin calls. Having put options in place means a certain volume has at least a minimum value, making it easier and sometimes cheaper to raise advance funding.
- Having a well-functioning risk management strategy can assist with the raising of short term or intra-seasonal funding but does not help when it comes to long term funding…

To recapitulate

- Good organizational level, including a mature Board
- Qualified and trained technical staff.
- Long-term vision. Financial instruments work better under a clear long-term strategy as a way of minimizing the *natural* speculative position of producers who are always long.

[14] Logically a cooperative will always be long in that it has to buy its members' coffee. Failing forward or back-to-back sales the temptation would obviously be to short futures but this is both dangerous and may become a financial albatross if the market moves suddenly and sharply.

- Understand this is a progressive learning process.
- Requires parallel finance which is still not easy to get. (Coopetarrazu have invested their own capital). Could help to access finance without having sales contracts.
- A dynamic (flexible) strategy should take into account the organizational structure, the local environment and the global market for the particular type of coffee.

Minimizing Price Risk Through Call Options – with thanks to Sustainable Harvest Coffee Importers, Portland USA

Background. Price volatility complicates the timing of marketing decisions for the entire supply chain, particularly so for managers of coffee cooperatives who take sales and pricing decisions on behalf of the members. If prices rise subsequent to selling then the members may refuse to supply (default) or, if prices fall subsequent to buying coffee then a cooperative will lose money. Taking sales decisions in this environment is not only difficult but can also be quite hazardous. And, even where a guaranteed floor price such as the Fairtrade model is in place, volatility still impacts on the decision making process. To note here that without financial literacy a cooperative may not know its true costs (and cannot present a good business case to potential lenders), whereas lack of market insight may result in blind speculation or indecision, i.e. ad hoc decisions. And whilst trading back-to-back (buy and sell simultaneously) sounds simple in terms of risk avoidance, in reality this does not really make the pricing decisions any easier.

Realizing that poor decision making processes were detracting from efficient and sustainable supply, in 2009 the Portland USA based firm Sustainable Harvest Specialty Importers (SH) invested in an extended program with 35 cooperatives, of which 27 in Peru and 8 between Costa Rica, Guatemala, Honduras, Mexico, and Nicaragua, to improve both financial literacy and market insight.15

Financial literacy, audited accounts and being able to demonstrate that the operation adds value are all prerequisites for any business case. In terms of accessing finance, having confirmed sales on the books to pre-approved buyers makes it easier to obtain seasonal funding to finance coffee purchases. In this case all 35 cooperatives had previously demonstrated their reliability as suppliers, both in terms of coffee quality and respect for contract execution, but all had difficulty in coping with the complexities of taking pricing decisions. Enter the Price To Be Fixed sales system.16

The SH Program. This consists of on-going (and annual refresher) training taking in the functioning of markets, market analysis, the role of futures, put and call options and related subjects, such as daily position analysis. Plus of course financial literacy and trading discipline as a whole. Initially a total of 4 training seminars were held.

Participating cooperatives subscribe to independent real-time price information through an account established by Sustainable Harvest, charged at a minimal fee.

Two sales methods

- Outright sale: In addition to all usual terms and conditions the contract immediately stipulates the final price.
- Sale PTBF: Seller and buyer agree quality, quantity, delivery, the differential and against which futures position the sale is to be fixed. The sale is 'sellers call' meaning the seller calls for the fix (within the time

[15] Partly funded by grants from USAID and other donors. Total cost circa USD 1,000 per participating cooperative who also make a small contribution themselves to ensure solid buy-in.

