



VIETNAM COFFEE SUPPLY CHAIN RISK ASSESSMENT

DRAFT REPORT

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Executive Summary:

With annual exports of around one million tons, worth USD 1.7 billion and representing approximately 14% of global coffee production in 2010, Vietnam today ranks as the world's second largest coffee producer. Since 1999, the country has been the world's largest exporter of Robusta coffee with approximately 500,000 rural households deriving most of their farming income from coffee production.¹ The sector is characterized by an extremely competitive environment with growers receiving around 95% of the FOB value. However, despite its prominent position in the global market, the industry faces a number of risks which may threaten its competitiveness.

- **Replanting issue:** The recommended age for replanting coffee trees in Vietnam is 25 years and according to industry experts, approximately 100,000 HA currently needs to be replanted, and by 2020, more than half of the Vietnamese coffee trees will need replanting. This replanting issue is a serious threat to the industry due to the following reasons: 1) The normal gestation period (time-period between planting to first major harvest) for coffee replacement is 3 years, however, due to nematode infestation, a two year fallow period is recommended, which increases the gestation period to 5 years. 2) Financing of replanting is challenging because of the upfront cost and long gestation period. It is estimated that between \$500 - \$800 million is required to meet the current replanting needs of 100,000 HA. In addition, the majority of the coffee farmers are smallholders (less than 1 HA) and staggering the replanting might not be a viable option for them. Replanting efforts will require national level coordination and scheduling of replanting which will be challenging due to the lack of an existing industry coordination mechanism. Without a prompt, effective and well coordinated action plan, Vietnamese coffee production, exports and coffee revenues will fall steeply from 2018-2026.
- **International coffee price volatility** is cited as the biggest risk by the industry stakeholders and the tendency to speculate on price movements, across the supply chain, further aggravates this risk, leading to significant financial losses.
- **Drought** is a serious recurring risk for the coffee sector. This risk leads to large production losses for rainfed coffee cultivation (13% of total acreage). Approximately 87% of Vietnamese coffee cultivation is irrigated and drought leads to increased cost of irrigation for these farms. In addition, a declining water table in coffee areas, due to excessive water use and prolonged droughts, is a major concern for coffee farmers.
- **Erratic rain patterns**, especially rains during flowering, harvesting, and drying, leads to production losses and quality deterioration. This risk is localized and does not impact the entire sector. However, respondents stated that climate change induced weather uncertainties might increase losses from this risk in future.
- **Counterparty risk (contract default)**, across the supply chain, leads to financial losses for stakeholders and tarnishes the reputation of the industry. The lack of a credible mechanism for contract enforcement, alongside a lack of industry led coordination mechanism, aggravates the issue.

¹ Modest amounts of Arabica coffee (approximately 40,000 MT) are also produced ..

- Robusta coffee trees are relatively resilient to **pests, diseases and insects**, however, cicada infestation and nematode (yellow leaf) led to sizable losses in 2007. Currently, pests and disease, other than nematodes, is not a big issue and farmers are able to manage this risk, however, with an aging tree population & soil fertility decline, this may become a bigger issue in the future.
- Coffee farmers are heavily reliant on fertilizer usage and diesel (for irrigation) to ensure high yields, and **input price volatility** was cited as a big concern by the farmers. Sudden spikes in input prices contribute to increasing production cost, rationing of fertilizer use, and reduced yields.
- Volatility in **interest rate and exchange rate** can lead to significant financial losses for exporters and there are few available instruments to manage this risk.

In addition to the above mentioned major risks, the coffee industry suffers from the following constraints some of which further amplifies the risk and aggravates losses to the industry : a) access and affordability of credit, b) limited extension services & unbalanced application of inputs (experts claims that in many instances fertilizer application and irrigation is 10-15% more than recommended doses) leading to increased cost of cultivation and negative impact on soil fertility; c) inconsistent quality, d) insufficient trading discipline in the supply chain and e) lack of effective industry coordination structure.

Vietnam's coffee industry has successfully weathered multiple shocks, 2000-2005 global coffee price crisis, occasional droughts, 2007 cicada outbreak etc and has proved to be resilient to shocks. However, sustained competitiveness of the industry will depend on its ability to manage risks. This documents highlights and prioritizes major risks to the Vietnam coffee supply chain and could be used to create a risk management roadmap for the industry.

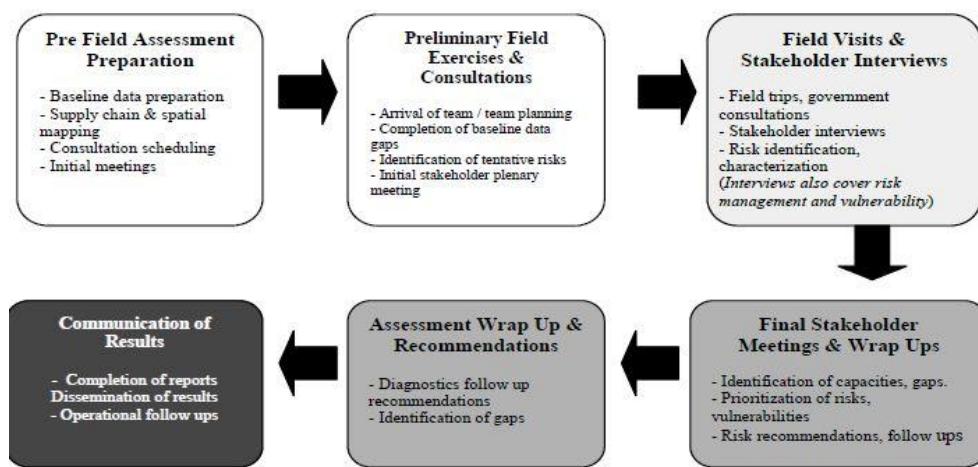
1.0 Background

At the request of the Ministry of Agriculture and Rural Development (MARD), the World Bank, in collaboration with the Institute of Policy and Strategy for Rural Development (IPSARD), conducted a coffee supply chain risk assessment in Vietnam in April, 2011. This report is the outcome of that assessment and is intended to serve as an advisory note to MARD to assist them in building upon existing programs and policies and in identifying potential public investments to improve current risk management practices in the coffee supply chain.

This report identifies the major risks facing the coffee supply chain, ranks them in terms of their potential impact and frequency of occurrence, and offers a framework for improving current risk management practices. The recommendations and findings will provide a basis for follow-up planning by MARD, the World Bank, and other development partners.

The findings and analysis of this initial assessment are based on a methodology designed by the Agricultural Risk Management Team (ARMT) for assessing risks in agricultural supply chains. The assessment team followed the following sequence of activities (Figure 1) while conducting the assessment.

Figure 1. Overall sequence of analysis and consultative steps.



(Source: Rapid Agricultural Supply Chain Risk Assessment, the World Bank, 2009)

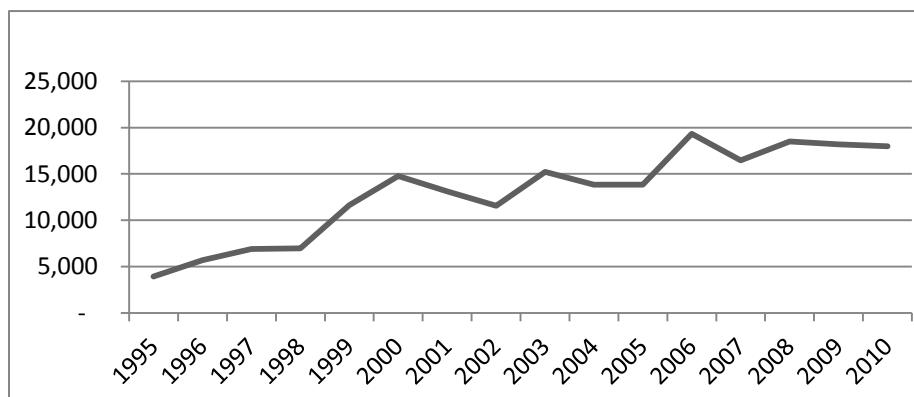
In-depth interviews were conducted with key coffee supply chain stakeholders in Ho Chi Min City, Hanoi, Buon Ma Thuot and Da Lat as well as with farmers, input suppliers, primary collectors, traders, financial intermediaries, processors, exporters, service providers, government officials, research institutes, and others. A full list of the stakeholders interviewed is provided in Annex 6.

2.0 Overview of the Coffee Sector in Vietnam

Starting from modest beginnings in the 1980's, Vietnam's coffee industry has grown at a rapid pace to become the world's second largest Robusta coffee producer with current annual exports fluctuating at around 1 million metric tonnes (MT), more than double the output of the world's previous number two producer, Colombia. Coffee is the main source of income for approximately 500,000 rural households. In addition, at the harvest time some 400,000 workers, including about 100,000 migrants, are employed in the coffee sector.

Coffee has been grown in Vietnam since the end of the 19th century but mass development only commenced in the 1980's, mostly as a result of cooperative agreements between Vietnam and Eastern European countries on coffee growing and exports. The Vietnamese Government strongly supported the sector and provided access to land and financing. As a result, coffee production expanded rapidly from 3,633 million bags (60 KG each) in 1995 to 19,600 million bags in 2009 (figure 2).

Figure 2: Coffee Production in Vietnam 1995-2010 (In millions of 60 kg bags)

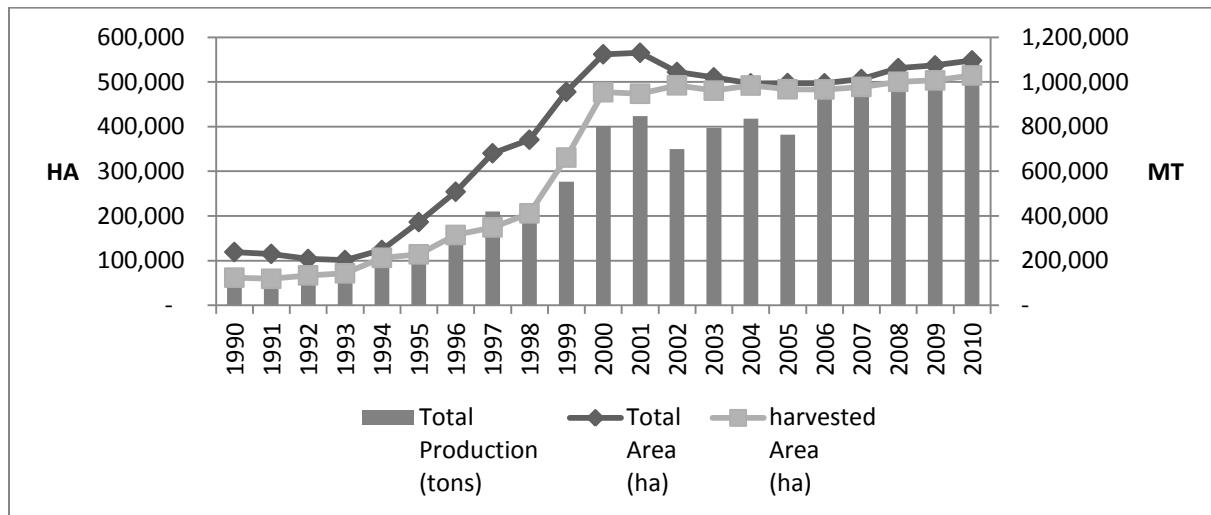


(Source: ICO)

Whilst initially grown on state-owned farms, subsequent liberalization and revised land use policies led to the rapid spread of coffee production to smallholders who now produce the bulk of coffee. It is opportune to mention here the important role women play in the Vietnamese coffee value chain with activities ranging from farming and farm ownership to managing export companies and dominating the internal trade/primary collection stage.

The time-period from 1993-2000 was particularly important for the industry during which there was a fivefold increase in coffee acreage from 101,300 HA (1993) to 561,000 HA (2000) (figure3). While this rapid growth in coffee acreage made Vietnam the second largest coffee producer, in future, it might create severe problems for the industry since all these coffee trees will arrive at their estimated replacement age within a narrow seven year period (see section 5.0 and annex 1).

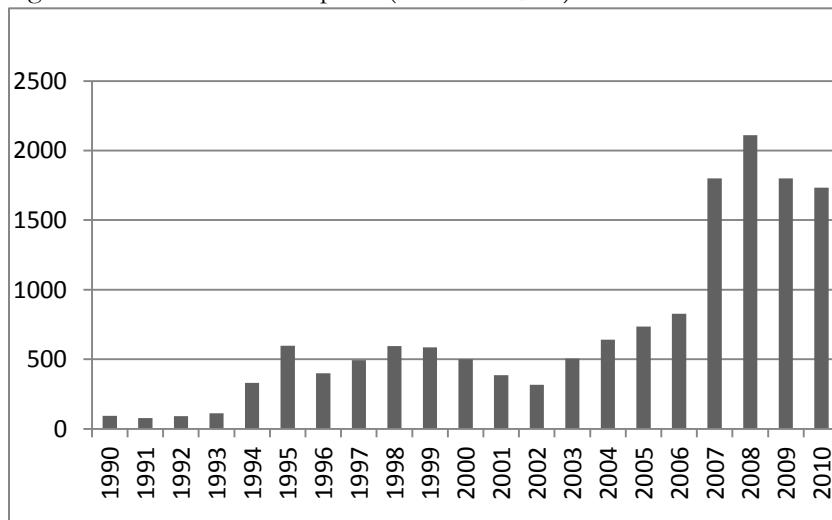
Figure 3: Vietnam coffee production (MT) and acreage (HA) 1990-2010



(Source: MARD and VICOFIA)

Coffee is a major source of foreign exchange and it generated export revenues of \$1.7 billion in 2010. Figure 4 provides the value of coffee exports in million \$US from 1990-2010. Substantial volatility in coffee prices translates in sharp fluctuations in export earnings, with extremely low revenues in the period 2001-2005. Despite the strong growth in coffee exports, even more rapid expansion of other Vietnamese export sectors has seen the share of coffee exports fall from about 9% in 1995 to around 3% of all exports in 2010.