[16] In terms of supply and demand producers need to confirm sales for their production and roasters need to fill their supply line but, neither may necessarily wish to set the price at the same time as they make those arrangements. Selling green coffee at a defined differential to the futures market (called Price To Be Fixed), leaves the final price decision for later, yet accommodates these conflicting interests. At the same time outright or market risk is changed into differential or basis risk. Basis risk usually is much lower than price risk. Nevertheless, also such sales still require a pricing decision in that someone has to decide on when to 'fix' the futures price that, together with the agreed differential will constitute the final sales price. In the mainstream coffee trade the execution of PTBF contracts is often done through the buying and selling of futures contracts which many producers find complicated but this is not the case here.

period and in the manner agreed). The seller is not involved in any futures transactions but simply calls for the price to be fixed using the method laid down in the contract.17

Under the outright option the pricing decision is made immediately but under PTBF it is postponed. Of course it still has to be made and cooperatives need to have clear internal guidelines that govern the fixing of PTBF contracts.

The problem. In a rising market potential profits may be lost which makes taking sales or fixation decisions very difficult. In extreme cases subsequent price rises may even lead to member default.

The answer. Price insurance.

Through the SH sponsored account cooperatives can purchase call options (the right to buy coffee futures forward at a set price) at the same time they sell physical coffee outright or fix an existing PTBF contract. If subsequently the futures market rises so will the value of the call option. On expiry the option will then be cashed in and the profit, minus the option cost, will accrue to the cooperative. Should the market fall then the option is simply allowed to expire and the cost, the 'insurance premium' that was paid to benefit from a possible price rise after sale, will detract from the original sales transaction.

Exercising the option. Option holders monitor both futures and the option value through the SH sponsored account. Options showing profit can be exercised through direct orders to the broker (assumes good communications); by giving a Good-till-Called order (the broker sells when the stated value is reached); or by Stop-Loss orders (the broker sells automatically if the value of a profitable option falls to a certain level).

NB. The cost of options varies and individual cooperatives decide for themselves whether they consider the premium worthwhile. Clearly calls are cheaper in a falling market… 18

Outcome. The cost of call options was subsidized by 50% in years 1 and 2 but is now paid by the participating cooperatives. Currently approximately 30% of sales are being made in conjunction with call options, often at season's beginning and end when the price outlook may be less clear, or in the middle when fears of frost in Brazil come into play. To date 70 call options have been taken out at an average cost of USD 1,317 each.

Today participating cooperatives know their cost price. They have developed better understanding of market behaviour and mechanisms, decision making processes have been formalised and they have learned how to make use of market rallies to transact both physical coffee and options. They now use both fixed price and PTBF contracts and do not necessarily fix entire positions all at once but judge market behaviour. Improved monitoring, trading and risk management has provided some of them not only with more but also with cheaper finance as lenders understand better how this system functions and the assurances it provides. Total data are available for Peru where so far a total of 239 containers were contracted of which 10 at fixed price and 229 basis PTBF. On average the fixation result for PTBF contracts combined with call options has been better because the cooperatives fixed the price as soon as they availed of the physical coffee, knowing the call option gave them a stake in any subsequent market advance. Delaying fixation might sometimes result in better or even much better prices but, can also result in a much lower price – whether to fix a PTBF contract or not when the physical coffee is bought is of course a management decision but deciding not to fix should be recognized for what it is: speculation.

[17] With the SH system the cooperatives need not concern themselves with futures transactions.
[18] Cooperatives wishing to protect against falling prices can of course themselves purchase put options (the right to sell coffee futures forward at a set price) but this is not part of the SH program as it does not relate to the import of physical coffee.

Lessons learned

- It is important to have insights on both sides (producer and roaster) and to be able to provide real-life information;
- Once cooperatives begin to understand how the system works they realize its advantages and are ready to pay the costs but initially it has to be subsidized;
- Being linked to a broker account has made them conversant with market behaviour, yet they can still ask the advice of the importer and, most importantly, they do not have to be involved with futures trading;
- Under Fairtrade contracts cooperatives of course have a natural floor price but nevertheless, by selling PTBF they can still benefit from market rallies;

Program Interventions

Current Financing Dynamics in the Kenya Coffee Sector – with thanks to John Amino, Kenya Coffee Development Fund

Background

Finance to the Kenya coffee sector is provided through different channels, both formal and informal

- Government through the Coffee Development Fund
- Commercial Lending Institutions i.e. Banks
- Micro-Finance Institutions/SACCOS[19]
- Marketing Agents/Traders[20]

Apart from the Coffee Development Fund and in part, the Cooperative Bank of Kenya through STABEX, most commercial lenders are known to provide financing to coffee value chain actors through existing loan products rather than specific products tailored for the value chain. For instance, financing for coffee growers is largely catered for in agricultural loans, while value chain players like Marketing agents and Coffee Dealers can access a range of products offered under Trade Finance.

Micro-finance institutions, particularly rural SACCOS, also makes them primary sources of micro-credit to coffee growers. The majority of coffee cooperative societies are closely affiliated to SACCOS whereas others have gone further and established their own.

Marketing Agent/Traderss as a source of credit is perhaps one of the unique features of coffee value chain finance in Kenya. This is inevitably so, due to their direct links and vested interest to coffee growers which has made them move beyond their marketing role to also play a financial role.

Savings and Credit Cooperative Societies - SACCOS

SACCOS generally emanate from Cooperatives which are entities primarily designed to promote the economic interests of their members through a number of ways. Coffee-based cooperatives for instance wet-process and transport coffee, and also have an intermediary role in channeling finance and credit to members. Most agricultural based cooperatives such as the coffee cooperatives were created around a single activity; coffee farming. However, in recent years cooperatives have been forced to diversify or transform to remain competitive, especially in sectors that were no longer profitable such as cotton and pyrethrum. Diversification of activities explains the substantial growth of cooperatives in the financial sector especially in rural markets in the form of Savings and Credit Cooperatives (SACCOS)

[19] Savings and Credit Cooperative Societies.
[20] Marketing Agents/Traders provide quality analysis, milling and financial services to growers, including readying coffee for auctioning, price risk management and so on.

The SACCO movement in rural Kenya is quite vibrant mainly due to the fact that most commercial lenders have a low presence in rural areas or coffee growing areas. As such it is highly likely they are the preferred financial providers for most smallholder coffee farmers. Indeed, the majority of coffee cooperative societies are closely affiliated to SACCOS or have established their own to offer savings and credit facilities to their members. The type of credit offered however is mainly seasonal agricultural loans and welfare loans that cater for social expenses such as school fees and medical bills.

Despite their key role in rural markets SACCOS are usually hampered by limited resources and from time to time require assistance from commercial lenders to meet the financial demands of their members. It is highly likely therefore that most SACCO's would borrow from Banks or other financial institutions to on-lend to their members.

The Coffee Development Fund - CoDF

At inception in 2007, CoDF faced a major challenge to reach coffee farmers who are widely dispersed in the coffee regions. The Fund therefore adapted a financial intermediation model by establishing linkages with rural-based financial institutions, the majority of whom are SACCOS, to act as financial 'intermediaries'. The function of CoDF 'intermediaries' is to mobilize, recruit, vet, appraise, approve, disburse and recover due loans on behalf of the Fund. The model mainly targets smallholder coffee growers organized in cooperatives. To monitor the movement of funds CoDF disburses to these 'intermediaries' based upon financial requests from the respective cooperatives and in tandem with the activities of the coffee cycle[21].

As of now CoDF channels funds through 29 intermediaries of which 27 are SACCOS, thus reaching just over 66,000 individual smallholders. In addition CoDF also lends direct to some 100 larger growers. Interest charged to famers is 10% p/a of which 1% accrues to the farmer's own Primary Cooperative Society, 4.5% to the intermediary and 4.5% to CoDF itself. To date approximately USD 16 mln has been disbursed of which about one third is currently outstanding. CoDF applies a provision for doubtful debt of 3%.

Risk Management

Cooperatives try to cushion themselves against risk in a variety of ways. The strategy varies from one cooperative to another and depending on the coffee growing regions. Perhaps the most common coping mechanism is diversifying to other enterprises. In the Western coffee growing regions for instance, most farmers intercrop their coffee with other food crops (sweet potatoes) for own consumption and also for commercial purposes. Other regions especially the North Rift Valley region have encouraged their farmers to venture into dairy and food crop enterprises. The common feature across cooperatives is diversification into enterprises that have a short turnover cycle to meet short term financial needs during the long coffee cycle.