Figure 4: Value of coffee exports (In Million \$US)

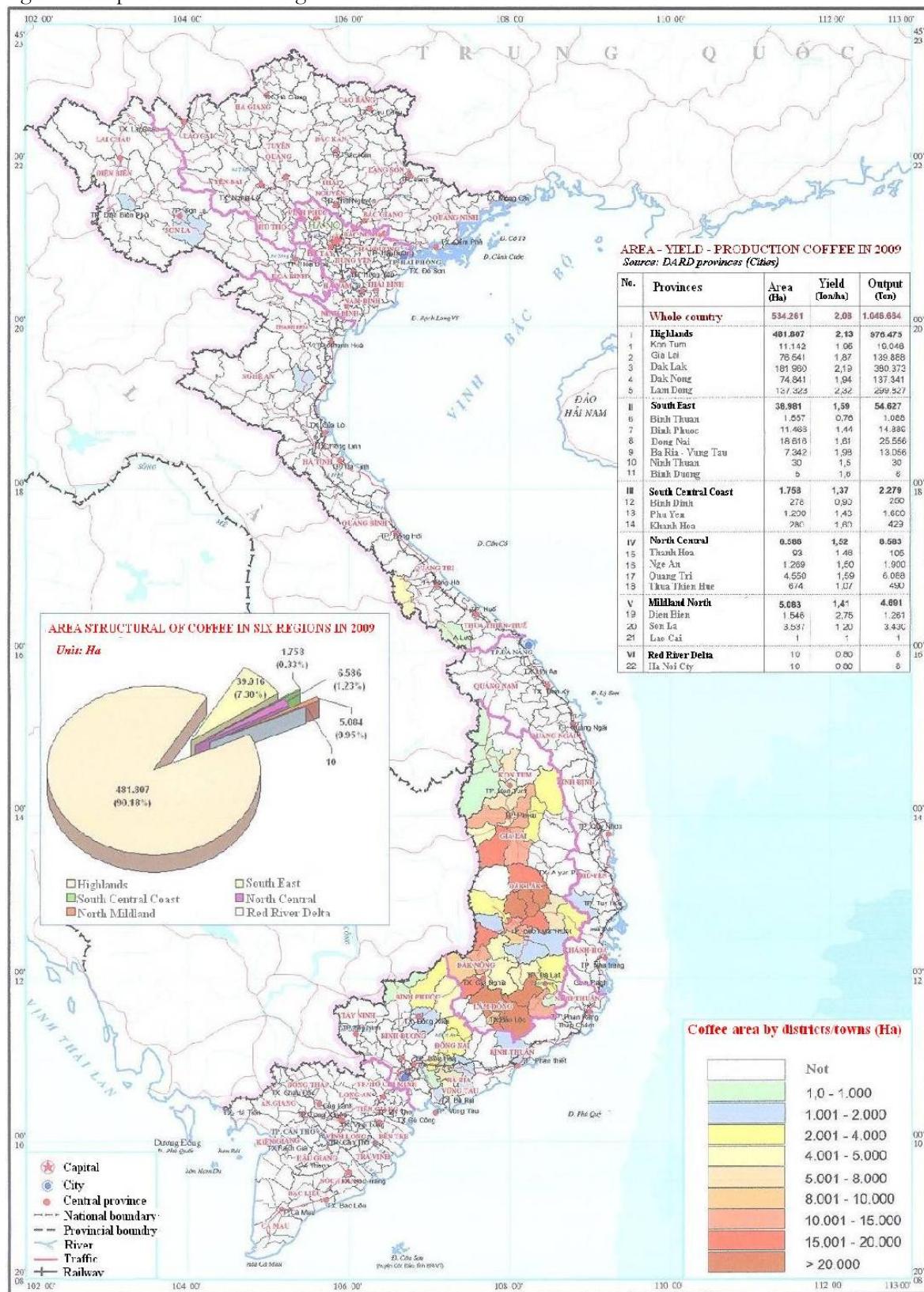


(Source: VICOFIA)

Robusta is mostly grown in the Highland provinces of Dak Lak, Lam Dong, Dak Nong and Gia Lai, and in the South East Region at altitudes ranging from 500 to 800 metres above sea level. While Arabica coffee (40,000 MT production in 2010) is grown up to 1500 meters in Quang Tri, Son La and Lam Dong (figure 5).²

² Robusta is also grown elsewhere but Government considers the 4 Highland provinces to be Vietnam's coffee production priority zone.

Figure 5. Map of Coffee Growing Areas

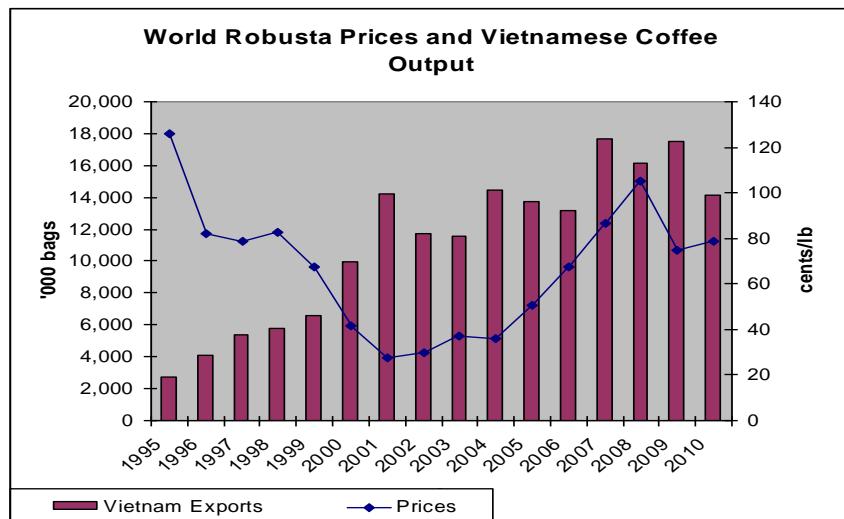


(Source: VICOFA)

With the exception of Brazil³, yields in Vietnam, at an estimated average of about 2 MT/ha, are well above average for most Robusta producing countries. Such high yields could be attributed to high input application, irrigation (87% of coffee plantations are irrigated), good agricultural practices, optimum spacing, and good planting material. However, an ageing tree stock, coupled with soil and nutrition imbalances as well as infestation problems, suggests that without remedial action future yields will fall. Annex 3 provides further detail on agronomy, production arrangements, harvesting and processing.

Vietnam currently has over 530,000 hectares under coffee (about 95%Robusta and 5% Arabica). As a result of widespread new plantings, production rose from around 136,000 MT in 1993 to almost 847,000 MT in 2001, unfortunately coinciding with the period of very low prices in 2001/05 (figure 5). Since then, steadily rising world consumption in both coffee producing and importing countries has helped to change the supply/demand outlook, resulting in a strong price recovery from 2007 onwards. Some market analysts consider that supply and demand are now finely balanced. If so, then any future supply shock in Vietnam has the potential to impact not only world Robusta prices but also coffee prices as a whole.⁴ Currently, producers generally receive close to 95% of the FOB price which is indicative of a fairly efficient and strongly competitive supply chain. However, anecdotal evidence suggests that farm gate prices reduce sharply, while the cost of finance rises, in line with a farmer's distance from a main coffee buying centre.

Figure 5. World Robusta Prices and Vietnamese coffee output



Source: ICO

Past expansion of the acreage under coffee, particularly in the period 1993-2000, did not meet major obstacles but today further production growth is constrained by reduced availability of land and competition from other crops.⁵ It is unlikely therefore that the area planted to coffee could be meaningfully expanded which is also not part of the Government policy. For Vietnam to retain its present competitive advantage the coffee sector will therefore have to become more efficient by increasing productivity (but yields are high already), and providing better and more consistent quality. The next section describes the coffee supply chain structure in Vietnam.

³ Brazil is the world's largest producer of Arabica and the 2nd largest producer of Robusta with annual Robusta output at approximately 10 to 12 mln bags that is mostly consumed internally. However, presumably as a result of current high prices, in April and May 2011 there were exports of Robusta (Conilon) from Brazil of almost 40,000 MT and trade sources suggest future production could increase to around 17 mln bags annually..

⁴ When prices are low roasters may substitute some Robustas with lower type Arabicas. Conversely, when prices are high more Robustas may be used in blends at the lower end of the scale.

⁵ Past expansion was in part made possible by extensive clearing of forest land.

3.0 Coffee Supply Chain Structure

Coffee production falls under the Ministry of Agriculture and Rural Development (MARD) while marketing, exports and issuance of business licenses for coffee traders, processors, and exporters under the Ministry of Trade and Industry. The Vietnamese government has never set coffee prices but during periods of low prices, Government has consistently attempted to support the coffee sector with a variety of measures.⁶

State-Owned Enterprises (SOE's) and Joint-Stock Companies (mixed public/private ownership) have played, and continue to play, a major role in the coffee value chain as both producers and processors/exporters. However, a growing number of foreign-linked companies as well as private domestic firms are now active and this appears to be contributing to increased competition at the farm gate level. Figure 6 provides a snapshot of the Vietnamese coffee supply chain.

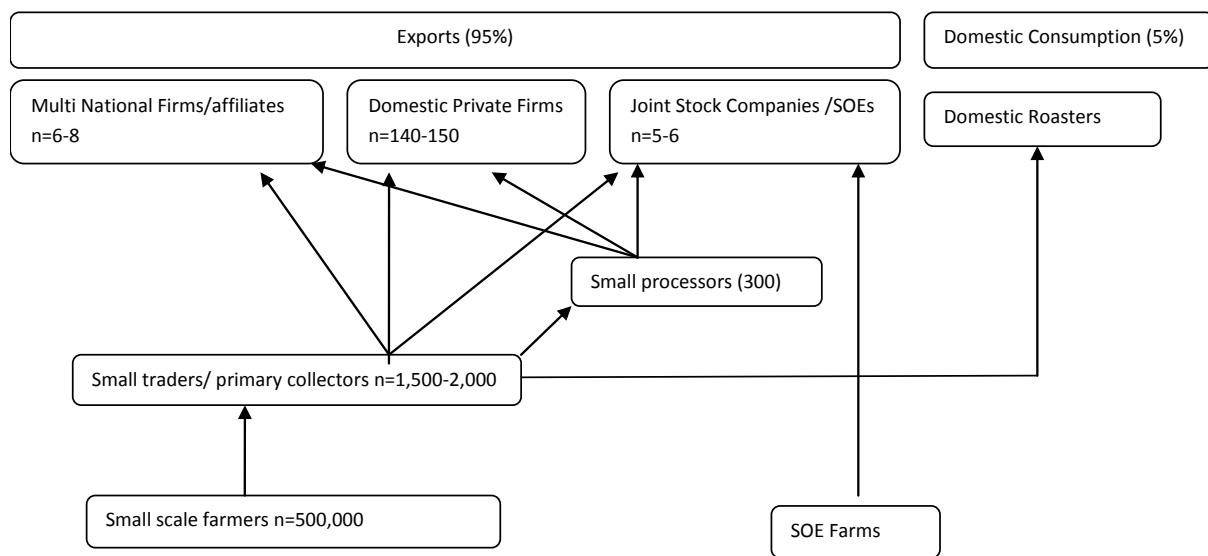
Internal trade: Coffee is mostly sold through primary village collectors, many of whom are linked to numerous small traders who in turn service larger traders/processors and processors/exporters. However larger farmers and those linked to State farms (out-growers or contract growers) also sell directly to processors/exporters. Individual collectors decide for themselves what coffee to accept or reject with few offering higher prices for better than average quality - instead deductions are made for inferior coffee. Anecdotal evidence suggests that little coffee is ever rejected on the grounds of quality, the argument being that it can be mixed with better quality to 'even things out'. However, a growing number of processors/exporters are now refusing to accept coffee that does not meet their minimum standard.

Regulatory Environment: The industry is loosely organized under the Vietnam Coffee-Cocoa Association (VICOFA). However, membership is not obligatory (mostly confined to exporters) and the association appears to have few regulatory powers and seemingly no disciplinary powers. No coffee-specific licensing requirements exist within the coffee trade, including export, which is conducted under general business licenses issued by the Ministry of Trade and Industry. There is limited presence of farmer and trade associations and there is limited activity to bring together and promote different stakeholders' interests.

Land Tenure System: Ultimate land ownership in Vietnam rests with the State with individuals owning different forms of Land Use Rights (LUR) namely: 1) The majority of coffee growers have Red Book LUR, allocated for up to 50 years. Such land can be leased out or reassigned, and can be used as collateral. 2) Green Book LUR confer the right to use land previously owned by SOE's and requires prior permission from the SOE in question to be reassigned. This limits their use as collateral. 3) Land Contracts between SOE's and individual farmers confer user rights for periods of 25 to 50 years against payment of an annual rent, often in kind (using part of the coffee harvest). Such land cannot be used as collateral. 4) Differing concepts of Customary Land Ownership are found amongst Vietnam's ethnic minority groups.

⁶ In recent years these have included preferential rates of interest and reductions or moratoriums on loan repayments. Actual write-offs have also occurred, for example during the Coffee Crisis years when some VND 1,000 bln was reportedly written off.

Figure 6: Vietnam Coffee Supply Chain Map



(Source: Authors)

Extension Services : General extension services at farm-level are provided and funded through provincial Departments of Agricultural and Rural Development (DARD). Through a network of district extension centres, DARD provides 1 to 2 extension officers per commune serving between 1,000 and 3,000 households.⁷ However, these extension officers cover all the commodities and are often not coffee specialist. Extension messages from the Ministry are usually disseminated through radio and TV, model farmers, farmer field schools, and specific training events. There is also limited outreach by the National Farmers Union but mainly on farming practices. Other discretionary and fluctuating funding becomes available through projects, SOE's, NGO's etc. Farmers growing coffee under land contracts with SOEs receive better extension services through SOE extension staffs and larger farmers can seek technical advice, against a fee, from the Western Highlands Agriculture and Forestry Science Institute (WASI). Despite the presence of above mentioned extension arrangements, in comparison to other large-scale coffee producing countries, i.e. Brazil and Colombia, the resources and depth of Vietnamese coffee extension services do not match the size and importance of the sector.

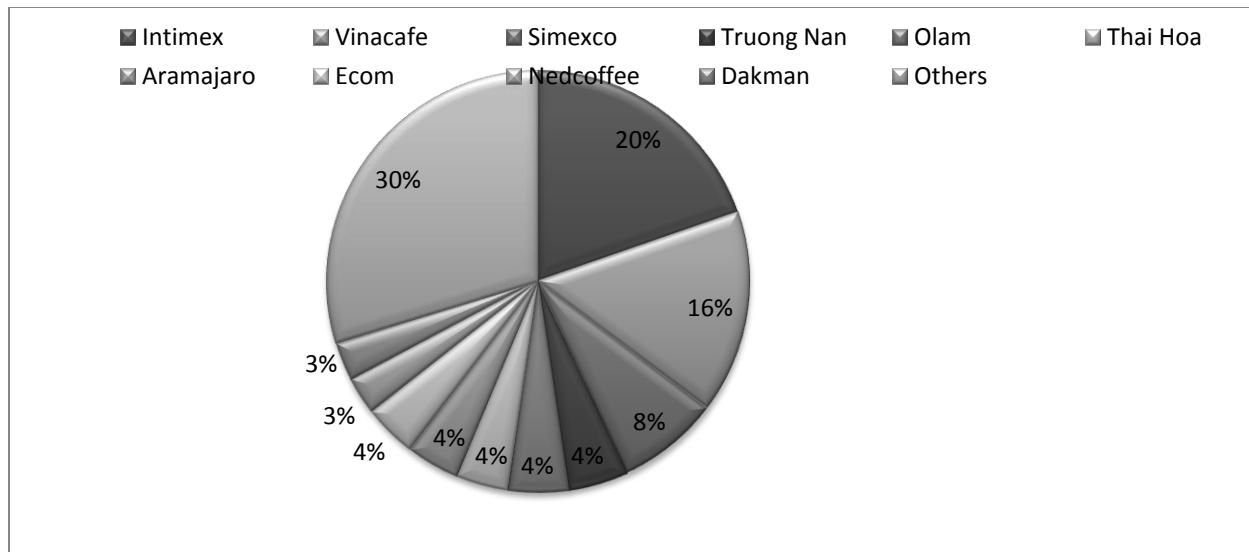
Research : A number of institutions contribute to coffee research of which the most important are WASI in Dak Lak Province and the Bavi Research Center for Coffee (BAVI) in Ha Tay Province. Activities of these research institutes include selection for disease resistance trees; development of sustainable cultivation practices; developing high yielding cultivars; improving nutrition packages; and suggesting better irrigation practices. Knowledge transfer between research institutions and farmers is limited and hampered by a lack of organization at farm level and insufficient linkages within the value chain, e.g. traders and collectors not taking an active part in the promotion of better practices.

Exports and Value Added: In the 2009/10 coffee year (October/September) over 1 million MT of coffee was exported of which close to 60% went to European Union destinations. The EU is by far Vietnam's most important market, followed by the United States. China is a market with great potential but officially recorded exports did not even reach 16,000 MT in 2009/10.

⁷ Funding per province ranges from VND 1bln to 15 bln with Dak Lak province for example receiving VND 5 bln in 2010 compared to VND 17 bln for Hanoi Province and VD 15 bln for HCMC Province.

In 2009/10 approximately 150 Vietnamese companies exported at least some coffee but approximately half of them shipped less than 1,000 MT. The three largest groups, all joint stock companies, (Intimex, Vinacafé and Simexco) exported approximately 44% of all coffee (figure 7). Taken together, the ten largest exporters accounted for 70% of all exports. Foreign-linked companies jointly shipped about 26% but none of them exceeded 50,000 MT in 2009/10. The share of the trade accounted for by majority government-owned companies was more than 50% in 2009/10.

Figure 7: Coffee Exports share of Major Companies 2009/10 (By Volume)



(Source: VICOFA and Authors' calculations.

The bulk of the exports consist of green coffee. Only small amounts of soluble coffee are exported and no roasted coffee is exported. Currently the majority of coffee is exported as a 'bulk commodity'. Vietnam is, however, responding positively to growing demand for sustainable or differentiated coffee by working with standards entities such as 4C Association, Utz Certified and the RainForest Alliance, with some companies also venturing into the production of washed robusta.

Before shipment the quality and moisture content of all export coffee is checked by one of the five inspection and verification companies that operate under MARD authority. There is general market consensus that coffee export quality has improved in recent years, in part as a result of the introduction of new National Standards for green coffee and more attention is being given to limiting the amount of foreign matter and moisture content. Even so, the Vietnamese industry still faces challenges in that quality is not optimal and consistent and more should be done to bring quality at par with international standards. However the immediate requirement is probably not for vastly superior quality but rather meeting the roasters' need for consistent quality.

As per ICO data, per capita consumption in Vietnam was 0.82 kg in 2009 which compares with 1.87 kg in Colombia and 5.64 kg in Brazil (ICO). But domestic consumption is growing rapidly and was just short of 1.6 million bags in 2010 with locally manufactured soluble coffee taking the major share. However, a growing domestic 'coffee café culture' bodes well for future growth in domestic consumption.

4.0 Major Risks and Capacity to Manage

Vietnam's coffee supply chain is confronted by multiple risks (Table 1), which have been grouped in three main categories: production; market; and enabling environment. This risk assessment is primarily focused on Robusta coffee, although many of the risks detailed in this section are equally applicable to Arabica coffee. Separate from the risks below, an ageing tree stock potentially constitutes a major threat to the industry. This is discussed in section 5 of this report.

Table 1: Major risks in the Vietnamese coffee supply chain

Production risks
Drought
Pest and disease outbreaks
Erratic rainfall
Market risks
Coffee price volatility risk
Steep and prolonged price fall
Input price volatility
Counterparty risk
Exchange rate & Interest rate volatility
Enabling environment risks
Reputational risk
Theft

To prioritize the identified risks, two criteria, namely likely frequency of occurrence and potential to cause losses to the industry, were used. The combination of both variables (severity and frequency) is captured in the Table 2. The risks located in the darkest shaded boxes (upper right corner) are those that require the most urgent attention because they can cause the greatest losses and are more likely to occur than other risks. Risks of the second level of importance appear in the lighter shaded boxes, and risks that have a low financial impact when they arise and/or occur very infrequently appear in the boxes without any shading.

Table 2: Summary of Risks: Severity Versus Probability

Probability of Event		Potential Severity of Impact				
		Negligible	Moderate	Considerable	Critical	Catastrophic
Highly probable		Erratic rainfall Exchange rate & Interest rate volatility Input price volatility	Coffee price volatility			
Probable		Pest and disease outbreak Reputational risk Counterparty risk	Drought			
Occasional	Theft					
Remote					Steep and prolonged price fall	
Improbable						

4.1 PRODUCTION RISKS:

4.1.1 Drought

Probability: Probable

Impact: Considerable

Drought is a considerable risk, particularly for rain-fed coffee which makes up about 13% of the total area under coffee, resulting in immediate crop losses for the affected area. However, approximately 87% of the total coffee area is irrigated and the risk of crop loss is appreciably reduced unless an extreme and prolonged drought was to occur. Drought during the early period, (rains not beginning until May or June), necessitates additional irrigation cycles, however, and ground water levels and free surface water are often quite reduced due to drought. Severe drought can result in as many as three additional irrigation cycles. While additional irrigation is meant to preserve the coffee crop, doing so incurs significant additional costs including fuel charges for pumping, additional labor costs, expenses to clean and deepen hand dug wells, and interest charges on loans often taken for these additional irrigation expenses.

Moisture stress during the early season also impacts bean size and coffee quality. In addition, hot dry weather is accompanied by a higher incidence of certain pests which attack many parts of the coffee plant, especially new growth as well as roots, leading to additional stress and crop loss.

Drought at the end of the rainy season (rains ending in September) may also require incurring expenses for additional irrigation to avoid yield loss. Frequently during late season drought, farmers will also forgo the usual final fertilizer application which has consequences for yield and bean quality. In addition, lower than usual rainfall at the end of the rainy season often means that growers have to begin irrigating early, and more times, during the next plant cycle, in which they are confronted with slow groundwater recharge. In the past, Dak Lak region has experienced several droughts causing substantial financial losses (table 3).

Table 3: Major Drought Years in DakLak Region

Year	Estimated Loss (MT coffee)	Estimated Loss US \$ (based on FOB price during the year)
1995	24,000 MT	\$57 million
1998	60,000 MT	\$92 million
2005	100,000 MT	\$92 million

(Source: Factiva database and authors' calculations)

4.1.2 Pest and Disease Outbreaks

Probability: Probable

Impact: Moderate

The natural resilience of Robusta coffee trees, coupled with good agronomic practices, and easy availability of chemicals, has resulted in relatively low incidences of pest and disease outbreak in Vietnam. A few localized incidences of outbreak did occur; however, farmers were able to manage them successfully. The 2006/07 season experienced the first large scale outbreak of cicada (insect), along with yellow leaf disease (symptom of nematode problem), which led to production losses worth \$112 million⁸.

Besides the two issues mentioned above, losses from other pest and disease (leaf rust, fungi, mealy bug/aphids, cicadas, and berry borer) are not that significant and the majority of the stakeholders did not mention this to be a high priority risk. Currently, farmers appear to be coping relatively well with normal occurrences of known pests and diseases but changing circumstances might make this more difficult. However an ageing tree stock, soil imbalances, and the arrival of new pests and diseases, coupled with existing ones expanding into hitherto untouched areas, might make it a serious issue in the future. A few stakeholders, including WASI, argue that changes in weather patterns (drought, unpredictable and varied rains, temperature changes) might lead to alterations in the pattern and severity of pests and diseases.

⁸ Source : Reuters and Factiva database

4.1.3 Erratic Rainfall

Probability: Highly Probable

Impact: Moderate

Whilst no precise weather data was available to the authors of this report, almost all farmers and authorities interviewed reported that erratic rainfall during the flowering and harvesting/drying season is of increasing concern. Persistent rain during flowering, coupled with temperature drop, may cause flowers to fall off and/or prevent pinheads from forming, thereby reducing yields. Most farmers rely on sun drying and rain during the harvest season not only prolongs the drying process but also increases the risk of mould and fermentation, both serious defects. Additional investment in coffee drying tarpaulins and drying trays would at least enable drying cherries to be removed to safety when rain is imminent. Small individual or more central larger artificial drying systems on the other hand would not only speed up the drying process but would also result in more even drying and therefore better quality.

4.2 Market Risks

4.2.1 Steep and Prolonged Price Fall

Probability: Remote

Impact: Critical

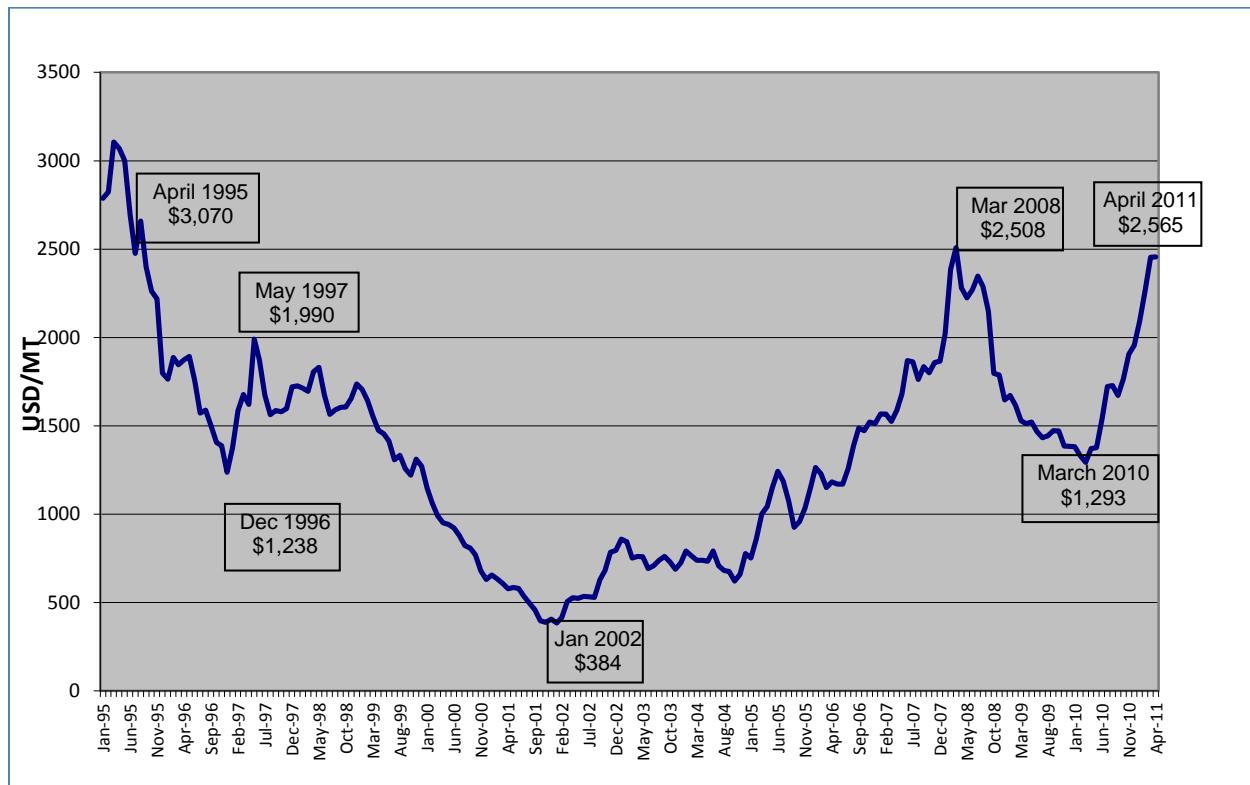
Current coffee prices are relatively high, but there is always a risk of international coffee prices falling to low levels and remaining there for a significant period of time. In March 2000 the London Robusta Futures price fell below USD 1,000/MT and remained there for over almost five years, until March 2005, reaching a low of just USD 384/MT in January 2002 (figure 8).⁹

There is no practical protection against the kind of price falls seen in 2000/2005, other than to improve productivity and reduce the cost of production.¹⁰ Recurrence of such an event in the foreseeable future cannot be foretold but is considered relatively unlikely. However, should such an event recur, then, depending on the duration, the potential impact on the Vietnamese coffee sector would be critical. Export revenues would plummet, as would farm gate prices, and many farmers would lose interest in coffee.