Traditional methods of tackling price risk are mainly undertaken by Marketing Agents/Traders who have the ability and know-how to apply price risk mechanisms such as hedging, forward sales, futures etc. and, who have the access to such facilities that the cooperatives themselves lack.

Nationally CoDF is looking at financial interventions aimed at market diversification and value addition that will promote domestic consumption, currently just 5% of production. The opportunity to increase domestic

[21] See Annex 1

consumption in Kenya is huge due to rapid urbanization and a growing middle class that is increasingly becoming accustomed to better quality coffee.

Lessons learned

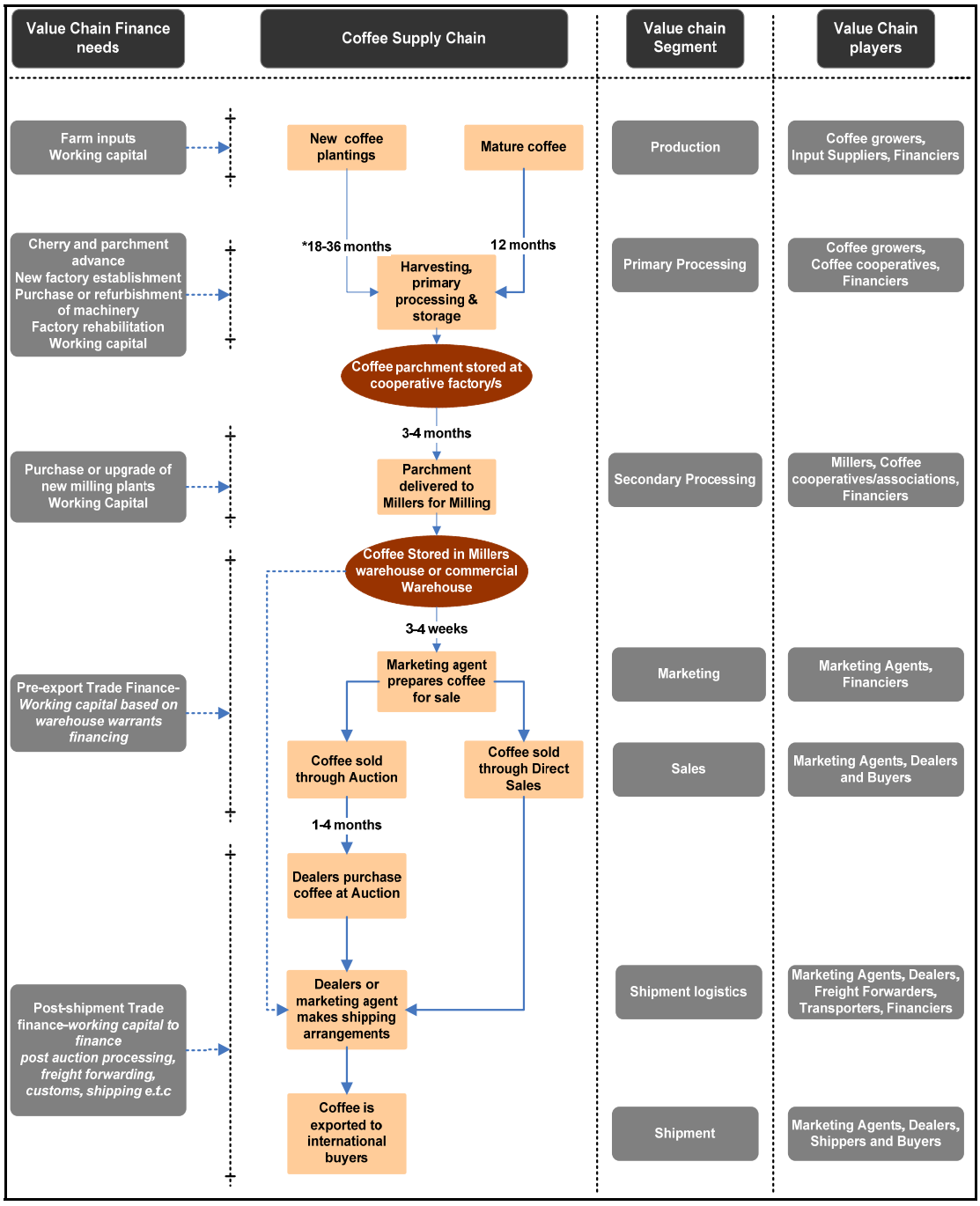
- Over the years, one of the key lessons learned from this model was that non-agricultural based SACCOS, particularly the ***teacher-based*** SACCOS did not perform well in administering CoDF loans.[22] This mainly because coffee was not the core activity of its members and also to some extent governance/mismanagement issues in some of them. ***Farmer-based*** SACCOS on the other hand were impressive in administering CoDF loans, purely because of the pressure to meet the demands of their member farmers who are directly involved in coffee farming as a core activity and, are their main shareholders. Some of these SACCOS have gradually strengthened their operations and financial base through commissions paid out by CoDF for their services. Others, also based on performance (good repayment history of CoDF loans), now borrow wholesale directly from CoDF so as to plan in advance for members requests during the coffee season.
- Prior to the establishment of CoDF, various government intervention were designed to channel credit to coffee farmers through SACCOS and Coffee Cooperatives but received mixed success in the various coffee growing areas. Non-successful areas were mainly hampered by poor management structures and lack of adequate capacity to administer funds efficiently. In this respect the recent establishment of an oversight regulatory body, the SACCO Societies Regulatory Authority or SASRA, probably is a welcome development. Industry players and stakeholders as CoDF are optimistic about the future performance of SACCOS.
- Farmers borrowing from different sources/lenders along the value chain leads to multiple borrowing, meaning the same crop may be hypothecated against various sources of financing. This leads to high indebtedness among coffee farmers. However, as yet there is no mechanism for sharing financial and credit information, especially between non-financial institutions as Marketing Agents, as well as Banks and indeed CoDF.