⁹ Average of 2nd and 3rd positions. The NYSE Liffe Robusta market in London is the leading reference point for Robusta.

¹⁰ Average yields in Vietnam are already high by international standards and, whilst improvement is not impossible, the overall ability to substantially raise yields still further is relatively limited. Consequently the industry remains very vulnerable to such an event re-occurring.

Figure 8: London Liffe Robusta Futures 1995 - 2011 (April) (Average of 2nd and 3rd positions)



(Source: Liffe market data and authors' calculations).

4.2.2 Coffee Price Volatility Risk

Probability: High

Impact: Considerable

Intraday and intra-season coffee price volatility was cited as one of the biggest risks by farmers, primary collectors, traders, processors and exporters. The risk is amplified due to a 'culture' of speculation across the supply chain and consequently market intermediaries generate sizeable financial losses¹¹, specifically when they are not able to manage price risk through the use of either physical contracts or financial instruments. Generally, only the larger exporters, including multinational companies and affiliates with easier access to derivative markets, have adequate risk management strategies in place. Therefore, the risk of losses remains primarily with the small and medium-sized coffee-trading enterprises, many of which, at various times, find themselves either short or long.¹² Many traders and exporters have reverted to back-to-back trading strategies to minimize their exposure, even if this reduces their opportunities for maximizing profits. The potential impact of this unmanaged risk is that some operators may leave the trade altogether if they generate losses, or

¹¹ Collectors have to purchase when farmers wish to sell and exporters have to offer prices in the local market when the Vietnamese trading day starts. But, intra-day volatility can turn what looked profitable pricewise in the morning into a loss in the afternoon if the (much later) London opening is not as per expectation.

¹² Long = buying coffee ahead of a potential sale. Short = selling coffee ahead of a potential purchase.

they may no longer be willing to accept the levels of risk they are exposed to, thereby lessening competition and, in time, possibly eroding farm-gate prices.

Coffee price differentials today dominate trading in physical (i.e. green coffee in both Arabica and Robusta). Differentials link prices for widely differing types and qualities of green coffees with prices on the futures markets where standard qualities and quantities of coffee are traded. In recent years, increasing activity on the futures markets, not always linked to changing fundamentals such as supply and demand, has translated into severe price volatility. As a result differentials for many individual origins now fluctuate not only in response to domestic changes in, quality or availability, but also because of movements on the futures markets.

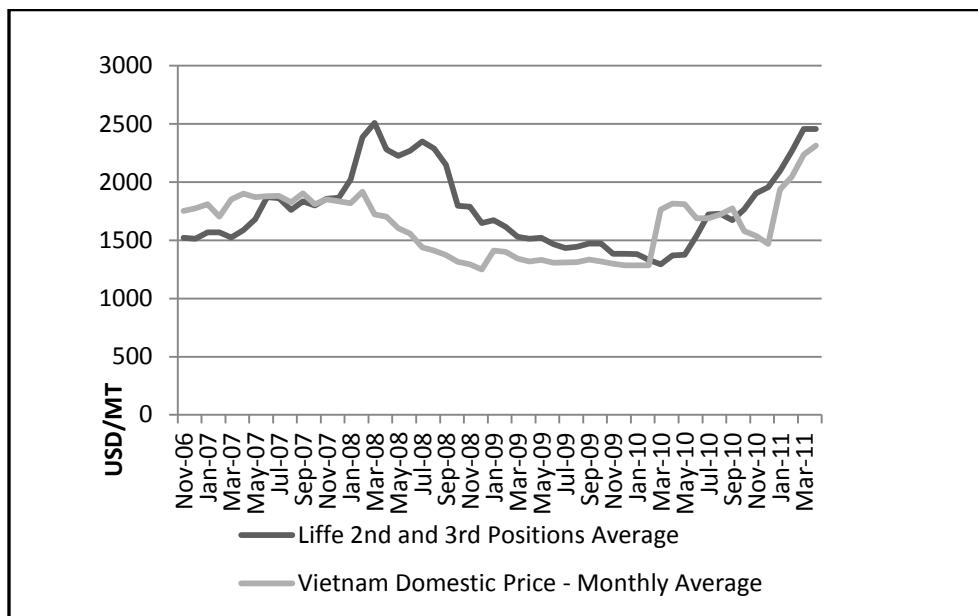
Many farmers sell a substantial part of their crop soon after the harvest to escape punitive rates of debt interest, (interest on loans taken out for inputs). Traders and exporters therefore have to absorb and finance the flood of early harvest coffee using bank finance. Banks, in turn, insist on sales contracts from approved buyers being in place to justify such loans. Selling coffee forward on a differential basis (Price to be Fixed or PTBF)¹³ facilitates this process and as a result, at the start of the marketing season usually large, to very large, forward positions are already on exporters' books and this further increases the risk of price volatility.¹⁴

The following graph (figure 9) demonstrates the volatility of differential or basis risk. In early 2009 the differential for Vietnamese Robusta coffee Grade 2 stood at "minus USD 130/MT" but had risen to "plus USD 30" by March 2010, only to fall back again to "minus USD 130" by January 2011. However, by end June 2011 it had once again risen to about "plus USD 100". In early 2010, reluctance by Vietnam to follow the continuing fall in Liffe prices resulted in domestic prices rising sharply above those for futures. This disconnect between the two markets caused the differential to adjust from "minus" to "plus", thereby causing a number of processors and exporters holding open PTBF contracts serious losses because they were fully exposed to these fluctuations in the differential. 2010 is generally said to have been a poor year for many operators and a few of them actually ceased trading altogether.

¹³ Fixed price contracts mean the price is final. The holder of an outright or fixed price contract cannot benefit from subsequent price rises (affects the seller) nor can he benefit from subsequent price falls (affects the buyer). Using differentials on the other hand allows one to postpone setting the final price until both sides to the transaction are complete: the short seller has bought the required green coffee and now has a matching sale and purchase, whereas the buyer has sold on what he bought and now has a matching purchase and sale. Pricing and trading coffee using differentials, linked to futures markets, is often called trading 'Price to be Fixed' or PTBF because the price is 'fixed' later through matching purchases and sales of futures contracts.

¹⁴ Falling prices in 2009 caused Government to consider how supply could be better managed and introduced the notion of stockpiling substantial amounts of coffee to avoid buyers taking advantage of the inability of most Vietnamese farmers to hold on to stocks themselves. However, not only did the proposed stockpile plan mostly fail but it also highlighted questions around who should finance such stocks and, who should carry the risk. It is also questionable whether the well-publicized withholding of supplies will in fact compel buyers into paying higher prices since that coffee will still have to be sold, albeit at a later date.

Figure 9: Vietnam Domestic Coffee Price Vs London Liffe Robusta (2007- March 2011)



(Source: Liffe market data and authors' calculations).

Over time the introduction of domestic futures trading, if successful, should enhance the competitiveness of smaller operators, provided that market conditions and expectations are reflected reasonably accurately. Nevertheless, it should also be recognized that for some collectors and exporters the availability of price risk management instruments will likely represent additional possibilities to engage in speculation.¹⁵

4.2.3 Input Price Volatility

Probability: Highly Probable

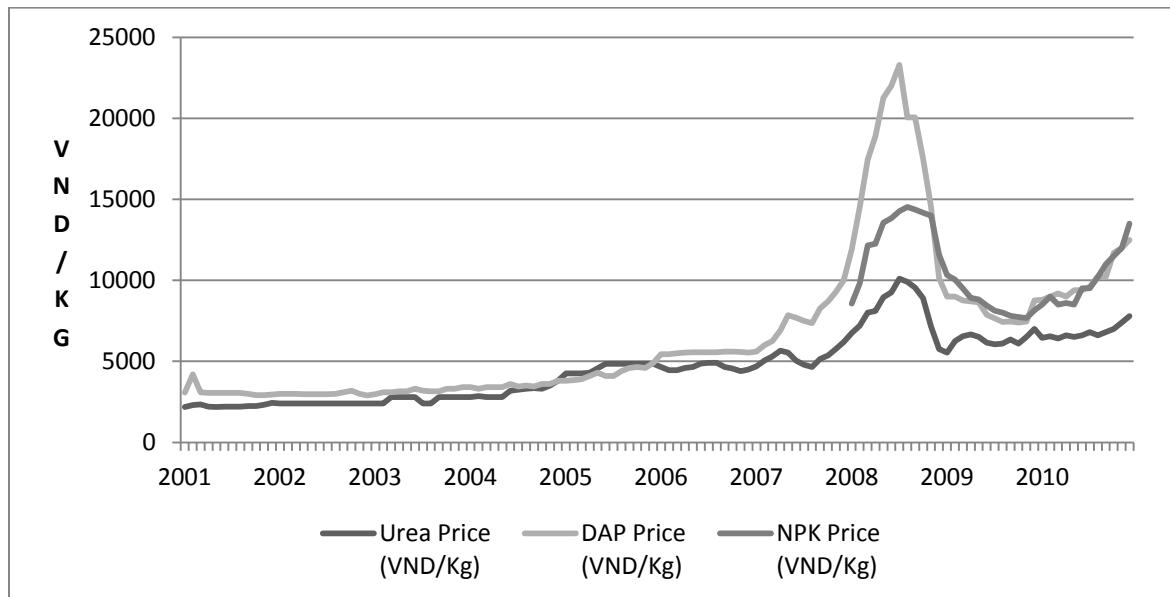
Impact: Moderate

Vietnamese growers rely heavily on fertilizers for high yields and diesel fuel for irrigation. The prices of both inputs are relatively volatile and strongly impacted by events in the oil and currency markets. In the three years 2008-2010 the retail price of Urea ranged from 5,550 VND/Kg to 10,100, ending at 7,800 in 2010; DAP (Diammonium phosphate) from 7,400 to 23,300, ending at 12,500; and NPK (Nitrogen, Phosphorous, and Potash (Potassium)) from 7,742 to 14,520, ending at 13,500. Over the same period the price for Diesel, used for irrigation pumps, ranged from 9,950 VND/ltr to 21,050 VND/ltr, ending at 21,050 as of late March 2011.

Individual smallholders lack the organizational structures that could benefit from bulk purchasing and long-term contracts. The majority rely on village level input suppliers who, if credit is required, also charge high rates of interest. The risk is that when coffee prices are low, and/or the price of inputs rises sharply, many smallholders cannot easily afford to apply sufficient inputs which will cause the coffee trees to yield less, thereby exacerbating the economic cost to growers

¹⁵ Some PTBF or Differential contracts even allow price fixing by the seller to be delayed until after the goods have already been shipped, i.e. long after the physical coffee was purchased and the price could have been fixed. This is an indication of how some exporters use the PTBF method to extend price speculation. Some of the banks now have reservations about the PTBF system, preferring to see fixed price contracts instead.

Figure 10 : Monthly price of major fertilizers in Vietnam-VND/Kg (2001-2010)



(Source: Ministry of Finance, Government of Vietnam)

4.2.4 Counterpart/Default Risk

Probability: Probable

Impact: Moderate

High levels of price volatility, intense competition, and relatively narrow margins all combine to render the domestic coffee trade itself quite volatile in terms of performance and reliability. For example, in 2010 some 20 plus Vietnamese coffee facilities in the Central Highlands ceased trading/were declared bankrupt, while in mid-2011 the market was once again awash with rumors of substantial shipment defaults.¹⁶

Collectors, traders and processors may dishonor earlier commitments to supply (or accept) coffee when notable price changes occur and, in doing so, can cause great harm to the other party to the transaction.¹⁷ For injured parties seeking redress, the legal system represents a lengthy procedure with no real guarantee of success. A favorable judgment may be thwarted through the debtor by simply disposing of all worthwhile collateral. In other words, when it comes to contract integrity, the domestic coffee trade largely operates in a regulatory void with participants having to rely more or less exclusively on their own experience and judgment with mistrust permeating much of the domestic supply chain.

¹⁶ An exporter defaulting not only leaves the intermediary buyer with an open supply obligation vis-a-vis his own buyer that he remains committed to fulfil. If the purchase had also been hedged then the intermediary buyer finds himself with a short position on the futures market, as well. Taken together this situation can cause huge losses, especially when, as is often the case, default is the result of a major price change. By mid-2011 the market place was once again suggesting actual/potential defaults due to domestic prices considerably outstripping the London Liffe price.

¹⁷ Farmers too have been known to renege on supply commitments from time to time.