Way Forward

Given the experiences and lessons learnt, Coffee development seeks to strengthen the model by building capacity especially amongst its financial intermediaries (SACCOS) and coffee cooperatives as a whole. Capacity building interventions will involve financial literacy and corporate governance training. Other interventions to strengthen the model shall include alternative service delivery models such as the use of mobile technology and smart card systems.

[22] Teachers often play a leading role in establishing and managing cooperatives in Kenya.

Coffee Cycle Activities



Implementing Price Risk Management into the Rwandan Market Place – with thanks to Paul Stewart, Technoserve

Issues

Protect producer organizations or cooperatives that operate coffee wet mills against potential loss or default due to major price moves. Create access to hedging opportunities.

Response

TechnoServe works with exporters that buy from producer cooperatives that own coffee wet mill stations, providing services that help reduce or avoid altogether the losses and defaults that can arise from sharp movements in both local and global coffee prices. The scheme is innovative in its use of mobile technology (cellphones) to track the daily volume of coffee cherry purchases, the volume of coffee parchment yielded by the coffee washing process, coffee stock movement and wet mill station operating expense data. This data keeps exporters informed of how much coffee is being held at the stations they purchase from and allows them to use this volume data on the futures market to "lock in" a price. The program was initiated in 2010 and in 2012 already approximately 1,000 metric tons was hedged on the New York futures market (ICE). [23]

Background

Rwanda's coffee sector has similarities to many other coffee producing countries. Farmer associations and cooperatives buy coffee cherry from smallholder coffee farmers, process it at their wet mill station and subsequently sell that coffee to exporters. The exporters then mill, market, and ship the product (green coffee) to buyers across the globe. Many exporters are subsidiaries of global trading houses, with some domestic / local exporters active as well. When purchasing coffee, exporters and buyers index the price to the international market price when determining their offer price.

A challenge for the Rwandan coffee market (and elsewhere across the globe) is that sharp price movements may occur in relatively short periods of time. This can be contrasted with the coffee harvesting and production process, in which there is typically a lag of at least 2-3 months between harvest of coffee cherry and sale due to the time required to wet-process and dry-process green coffee. Thus, coffee harvested when the market is strong, may be sold at a point when the market has collapsed, adversely impacting the position of cooperatives and their member farmers.

As an example, after a significant period of rising prices in 2010, the international price of coffee started to fall dramatically in 2011. Cooperatives in Rwanda suddenly found their profits wiped out, with some at risk of making losses. The risk of default became quite real and answers had to be found to avoid similar occurrences in future.

To avoid such exposure to price fluctuations, cooperatives could consider agreeing a price with a buyer for an entire season (ie forward sell), thus allowing them to know exactly what price to expect once their coffee is harvested and processed. However, despite the benefit of price stability, such agreements (informal or contractually bound), are also exposed to a set of risks:

[23] Rwanda produces Arabica, a small percentage of which is processed in modern wet mill stations. The 1,000 MT that was hedged represented about 25% of the total wet mill station 2012 output of some 4,000 MT. The bulk of Rwandan coffee output is processed using conventional means.

- Should prices fall during the season, a buyer might try to renegotiate a contract to obtain more favorable (ie lower priced) terms.
- Should prices rise, farmers may not sell their coffee cherry to the cooperative, choosing instead to sell to a competitor paying a higher price.

Hedging as a Solution

Price risk is an issue for all actors operating within an agricultural commodity supply chain. Commodity exchanges or futures markets provide access to futures contracts that can be used to manage and protect against price risk. The coffee futures contract traded on the New York exchange represents the global market for Arabica coffee. This market allows coffee sector firms to both buy and sell coffee for a future date, hence protecting themselves against price movements caused by their position in the physical coffee market.[24] However protecting one's position against price risk can be both time consuming and costly, requiring in-depth expertise of the global markets and the financial products, also known as derivatives.

For producer organizations and cooperatives, accessing the futures market is a challenge logistically (distance from market); financially (the need to have sufficient funds to cover hedges and meet margin calls); and in terms of complexity (the risk of increasing rather than reducing risk if a hedging strategy is poorly implemented and managed). As such the vast majority of trading on the exchanges is by coffee exporters and buyers rather than by producer organizations. Such enterprises have the in-house skills and resources to effectively utilize these markets. With hedging nevertheless representing the best approach against price volatility, the question remained: how could produce organizations benefit from such strategies?

Providing Price Risk Management to Producer Cooperatives

As described above, the cooperatives in Rwanda were struggling with the adverse effects of volatile prices. They neither had the expertise, the financial resources, nor the access to markets to enable them to directly manage their exposure to such price volatility. By working with TechnoServe, however, who had helped to establish relationships between these producer cooperatives and coffee exporter companies, producer organizations were able to benefit from a hedging strategy implemented by coffee exporter companies.

In Rwanda, in addition to milling and marketing services, coffee exporters also provide working capital financing to the producer organizations. Working at first with one local exporter, TechnoServe began a program to better enable that exporter to manage the price risk of coffee purchases by utilizing the coffee futures market.

The mechanism included an exporter paying a cooperative a price determined by the current international coffee market price at the time the purchase was negotiated. The exporter would, in turn, hedge the volume of coffee it purchased through a sale on the futures market, therefore locking in their own price and justifying the price agreed with and paid to the cooperative. As such, all parties in the transaction would no longer be exposed to price fluctuations minimizing future default risk.

In order to execute on such a strategy, the exporter required accurate, daily coffee volume information – both regarding daily cherry purchases at the cooperative level and regarding how much green coffee that cherry could be expected to yield. By knowing how much coffee the cooperatives had purchased daily, the exporter could use pooled information from its member cooperatives to hedge its exposure and thereby reduce price volatility risks.

[24] The physical market is where the actual green coffee changes hands.