4.2.5 Exchange Rate and Interest Rate Volatility

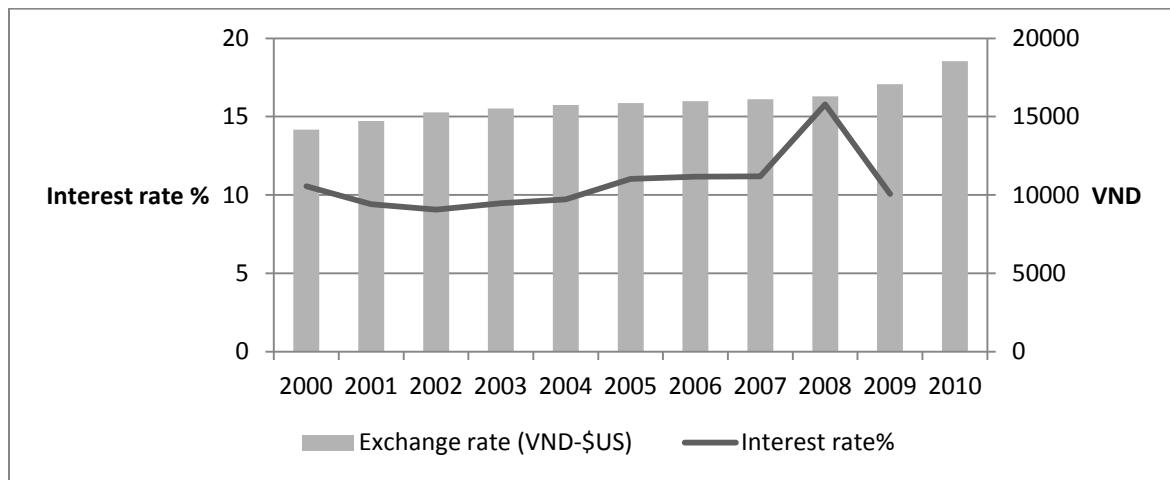
Probability: Highly probable

Impact: Moderate

The Vietnamese exchange rate is actively managed by the Vietnamese central bank. However, over the past decade the currency has been depreciated at times against the US dollar. As coffee exports are priced in US dollars the depreciation has an impact on the local traders and exporters and could lead to increased incomes / profits, depending on the position of the party at the point of the devaluation. However, unless assets are valued upwards accordingly, depreciation of the currency not only devalues balance sheets but also raises the domestic borrowing requirements of the industry which are now expressed in billions of VND. Figure 11 illustrates that periods of stable exchange rates are interrupted by occasional depreciation (2009-10).

Vietnamese interest rates over the past decade have been reasonably stable but relatively high. In 2008 interest rates shot up dramatically as the government sought to tackle excessively high inflation. The figure 11 above illustrates that between 2000 and 2009 annual benchmark lending interest rates varied between 9 and 11%, if one excludes 2008. It must be noted that this indicator is not the actual rate that clients can borrow at but rather the rate charged to banks on loans to prime companies, coffee sector clients would pay a significant premium on top of this rate -perhaps 6-7%. In 2010, to control inflation and arrest overheating of the economy, government squeezed the credit flow and interest rates for commercial borrowing shot up to 20-22%. This volatility is to the direct detriment of coffee farmers as over time exporters have no option but to pass the high cost of domestic borrowing back along the value chain.

Figure 11: Exchange Rate (Vietnamese Dong: \$US) 2000-2010



(Source: The State Bank of Vietnam)

4.3 Enabling Environment

4.3.1 Reputational Risk

Probability: Probable

Impact Moderate

The international trade in coffee is based on trust and often involves long-distance impersonal interaction. Furthermore, to safeguard supply lines, much coffee is bought on forward contracts. This assumes that both parties will honor their obligations, irrespective of whether in the end the contract turns out to be profitable or loss-making. The international coffee community is relatively small and as a result news of recent Vietnamese defaults on loss-making contracts spreads very quickly. Frequent defaults leads to erosion of trust and is often manifested through less favorable differentials. It is difficult to quantify losses due to reputational risk, however, its consequences could be severe and, unless managed well, it could lead to erosion of competitive position of the industry.

4.3.2 Theft

Probability: Occasional

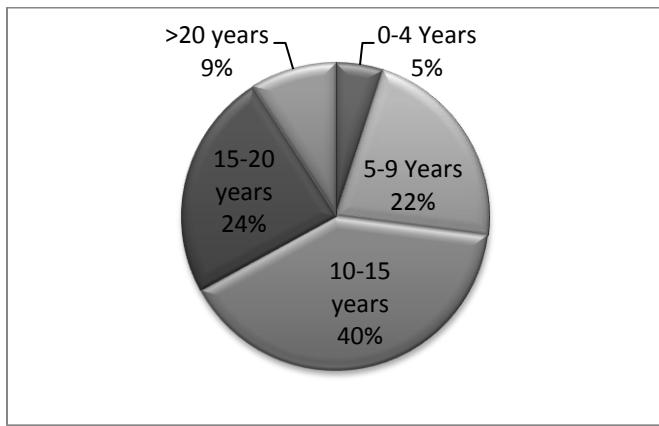
Impact: Negligible

During periods of high coffee prices, cherry theft (off the trees and/or drying floors) can become an issue. Apart from the monetary loss to the farmer, theft of unripe cherry could also lead to picking of unripe beans leading to quality deterioration.

5.0 Looming Threat: Ageing Tree Stock and Emerging Replanting Crisis

Vietnam started initiatives to boost coffee production in the 1980s with the bulk of the coffee acreage expansion occurring between 1993-2000 mostly in pest-free virgin soils, in part obtained through substantial forest clearing. The recommended replacement age of Robusta coffee tree in Vietnam varies between 20-30 years and local stakeholders indicate that between 100,000 HA-150,000 HA (mostly plantations started in the 1980s) is currently in need of replacement (figure 12 depicts area structure of coffee by age). More importantly, however, in the coming years, (2018-2026), more than 70% of the coffee plantations will reach their replacement age.

Figure 12 Area Structure of Coffee by Age (2010)



(Source: MARD)

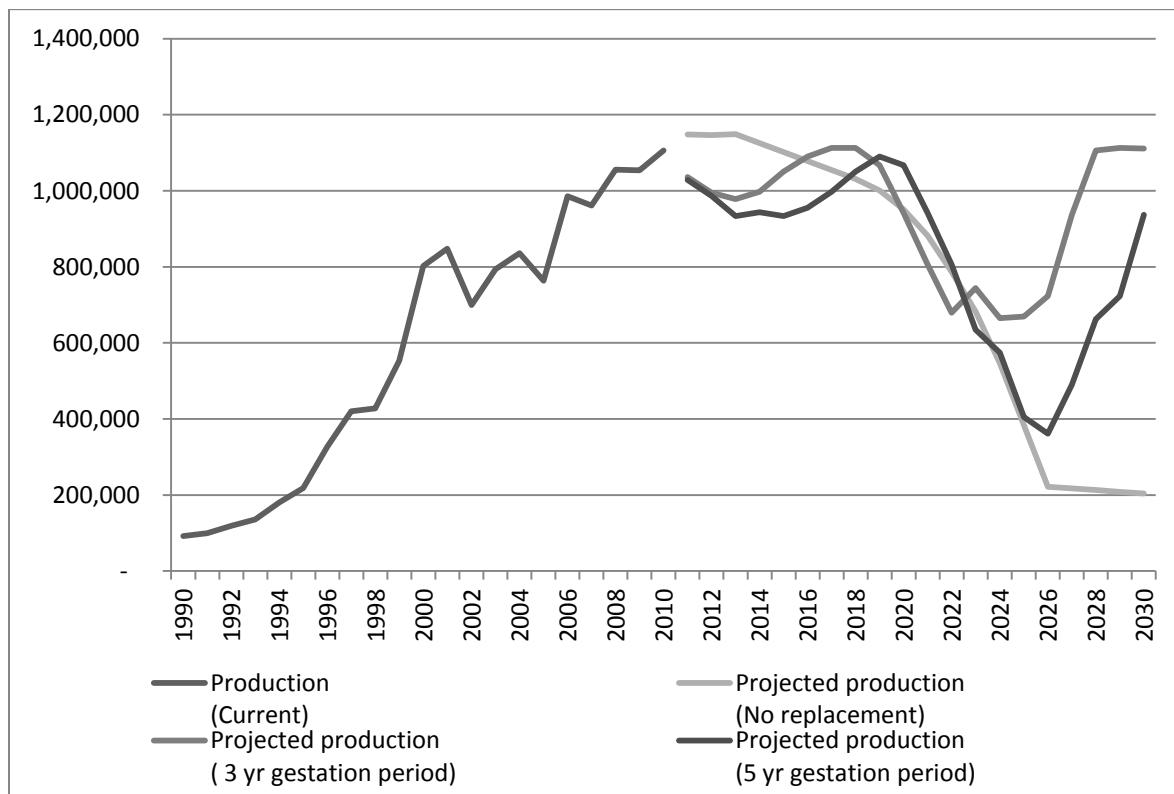
However, despite the urgent need to start mass replanting, no large scale efforts are in currently in place to tackle the problem. This could be attributed to several factors including:

- Cost of replanting:** Usual gestation period of coffee plants (from planting to harvest) is three years which leads to significant replanting costs (direct, in terms of costs of labour and inputs, and indirect / opportunity cost in terms of lost production). Key informants indicated that replanting cost varies from \$5,000 to \$8,000 per Ha which is often out of the reach of many coffee farmers.
- Nematode infestation:** High density mono crop cultivation, together with high application of fertilizers, has resulted in growing nutrition and soil imbalances leading to infestation particularly by nematodes that cause root rot, followed by leaf drop and finally tree death. The cost of replanting is raised by the presence of nematodes which attack and kill newly planted seedlings that have a shallow root system and are more susceptible. For this to be avoided farmers need to wait a minimum of two years from uprooting aged trees to replanting, further increasing the costs of uprooting existing trees and replanting new trees. This results in a five year gestation period where the farmer receives little or no income from the area of land undergoing replanting, while still having to spend money on inputs and maintenance. This is prohibitively costly and farmers may therefore choose to hold-off replanting and instead choose to accept ever reducing yields from their ageing trees.

In addition, the fact that the majority of the coffee farmers are smallholders (less than 1 HA) further compounds the problem since staggering of replanting on such small plots might not be a viable option. Addressing this threat to the industry means a massive undertaking, consisting of a combination of replanting

viable areas; the introduction of new treatment methods and more tolerant cultivars; the introduction of sustainable good agricultural practices throughout the sector; and returning marginal areas to other crop use.

Figure 13: Coffee Production Projections 1990-2030 (3 scenarios)



(Source: Authors' calculations)

Figure 13 above depicts a simple simulation of projected coffee production in Vietnam from 2012-2030 under 3 different scenarios: 1) 100% replacement of all the coffee trees once they attain 25 years of age and a gestation period of 3 years from planting until optimum harvest; 2) 100% replacement of all the coffee trees once they attain 25 years of age and gestation period of 5 years from planting until optimum harvest; and 3) no replacement of coffee trees with rapidly declining coffee yields. All these scenarios indicates that from 2018-2026, coffee production will fall drastically but more importantly it shows that without a replanting program, coffee production in Vietnam might collapse. These are rough estimates only based on simple assumptions and are intended to demonstrate the potential severity of the problem.

Output loss on this scale will not only affect the livelihood of many farmers but Vietnam's position as a leading Robusta producer may also come under threat from other countries. Government has recognized the problem but this effort requires the kind of intensive national planning, coordination and resources that are presently lacking. Annex 1 provides a detailed discussion of this issue.

6.0 Priority Measures for Risk Management

Although it is beyond the scope of this risk assessment exercise to come up with a comprehensive framework with detailed measures on how to manage the identified risks, how this next step can be approached is shown below. This is followed by a brief description of the risk management measures for selected risks.

Table 4: Priority Measures for Risk Management

Identified risk	Potential Risk Management Options (Mitigation-transfer-coping)
Coffee price Volatility	<ul style="list-style-type: none"> • Improve grower access to credit through Coffee Warehouse Receipt System or alternative. • Better “Discipline “in trading. • Improve understanding of risk and risk management at all levels of the value chain. • Strengthen domestic risk management institutions/hedging mechanisms, i.e. coffee exchanges. • Facilitate access to and financing of international risk management instruments. • Increase domestic consumption. • Improve understanding of differentials, the potential impact of domestic speculation, and the risks involved in excessive differential trading. • Enhance the liquidity of domestic exchanges to limit differential risk over time.
Drought	<ul style="list-style-type: none"> • Accurate area-specific weather forecasting /early warning system. • Protect water resources through improved regulation and irrigation practices. • Promote sustainable farming practices, based on recognized mitigation and adaptation measures. • Promote monitoring, adaptive research, and information exchange, including more recognition and support of Public Private Partnerships and other such initiatives seeking to address climate change issues. • Insurance
Steep and prolonged price Fall	<ul style="list-style-type: none"> • Improve coffee yields • Reduce costs/improve efficiency • Strengthen and promote sustainable coffee production and trade (e.g., increase certified coffee exports as 4C, Utz Certified, RainForest Alliance etc) • Create long-term commercial relationships
Reputational, and counterparty (default) risk	<ul style="list-style-type: none"> • Develop an effective industry-led coordination mechanism • Establishing representative bodies at all levels of the supply chain to improve industry coordination, including restructuring and strengthening of VICOFA • Jointly creating a national coffee and coffee credit policy • Introducing appropriate legislation and impartial licensing procedures to improve industry regulation, including an independent arbitration system to deal with commercial defaults and claims, accessible to both domestic and foreign stakeholders and allowing legal enforcement of awards. • Promoting ‘respect’ for contracts.
Pests and diseases	<ul style="list-style-type: none"> • Establish early warning system and sanitation response plan. • Ensure adequate research support. • Improve extension service. • Improve extension messages, enabling correct identification of pests and diseases, and appropriate dosage and application of corrective measures. • Intensify knowledge transfer to farmers, including promotion of farmer schools and

	<p>easier access to extension services.</p> <ul style="list-style-type: none"> • Tighten monitoring of agricultural inputs to eliminate fake products, particularly those containing prohibited chemicals. • Improve product and application knowledge of input retailers.
Erratic rainfall	<ul style="list-style-type: none"> • Accurate area-specific weather forecasting/early warning system. • Increase the use of tarpaulins and drying trays for cherry drying. • Promote communal drying facilities. • Investigate insurance possibilities
Input price volatility	<ul style="list-style-type: none"> • Long term, forward procurement contracts.
Exchange and interest rate risk	<ul style="list-style-type: none"> • Allowing exporters to maintain US Dollar accounts. • Development of appropriate financial products (fixed interest rate loans, currency futures).

Vietnam's meteoric rise in the global coffee trade within a short span of one decade is often considered a global success story of export led agriculture growth. Now the biggest challenge for Vietnam is to maintain its competitive advantage which might be seriously eroded by the occurrence of one or more risks identified in this document. The priority issues that need to be addressed are summarized below:

1. **Replanting issue:** This is the biggest challenge facing the coffee industry and its successful management will determine the future of the sector. Coordinating the replanting effort to minimize sudden supply deficits during the gestation years, dealing with the Nematode issue, and generating financial resources to support replanting will require a large scale coordinated effort of all the major stakeholders of the coffee supply chain. This might involve the following: 1) Establishment of a high-level coffee industry task-force; 2) Detailed mapping of the coffee growing area; 3) Estimating impact of Vietnams' potential supply shortages on global coffee markets; 4) Projecting trends on weather and climatic patterns; 5) Exploring alternative solutions for the nematode problem; 6) Development of a coffee replanting strategy which should include designing an optimum replanting schedule, promoting staggering of replanting, wherever feasible; exploring different financing options, including possible qualification of replanting under the Clean Development Mechanism (CDM); ensuring timely availability of coffee seedlings and saplings; appropriate credit structures for supporting replanting; and 7) Implementation of the coffee replanting strategy.
2. **Coffee price volatility:** Volatile prices (both differentials and international market prices) throughout a season can be managed more effectively than they currently are. At the farmer level the creation of farmer organizations could assist in capturing greater value for producers and locking in more stable prices through forward contracts with buyers. Additionally the introduction of affordable and accessible warehouse receipts for coffee (linked to affordable credit), could enable farmers to sell their coffee at the most advantageous time rather than sell immediately following harvest when prices may not be optimal. At the trader and exporter level improved capacity building in price risk management and risk assessment may enable traders and exporters to avoid inadvertently taking dangerous levels of exposure in their trading activities. Such education could also assist in providing knowledge of how best to utilize physical contracts, and financial instruments, to offset positions and proactively mitigate risk. Training may also explain why speculation on coffee prices may be harmful

to trading enterprises. Training on differential risk would also raise awareness of the risk of relying on PTBF contracts without appreciating the risks involved. An improvement in the strength of local coffee exchanges could also provide locally tailored hedging products to assist Vietnamese traders in managing their price risk exposure, in a way that addresses at least some of the differential risk (this would require, at a minimum, increased liquidity on the existing exchanges and improvements in regulatory environment of the coffee sector).

3. **Drought:** There are limited mitigation measures to reduce the frequency of occurrence of droughts, however, the losses from it can be reduced by adopting appropriate risk mitigation measures including a) research and promotion of drought resistant varieties; b) optimum & improved irrigation practices focusing on water conservation; and c) accurate area-specific weather forecasting/ early warning system to enable stakeholders take proactive actions to reduce crop loss. Risk transfer of drought risk is an interesting possibility and currently a drought index insurance pilot project is underway in Dak Lak by Bao Minh Insurance Joint Stock Corporation. It would be useful to track the outcome of the project and if successful, the possibility of its scale-up to major coffee producing areas should be explored.
4. **Steep and prolonged price fall:** Vietnamese coffee prices are determined by the prices quoted on the international coffee markets. As such a return to a long period of low global coffee prices would result in lower prices for Vietnamese exporters and farmers. A key means of coping with globally low prices, at the producer level, is to raise production efficiency so that farmers are producing as efficiently as possible (producing at the lowest cost per kg / ton as possible by maximizing yields and maximizing efficiency of inputs). Improved efficiency in input usage would raise production efficiency. Efficient farmers are most likely to be able to survive a period of low prices by reducing costs per kg produced and thereby minimizing their losses. Alternatively farmers, and other stakeholders in the coffee supply chain, can increase the value (i.e. sales price) of their coffee by raising value by both improving quality and/or by securing certification of their coffee (e.g. Rainforest Alliance, Fairtrade, Utz, 4C etc). Exporters (and/or farmer organizations) with long term relationships with buyers may also be able to negotiate higher prices based on the strength of the relationship with the buyer.
5. **Counterparty risk and reputational risk:** The culture of speculation, inability to manage price risk, and lack of an established contract enforcement mechanism is leading to wide spread defaults tarnishing the reputation of Vietnam as a credible supplier of coffee. Efforts to manage this risk will require development of an effective industry-led coordination mechanism (consisting of establishing representative bodies at all levels of the supply chain to improve industry coordination, including restructuring and strengthening of VICOFA). Efforts should be made to introduce appropriate legislation and impartial licensing procedures to improve industry regulation, including an independent arbitration system to deal with commercial defaults and claims, accessible to both domestic and foreign stakeholders and allowing legal enforcement of awards. This will also help to promote a ‘respect’ for contracts.
6. **Pests and diseases:** Currently, with the exception of the nematode issue, this is not a major risk for the coffee industry; however, with an ageing tree stock, deteriorating soil balance, and the arrival of new pests and diseases, it could become a serious issue in the future. Better preparedness and developing appropriate response mechanisms would help mitigate this risk. Plans to address this risk

should include: a) establishment of an early warning system and sanitation response plan; b) ensuring adequate research support from donors and Government to develop resistant coffee variety and developing package of practices to manage existing and potential outbreak of pest and diseases; c) improvement in extension services and extension messages, enabling correct identification of pests and diseases, and appropriate dosage and application of corrective measures, d) improvement of the knowledge base of input retailers and e) tighten monitoring of agricultural inputs to eliminate fake products, particularly those containing prohibited chemicals.

7. **Erratic rainfall:** Being a weather phenomenon, it is difficult to control , however, the damage from it can be reduced by a) accurate area-specific weather forecasting/early warning system enabling farmers to take proactive measures to minimize the damage; b) increased use of tarpaulins and drying trays for cherry drying; and c) promoting communal drying facilities.
8. **Input Price volatility:** One means for managing input price volatility is to reduce the amount / volumes of inputs used by raising the efficiency of input application and usage. Utilization of leaf and soil analysis would enable farmers to apply the most appropriate types of inputs, and to reduce volumes applied, thereby reducing input costs, enabling farmers to better cope with rises in input prices, as well as improve profitability more generally. Improved extension, involving training in application and usage of inputs, could greatly reduce the volume and costs of inputs. Possibility of long term contracts between distributors and input suppliers where prices would be fixed (or set between a cap & collar) could be explored to manage this risk, however, considering the competitive nature of the input market, there will be multiple challenges to such an arrangement.
9. **Exchange rate volatility:** Exchange rate movements which come as a shock to the sector can lead to profitable positions turning to loss making positions overnight. Possible solutions might include some consideration as to whether to grant exporters the ability to maintain US dollar accounts; as such holdings could provide protection to exporters during periods of devaluation. One step that should be investigated is whether commercial banks can improve their offering of exchange rate related products and services for coffee sector clients, enabling exporters to hedge their currency risk through financial instruments including currency futures and forward contracts.

7.0 Final remarks

Coffee production in Vietnam is a high input-high output model, reliant on both high irrigation and high fertilizer usage, and it has resulted in coffee becoming the main source of income for large number of coffee farmers and the country becoming the world's largest Robusta coffee exporter. The Vietnamese coffee supply chain has proved to be resilient to a number of shocks including frequent price volatilities, the coffee crisis, frequent occurrence of droughts, pests and diseases outbreaks, etc.

This documents highlights some of the major risks and threats to the Vietnam coffee supply chain namely an emerging replanting crisis, coffee price volatility, drought, steep and prolonged price falls, counterparty risk and reputation risks, pest and disease outbreaks, erratic rainfall, input price volatility and interest rate & exchange rate volatility.

The way forward consists of addressing a number of important issues more or less simultaneously which will require the creation of a industry led coordination structure and development of a risk management roadmap to address relevant issues. Rather than a stand-alone measure, such a roadmap should be integrated into a broader sector development strategy and should have a buy-in of all the key coffee sector stakeholders.

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Annex 1 Looming Threat: Ageing Tree Stock and Emerging Replanting Crisis

Background

More than 70% of the current Vietnamese coffee plantations were started within a narrow seven year period (1993-2000) during which the coffee acreage grew from 101,300 HA to 561,900 HA. While this exponential acreage increase catapulted Vietnam to the position of the world's largest Robusta exporter, all these coffee plantations will arrive at their optimal replanting age within a seven year window, thus posing considerable challenges for the coffee industry. To maintain high yields replanting is required (replacing existing aged trees with new trees), yet the costs associated with replanting (direct, in terms of costs of labour and inputs, and indirect / opportunity cost, in terms of lost production) are very significant and out of the reach of many coffee farmers.

High density mono crop cultivation, together with the intensive application of fertilizers, has resulted in growing nutrition and soil imbalances leading to infestation particularly by nematodes that cause root rot, followed by leaf drop and finally tree death. Nematode infestation is particularly damaging for young saplings and it discourages farmers from tree replanting. Presently available cultivars are not resistant to nematodes and while local and international research resources and assistance are being tapped to try and identify cultivars that might be more tolerant, to date such cultivars are not available. Furthermore, even if such cultivars were available up-scaling of production and distribution of planting material would take time.¹⁸ Effective non-toxic chemical treatment of nematodes is currently not available, although trials with new types of chemical treatment are reportedly showing promising results in other coffee producing countries. If also successful under Vietnamese conditions then such treatment could perhaps greatly limit the impact of what, for now, is a massive threat to the industry.

Potential solutions to dealing with the nematode problem for replanting of coffee trees include intercropping coffee with certain crops that attract nematodes but do not provide sustenance, or uprooting infested areas and replanting with annual crops to achieve the same objective. But mostly the current consensus view appears to be that land should be allowed to lie fallow for at least two years after uprooting before new coffee trees should be planted. This is because especially young trees with still shallow root systems are more susceptible to nematode attack. However, this results in a five year gestation period where the farmer receives little or no income from the area of land undergoing replanting. This is prohibitively costly and a farmer may therefore choose to hold-off replanting and instead choose to accept ever reducing yields from their ageing trees.

Table 5 provides the distribution of total area under coffee cultivation and annual increase, or decrease, in coffee acreage in a particular year from 1985-2010. This table has been used to estimate the acreage needing replanting in the coming few years and projecting coffee production from 2012-2030.

¹⁸ Where existing trees show better ability to cope, stumping and grafting may be another rejuvenation option.

Table 5 Acreage growth in coffee cultivation (1985-2010)

	Total area (ha)	Harvested area (ha)	Annual increase Area (ha)
1985	44,658	14,062	
1986	65,630	14,762	20,972
1987	92,300	21,462	26,670
1988	111,897	24,362	19,597
1989	123,124	39,620	11,227
1990	119,300	61,857	(3,824)
1991	115,100	59,300	(4,200)
1992	103,700	67,000	(11,400)
1993	101,300	71,600	(2,400)
1994	123,900	106,300	22,600
1995	186,400	114,100	62,500
1996	254,200	157,460	67,800
1997	340,300	174,380	86,100
1998	370,600	205,850	30,300
1999	477,700	330,690	107,100
2000	561,900	476,950	84,200
2001	565,300	473,550	3,400
2002	522,200	492,400	(43,100)
2003	510,200	480,500	(12,000)
2004	496,800	491,900	(13,400)
2005	497,400	483,600	600
2006	497,000	483,600	(400)
2007	506,400	488,900	9,400
2008	530,900	500,200	24,500
2009	537,000	503,467	6,100
2010	548,200	514,400	11,200

(Source: IPSARD)

Coffee Production Projection (2012-2030)

Using the data from table 5, coffee production has been simulated from 2012 to 2030 under three different replanting scenarios (figure 13). It is important to note that the decision to replant is not simply a function of tree age but also of tree and soil condition.¹⁹ Furthermore, the assumption that at 25 years of age all trees need replacement is a broad generalization. Much depends on individual situations with some plantations aged 35 years old (Dak Nong for example) still producing well whilst others, mostly due to having been planted in unsuitable soils, needing replanting after only 20 years. It might be more appropriate to state

¹⁹ A WASI survey end 2009/early 2010 of 405 farmers from 5 main coffee provinces states that 88% of trees reported on were between 13 and 20 years of age but, the survey does not give any figure for over 20 years. Yet some individual farmers interviewed during the mission mentioned substantial numbers of trees being over 20 years old.

therefore that with advancing age, and without improved agricultural practices, including nutrition, the yield of substantial numbers of trees is likely to fall, but it is difficult to quantify it. Additionally it needs to be noted that requiring land to lie fallow for two years or so assumes no suitable soil treatment will become available. If suitable soil treatment against nematodes does become available then, together with improved applications of other inputs such as fertilizers etc, large numbers of trees might be ‘rescued’ and the total hectares absolutely needing replacement could drop substantially. The following section describes the assumptions under three different scenarios:

Scenario I: No replacement

1. No replacement is made of existing trees
2. Due to new plantations (2007-2010) coming into bearing, production from 2011 to 2013 will increase slightly
3. Due to ageing plantations (1986 - 1989 and 1994 – 2001), production from 2011 - 2026 will decrease (15% drop in production of the acreage attaining 25 years of age)