Challenges of Hedging via an Exporter Service Provider

This approach is not without its own challenges. Specifically, exporters provide marketing services to many farm cooperatives at once, require accurate, up to date coffee cherry purchase volume reports from each of these rural businesses, daily, in order to hedge. Additionally, exporters provide credit services to many cooperatives and need to monitor these loans. The most effective way to do this is to monitor the farm-gate prices paid daily by cooperatives to farmers for the cherry they deliver to the wet mill stations and to ensure that these prices are in-line with what the international market would justify. With an accurate monitoring tool, exporters can ensure cooperatives do not overpay for coffee cherry thereby risking making a loss at the time of sale and defaulting on loans. If exporters were geographically near to their member cooperatives, they could more easily monitor these businesses closely; however most wet mill stations are rural, located far from where the exporters are based. As such, a more transparent inventory management system was needed to allow exporters to obtain accurate pricing and stock volume information from rural wet mill stations in order to execute on their hedging strategy, as well as for their loan monitoring purposes.

Traditionally, cooperatives have used paper-based records to monitor volume and operating expense information. But paper-based records are difficult to share and easy to falsify, causing delays in information dissemination and difficulties in monitoring for fraud, theft, or poor management.

A more Transparent Inventory Management System Solution

TechnoServe worked closely with Rwandan exporters and cooperatives to find a solution to these issues. As a result, an SMS bookkeeping tool was developed, linking simple cellphone text message technology to a sophisticated cloud-based platform.

The move to SMS bookkeeping enabled for daily data collection at wet mill stations which could then be shared real-time with exporters, thus enabling exporters to (1) use this volume data to hedge coffee at appropriate scale and times and (2) monitor the risk associated with lending working capital to these cooperatives.

The benefits of using cellphones and SMS technology are widely recognised: cellphone usage is extremely widespread in Rwanda, including amongst wet mill station accountants. By taking advantage of existing utilized technology the need for expensive or complicated hardware (such as PCs)was avoided. Additionally, these phones are relatively simple to use avoiding the need for expensive training. Finally, data sent via SMS is both inexpensive and fast. SMS data can arrive almost instantly rather than be delayed by conventional postage. In short, this program utilizes existing, readily available, and easy-to-use technology enabling speedy adoption, rapid scale-up and ensuring reduced user-error.

How the System Works

SMS bookkeeping requires wet mill station accountants to send daily and weekly messages that are recorded on an online platform viewable to affiliated lenders and export companies. The daily message reports the kilos of cherry purchased, the cash / credit spent on cherry and the cash advanced to satellite buying sites. The weekly cash message reports opening cash balance, working capital received and operating expenses at each cost center. A weekly stock message reports parchment moved to store from the drying beds and the parchment shipped to the dry mill. The cloud-based system collates this information from all wet mill stations, allowing an exporter to view its entire portfolio of wet mill stations at once.

With this information an exporter at any point can know exactly what the stock position of each wet mill station is; where coffee sits in the chain; and the pricing and cash position of each wet mill station – providing them with sufficient information to ensure that funds are being spent appropriately and to know when they should hedge the exposure.

The system promotes financial transparency but also protects private information. Producer organizations, exporters and other related parties agree on the data that will be viewable to each party at the beginning of the season. And, the system can be programmed to send performance reports to cooperative leaders and farmers directly, via SMS, thereby promoting financial transparency within producer associations.

Improving Access to Finance

The program and the inventory management system enabled cooperatives and their smallholder farmer members to benefit from a sophisticated hedging strategy, thereby avoiding price risk and related losses. With greater real-time transparency into the operations and track record of producer organizations, exporters, in their role as credit providers, are able to underwrite greater amounts of working capital to the producer organizations, as well as disburse them more timely and efficiently. This has caused an increase in financing available to producer cooperatives at a time when many businesses and banks continue to be hesitant to extend loans to small, rural, agriculture-based borrowers. At the end of 2012, SMS bookkeeping had been implemented at more than 50 of Rwanda's 215 cooperatives. Starting the next coffee season, TechnoServe will begin implementing this approach in Tanzania and Ethiopia.