Scenario II: 3 year gestation

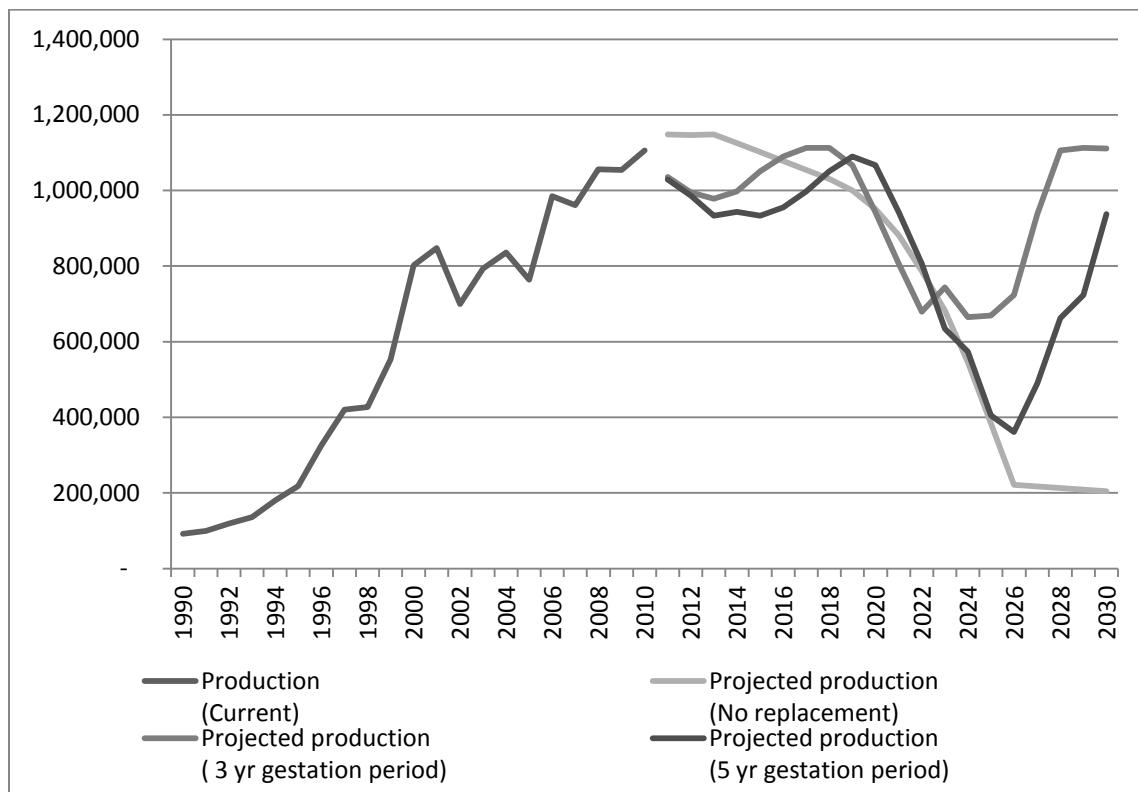
1. Replacement of all coffee trees once they are 25 years old
2. Trees will start bearing fruit on the 4th year of replanting
3. Assuming trees reach full production potential on the 4th year
4. The average yield will be 2 MT/Ha, i.e the current average yield

Scenario III: 5 year gestation

1. Replacement of all coffee trees once they are 25 years old
2. There will be a gestation period of 2 years where the land will be left fallow or under different crop (to control nematode infestation)
3. Trees will start bearing fruit on the 4th year of replanting
4. Assuming trees reach full production potential on the 4th year
5. The average yield will be 2 MT/Ha, i.e the current average yield

(Note: although the coffee tree will bear some coffee beans on the 3rd year of replanting, however, it has not been included in the production projections)

Figure 13: Coffee Production Projections 1990-2030 (3 scenarios)



(Source: Authors' calculations)

All the 3 scenarios indicate that coffee production in Vietnam will drastically fall from 2018-2026. The actual fall and recovery will vary as per the scenario, but the country may lose up to 40-70% of the current production. This will have huge implications, not only on the foreign exchange earnings and loss of livelihoods for the farming families in Vietnam, but it will also lead to severe coffee supply shortages and domestic price spikes. If not managed properly, this could erode Vietnam's competitive position in the global coffee market.

The Way Forward

Addressing this threat to the industry means a massive undertaking by both government and the coffee industry, consisting of a combination of replanting viable areas; the introduction of new treatment methods and more tolerant cultivars; the introduction of sustainable good agricultural practices throughout the sector; and returning marginal areas to other crop use. Whilst Government has recognised the problem this effort requires the kind of intensive national planning, coordination and resources that are presently lacking. Without massive, prompt and effective remedial action, including assistance to growers, not only will coffee yields and farmer livelihoods progressively decline, but Vietnam's position as a leading Robusta producer may well come under threat from other countries.

Over the medium to longer term substantial numbers of trees will need replacing and it will require significant financial resources (\$5,000 to 8,000 per Ha) which will increase over the years. Daunting as the potential costs may seem, this crisis nevertheless also presents a number of opportunities:

- Coffee, sustainably produced and inter-planted with shade trees, fruit trees, bananas, and inter-spaced with wind breaks, offers potential for both the mitigation of climate change impact and enhanced profitability because production costs will decrease whilst quality will improve;
- Appropriate land preparation and water retention systems such as contouring and rain traps, together with certain forms of drip irrigation will reduce the usage and cost of water;
- Replanting offers an opportunity to improve and possibly harmonize coffee drying and primary processing systems at the farm level, resulting in better and more consistent coffee quality;
- The coordinated large scale replanting of coffee trees in relatively concentrated areas, combined with the introduction of shade trees and windbreaks, could possibly qualify for Clean Development Mechanism or similar such status. Replanting of diseased coffee bushes will arrest the loss of carbon sinks and the land degradation that might otherwise occur, whereas the planting of new trees would offset the effects of deforestation elsewhere. Properly packaged such a process could attract widespread interest, possibly including from within the mainstream coffee sector, particularly if the generation of marketable carbon offset credits would turn out to be a realistic option.

Clearly there are no easy answers. Even so, whilst there are no immediate solutions it seems unlikely that production will decrease sharply within the very near future, especially now that coffee prices are remunerative and farmers are investing more in tree maintenance. Nevertheless, considering that gearing up to the level required will take time, it is essential that remedial actions are initiated immediately, especially in light of the time-lags that occur between replanting and production. In terms of next concrete steps, the following activities needs to be undertaken which will help in designing the replanting strategy:

1. **Establishment of a high-level coffee industry task-force:** Establish a high level industry taskforce with the necessary authority to oversee, coordinate, and monitor the implementation and effectiveness of different activities and determining how to take the required revitalization program forward.
2. **Detailed mapping of the coffee growing area:** The objective of the mapping should be to a) identify the areas which are severely affected by the nematode issue and areas which are free from the nematode problem. b) Identify the marginal areas where coffee is grown but which are not suitable for coffee production, c) Identify the age profile of coffee crops in different regions, d) Quantify coffee yields in different coffee growing areas and e) Conduct soil mapping to help determine the current nutrient level and design appropriate tree nutrition program. This mapping exercise should ideally be at the district, or sub-district, level to get better granularity. Overlaying of these different themes will provide a good idea on how to structure and phase the replanting program. This will also give an indication on areas where coffee should be replaced with other crops (agro forestry, cocoa etc).
3. **Estimating impact of Vietnams' potential supply shortages on the global coffee markets:** A number of research institutions projects global coffee demand and supply situation annually. This information, from multiple sources, needs to be analyzed to help decide on the following: a) what should be the appropriate level of cultivation of Robusta and Arabica coffee in Vietnam? Should Vietnam increase the acreage of Arabica coffee, if so, by how much? b) What might be the possible impact of Robusta supply shortages from Vietnam on the global markets? How will it impact on coffee prices? How might other competitors attempt to take advantage of Vietnam's supply shortages? Possible understanding of potential impact of replanting on coffee prices and alternate supply sources will help in deciding on the optimal mix of replanting scheduling.

4. **Projecting trends on weather and climatic pattern:** A better understanding of future trends regarding weather and climatic patterns is required for structuring the replanting program. Climatic and weather suitability should be key a parameter to help decide on the locations for replanting as well as varietals/ clones most appropriate for a given region.
5. **Exploring alternative solutions for the nematode problem:** The cost of the nematode problem, in terms of two additional year of gestation period, is immense for the country and the coffee industry should explore all possible solutions to manage this problem. This might include soil treatment, developing resistant or tolerant coffee cultivars, grafting techniques, managing nematode through agronomic practices or growing other plants etc.
6. **Development of a coffee replanting strategy:** Based on the analysis of the relevant information, the industry task-force should develop a national coffee replanting strategy. This strategy should give details of different areas where replanting should be carried out, sequencing and time-frame frame of replanting, access to appropriate replanting material, and implementation, financing, and coordination mechanism of replanting program.
7. **Implementation of the coffee replanting strategy:** Implementing the coffee replanting strategy will be a daunting task and private sector led replanting effort will require strong Government support. Besides physical replanting, this effort should also attempt to integrate the following aspects for improving coffee production and sustainability : a) Increasing the numbers, capacity and reach of coffee specific extension staff; b) Promoting the use of soil and leaf analysis, resulting in correct application of recommended inputs, thereby correcting soil imbalances, improving tree health and lowering production costs; c) Promoting sustainable agricultural practices and intensify coffee extension messages; and d) Providing Research, Extension and Public/Private Partnerships with the necessary resources.

Government is supportive of sustainable coffee production but it remains to be seen how detailed sector development plans will be developed and implemented at provincial level. Given currently high Robusta prices it is also unlikely that private land owners will be keen to uproot still bearing coffee trees and, even if they could afford the cost, they cannot be forced to do so. Therefore, considerable direct support will be required to address these challenges, for example through a well designed National Coffee Project that would provide the necessary impetus, incentives, expertise and coordination.

Annex 2. Constraints in the Coffee Supply Chain

1. Extension and Research

The current extension system in the coffee sector is at a much smaller scale and farmers rely on self-learning, peers, and input providers to manage their agronomic issues. The size and importance of the Vietnamese coffee sector may arguably justify more extension services than are currently on offer. For example, smaller producing countries such as Colombia operate vastly more intensive sector-wide programs that provide good linkages throughout the supply chain, thereby improving both competitiveness and profitability.

There is general agreement that levels of input use are high, at times excessively so, particularly when coffee prices are good. Soil and/or leaf analysis is not generally used and most input resellers at village level have little knowledge to offer farmers. This leads to input dealers, and farmers, focusing on using easily available, but not necessarily optimal, inputs, particularly the long term use of Urea. Technical advice is also difficult to disseminate as farmers tend to believe that as long as a tree looks good, it is in good shape! As a result, over the years this combination has led, and is leading to, serious soil imbalances on numerous farms²⁰. To break this cycle, reduce costs, and enhance productivity through better tree growth, more direct extension and sustainability messages are urgently required. These messages should aim at improving farmers' understanding of the types and amounts of inputs to be used, particularly nutrition but also including irrigation, and the timing of applications.

2. Inconsistent Quality

Quality certifying organizations and market sources, locally and abroad, confirm that the quality of exported coffee has improved since more stringent quality standards were introduced in the late 2007²¹. But this is not to say that quality is optimal: with 5% defectives permissible, a 20 ton container contains 1,000 kg of defectives! Vietnam's major buyers would also like to see moisture content reduced, from 12.5% to 12%. In terms of cup or taste quality, roasters need a neutral tasting cup without any 'surprises', meaning quality should not vary within a parcel of green coffee. When fermented, mouldy, or other such beans, are present a coffee may be termed unreliable in that there will be different taste experiences within a single lot.²² Consistent quality however means no variation within an individual lot and no marked differences between lots generally. Variability is probably easier to deal with for the very large roasters but for smaller roasters it can pose real problems and for specialty roasters it is just not acceptable. More consistent quality would improve prices, result in wider market appeal and create more durable exporter/buyer relationships. Reasons for quality deficiencies and inconsistency include:

- Not enough understanding of end user requirements, including at farm level;
- Inconsistent care and inadequate resources during harvesting and, especially, drying;
- Indiscriminate mixing of good and poor quality, sometimes to achieve the maximum permitted level of defectives or to 'even out' moisture content;
- Few price incentives at farm-gate and trader level to supply better quality coffee;²³

²⁰ Particularly very low Ph levels causing acidification. Rectification measures would include liming of the soil and application of both organic matter and compound fertilizers but will take time and, is costly.

²¹ MARD No 86/2007/QD-BNN

²² This is particularly noticeable in Arabica deliveries, many of which show serious taste deficiencies and fermentation .

²³ Positive quality control = pay premium for better than average quality. Negative quality control = only make deductions for lower than average quality.

3. Insufficient Trading Discipline in the Value Chain

It is difficult to quantify the amount of pure speculation within the value chain and indeed not all ‘buy and hold’ actions are speculative. Processors and exporters need stocks to be able to carry on day to day activities and for traders it is not always feasible to sell 100% of the day’s purchases by day end. Similarly, the buying of coffee for later sale (long), and selling ahead for later purchase (short), are entirely normal trading activities: it is difficult for all coffee to be traded on a ‘spot’ basis. But individual participants must establish how much ‘open’ risk they are able and willing to accept and set limits accordingly, both in terms of volume and of value. Using bank finance for coffee trading/exporting usually means fairly strict supervision but this can never replace internal or self discipline. For example, most collectors informed that intimated they limit the amount of unsold stocks they would hold but at the same time admitted that this depended ‘on the market’. Exporters enter into PTBF contracts that offer the possibility to extend ‘price fixing’ till after the coffee in question has been bought and paid for, adding another form of pure speculation. But the enormous volatility of coffee prices brings the attendant risk of continuing defaults that are causing mistrust throughout the value chain and, tarnish the industry’s external reputation as a reliable counterpart. Counteracting this will require proactively raising the levels of self-discipline throughout the value chain through better understanding of what real price risk management entails. If not then the emergence of domestic futures markets might be seen by some as simply additional possibilities to speculate, rather than as providing useful hedging instruments that would improve price risk management for all stakeholders.

4. Lack of Effective Industry Coordination Structure

Whilst Government is supportive of the coffee industry and its revitalization, it appears to rely on a somewhat amorphous and uncoordinated combination of governmental and civic organizations, institutions, State-Owned Enterprises, banks and investors, spread over a total of eleven provinces (of which 4 may be considered as priority zones). Previous sector-wide initiatives have not achieved the expected results and without a single coordinating body, equipped with the necessary expertise and capable of acting as a driver for both the replanting process and the move towards sustainability generally, the expected outcomes might not materialize in future.

Industry stakeholders do recognize both the need to improve VICOFA’s capacity and performance, and the usefulness of establishing smaller membership based organizations to support coffee growers and others in the sector.²⁴ Currently membership of VICOFA is not compulsory for traders, collectors, processors and exporters and effective industry associations at grower level do not exist. However, through programs as the 4C Association and Utz Certified there is movement towards the establishment of farmer groups and, possibly, farmer associations. There are a number of ongoing, but seemingly uncoordinated, individual initiatives and projects, mostly linked to sustainability objectives, whose results and experiences will be of interest for the whole sector. Nevertheless, effective responses to industry concerns will require a large scale industry-led effort to develop a industry coordination mechanism.

5. Access and Affordability of Credit: Availability and cost of credit is perceived by industry stakeholders, at all positions within the supply chain, as a major constraint of their operations. Finance restrictions are seen by producers as limiting investment in their plantations and compelling them to borrow from informal sources, by traders as limiting the scale of their operations, and by exporters as eroding their profitability and reducing their ability to compete. The main bank providing finance to producers is the government owned

²⁴ Vicofa: Vietnam Cocoa and Coffee Association representing mostly exporters and State-owned coffee enterprises.

Vietnam Bank of Agriculture and Rural Development (VBARD) while a selection of privately owned commercial banks provides loans to traders and exporters.

Producers: Bank lending and other formal credit provision for producers is almost exclusively limited to farmers with proven land title, with lenders taking a lien over land title and determining loan amounts based upon the stated value of the land. Those producers without land title are generally excluded from formal bank sector borrowing. The cost of lending is perceived as a significant issue. During the 2010 season interest rates for producers borrowing from banks were approximately 18% pa. This level of interest rates limits borrowing for seasonal inputs and prohibits borrowing for longer-term investment (for example tree replanting). Loan amounts were also reported by producers as insufficient, with lenders providing loan amounts based on outdated valuations of land. Limited bank lending has resulted in many producers receiving inputs (fertilizers and pesticides) on credit from either the coffee buyers (traders) or the input suppliers (sometimes these are the same people). In these cases rates appear to range from 1.5 – 2.0% per month with repayment occurring once the coffee is harvested.

Traders: Traders often access bank lending where they have assets to use as security. However a large number of traders have also built up their own cash reserves to meet their operating requirements. In addition traders with strong long-term relationships with processors / exporters can often receive short term financing for meeting part of the working capital. However such borrowing arrangements, limits the trader's scope in terms of their selling opportunities.

Exporters: Exporters are able to borrow from a number of commercial banks. Loan terms and conditions vary by bank but generally credit is provided for short term trade finance and requires a combination of collateral and contracts. Lending can be in VND or, and much more cheaply, in USD but the latter option is not always available to all exporters. At present prices and depending on the type of borrowing, the cost of financing a six week turnaround period between purchase and receipt can range from USD 20/MT to as much as USD 50 to 60/MT. The high cost of doing business, coupled with intense competition, is having a negative impact on the balance sheet of many industry participants, especially after the sharp rise of interest rates during the first half of 2011. Hence alternative ways and means should be found to mitigate the impact of both the cost of finance and the inequality that presently exists

Annex 3. Production Structure of the Vietnam Coffee Industry

Production: Coffee in Vietnam is generally planted with a spacing of 3 ft x3ft or approximately 1,000 to 1,100 trees/ha. Most farmers do not intercrop their coffee nor do they have shade trees or windbreaks. Unusually for many Robusta producers elsewhere, approximately 87% of all coffee grown in Vietnam is irrigated, mostly using the basin method where water is directed into basins that are created around the base of the coffee tree. This avoids water being lost and helps contain erosion but the pre-watering loosening of the surrounding soil risks damaging the rootlets, thus facilitating attack by both fungi and nematodes.

The number of annual irrigation cycles varies from about 3 in normal rainfall years, to 5 or even more in (very) dry years. Irrigation may also be used to 'bring on flowering'. However, rain during the actual flowering period causes flower and pinhead drop, thus reducing the next season's yield. To date irrigation water is obtained at little cost from dams, rivers and wells. However, rising fuel prices are increasing the cost of pumping and there are reports that the water table in some areas is declining.

With the exception of Brazil, yields in Vietnam at an estimated average of about 2 MT/ha in 2009 are well above average for most Robusta growing countries. A contributing factor here might be that Robusta was introduced and planted as a commercial crop from the very beginning, resulting in mostly neatly spaced and pruned coffee plots that are relatively easy to maintain and irrigate, whilst most are regularly fertilized using mineral fertilizers. However, excessive and/or inappropriate use of mineral fertilizers leads to soil imbalances and, over time, reduced soil fertility. Interviews suggest that there is only sporadic use of soil and leaf analysis which is a prerequisite for accurate and cost effective input application.

A 2009 WASI survey of 405 farmers in five provinces shows that yields can reach as high as 3 to 5 MT/ha in some instance and this was confirmed during field visits.²⁵ However, a now rapidly ageing tree stock together with serious problems of soil and nutrition imbalances as well as infestation by both nematodes, the latter especially in Dak Lak Province but also elsewhere, and fungi suggests that without remedial action future yields might fall.

Harvesting : Harvesting is exclusively by hand with the increasing scarcity and rising cost of casual labour impacting negatively on the number of picking rounds farmers can afford. The most common practice appears to be to harvest selectively by picking red cherry only in the first round, a second round to collect the bulk of the remaining cherries and a final round to 'clean' the trees from any remaining cherries. The latter practice also helps to limit the spread of coffee pests (ex. berry borer) that might otherwise carry forward to the next season. Most smallholder coffee is sun dried, spread on concrete floors, on tarpaulins or simply on the bare soil which can cause contamination. Improper drying and/or storing insufficiently dried coffee (for example due to lack of drying space or in expectation of price rises) can cause both mould and fermentation. In recent years erratic rainfall patterns are also causing quality problems when it rains during harvesting and drying. Small numbers of farmers use an artisanal form of mechanical drying, using electric fans, trays and local combustible materials such as coffee husk for example.

Processing: Primary processing is either by own equipment (limited), hiring hullers from neighbours or contract hulling by third parties (most common), often by collectors/traders who then combine smaller lots into larger transportable quantities. At this stage substandard quality (including wet coffee) may be mixed with better quality to 'average things out' which is one reason why almost any quality can be sold. However, some

²⁵ Interviews suggest that farmers with close links to State farms mostly have access to better services and therefore achieve higher yields.

collectors/exporters are now refusing to purchase coffee that requires too much final processing or poses quality risks such as mouldy beans, in return paying slightly higher prices for more acceptable quality. Export processing consists of re-drying where needed, removal of foreign matter and admixtures, followed by size and density grading. Better export grades (containing fewer defectives) may be colour sorted. Only dry processed or natural Robusta is exported although approximately 5% is wet-polished and some processors/exporters have ventured into the wet-processing of Robusta.²⁶ Arabica coffee on the other hand is increasingly wet-processed which represents new challenges in that water usage and disposal of effluents must be regulated and monitored.

MARD's Department of Processing and Trade oversees quality control aspects in the processing, storage and marketing of coffee (export standards for example), acknowledges that processing standards needs improvements and new regulations are about to come into effect. Food processing facilities, including those operated by coffee processors, roasters and exporters, will have to conform to NAFIQAD²⁷ food safety rules with inspections of actual premises expected to commence in 2012. Provided well managed and executed this initiative could improve quality control and traceability in the coffee supply chain.

²⁶ Wet-polishing moistens the beans, removes the adhering silver skin, then polishes the beans and dries them back to the requisite moisture level, resulting in a better looking green bean of a more neutral cup quality.

²⁷ National Agro-Forestry and Fisheries Quality Assurance Dept. of MARD.

Annex 4: Coffee quality

The inherent quality of Vietnamese Robusta coffee is fully acceptable but can easily be compromised by human controlled processes such as harvesting, drying, storage and export processing. The Vietnam Standard for export lists the type and maximum number of defectives allowed to be present.²⁸ Unfortunately, intermediaries in the supply chain often mix better and inferior quality or coffees with higher and lower moisture leading to the permissible maximum becoming the standard by default. It is difficult to ‘police’ the quality of over 1 million tons of smallholder coffee at the farm gate and so all Robusta coffee is basically traded ‘as is’ with the majority of intermediaries and processors discounting inferior quality, rather than offering premiums for better than average coffee. At the export level the most pressing quality issue today is probably not unacceptability but rather inconsistency. Specifically, there are still unacceptably high variations between individual shipments that cause difficulty for the end users (coffee roasters) and which hampers Vietnam ‘moving up’ the quality and price ladder. But there are signs of change with more exporters, including foreign-linked companies, now operating buying stations and paying more attention to quality, and official quality certifiers as VinaControl and CafeControl also linking up with processors, traders and farmers. With regards to Arabica coffee, according to leading trade sources, quality is definitely below par and consequently, with a few exceptions, the coffee is mostly selling below its potential value which is estimated to be close to parity with New York ICE levels. Currently it mostly sells at a discount. Moisture content for both Robusta and Arabica at the export level is generally under control although end users would prefer to see the maximum at 12 rather than 12.5% as at present.²⁹

Sustainable and Differentiated Coffees : Sustainability programmes active in Vietnam include RainForest Alliance, 4C Association, Utz Certified and Fairtrade. Current Government strategy aims to promote sustainable practices throughout the coffee sector, with particular emphasis on 4C, Utz Certified and VietGap. This approach is both appropriate and timely as evidenced by recent commitments by major European roasters as Kraft Foods, Nestlé, Sara Lee, Tchibo, and others to sharply increase the proportion of sustainably produced coffee in their total purchases - as a group these companies may account for as much as 50% of all Vietnamese coffee exports.³⁰

Accessing the market for differentiated or specialty coffee is more difficult although for instance there is active demand for really good quality Robusta, especially wet-processed, and ‘new’ Arabicas. Both niche segments therefore offers good prospects.³¹

Nevertheless, the main strategic pre-occupation should be with providing consistent quality coffee of the kind required by Vietnam’s major markets, i.e. the mainstream roasting industry. A general move towards sustainability in green coffee will also enable the coffee sector to respond adequately to increasingly stringent food safety requirements in importing countries. In this respect the Public Private Partnership on Sustainable Coffee Production is a laudable, albeit limited, initiative that operates two demonstration pilots in Dak Lak and Nam Dong Provinces. But formalizing these initiatives and upscaling the results will require substantial public support.

²⁸ MARD 15/10/2007 No 86/2007/QD-BNN

²⁹ Export quality is verified by five MARD accredited quality inspection companies which helps to maintain respect for the rules but does not necessarily improve quality. To note also that provision of a Certificate of Quality does not release exporters from their obligations vis-à-vis the end receiver who always retains the right to claim should the quality be below par on arrival.

³⁰ In May 2011 the Kraft Foods Group, Europe’s largest roaster, announced that from 2015 it will source only sustainably produced coffees for its European coffee brands. Europe is by far the world’s largest market for coffee.

³¹ Vietnam’s Arabica sector is still quite small but nevertheless offers good prospects, particularly if more attention were given to the quality and presentation of the export product. Indications are that much of this coffee is currently undervalued because of inadequate preparation and unreliable quality.

Annex 5: Coffee Price Risk and its Management in Vietnam

Price risk takes different forms and the three main actors in the coffee value chain: producers, intermediaries and roasters have fundamentally different pre-occupations regarding price. Falling prices may spell economic ruin for producers, often without any chance of redress. But intermediary parties along the chain such as traders, exporters, importers and the like can engage in appropriate risk management strategies and, they can trade in coffee more or less irrespective of the price level. For mainstream roasters the major consideration is not so much whether prices are high or low but rather it is to ensure that the average cost price of their green coffee intake remains comparable to that of the main competition. This minimizes the risk of competitors being able to gain market share by sharply lowering their selling prices.

This approach was not always the case but major price volatility in the 1970's resulted in huge losses on coffee stocks throughout the industry. This sharply highlighted the need to manage price risk differently and helped initiate the move towards expressing prices by way of a differential, linked to a futures contract period, instead of committing to outright prices 'there and then'. This use of price differentials, as the basis for determining the final price to be paid or received for a parcel of green coffee, has emerged because it allows both parties to a contract to share or offset the risk that the market may subsequently move up or down. Trading, or more accurately pricing physical coffee by agreeing a price differential is now a well-established trade practice and Vietnamese Robusta is no exception.³²

Fixed price contracts are relatively risk free if both sides, purchase and sale, can be transacted more or less simultaneously (back-to-back) or at least within the same day. After all, collectors have to purchase when coffee is offered and exporters have to put prices in the local market when the Vietnamese trading day starts. But, intra-day volatility can turn what looked profitable pricewise in the morning into a loss in the afternoon if the London opening is not as per expectation, in part due to the fact that there is a considerable time difference in business hours with the London exchange opening 7 hours after daily trading in Vietnam has begun. It should be stressed here that Robusta coffee is mainly a bulk commodity which means that the ruling price is widely known, making it difficult for individual exporters to achieve notably higher prices than their competitors. There are price differences for (slightly) better coffee but in reality no one can escape the link with the London price.

Selling forward at a fixed price without owning the coffee exposes that short seller to price risk: if local prices rise before he can purchase the green coffee there will be losses. And, should this be evident by the time coffee can be purchased, i.e. once the harvest begins, then it may even be difficult to raise the necessary finance because the bank too can see this deal is loss-making. Price risk on unsold stocks can be hedged by selling futures whereas the risk on fixed price short sales can be hedged by buying futures, always bearing in mind that the differential risk remains open. However, for many Vietnamese exporters access to the futures

³² Fixed price contracts mean the price is final. The holder of an outright or fixed price contract cannot benefit from subsequent price rises (affects the seller) nor can he benefit from subsequent price falls (affects the buyer). Alternatively, if the seller had sold in the expectation of buying in the necessary coffee later (he sold short) then rising prices can spell, potentially, unlimited loss as no one knows how high a market can go. And the buyer who bought in the expectation of selling on later (he bought long) will have to follow the market down or, as a roaster, runs the risk that competitors will buy in more cheaply and lower retail prices. Using differentials on the other hand allows one to enter into forward or long-term commitments and yet postpone setting the final price until both sides to the transaction are complete: the short seller has bought the required green coffee and now has a matching sale and purchase, whereas the buyer has sold on what he bought and now has a matching purchase and sale, or the roaster has received the shipment. Pricing and trading coffee using differentials, linked to futures markets, is often called trading 'Price to be Fixed' or PTBF because the price is 'fixed' later through matching purchases and sales of futures contracts.

market is constrained by both the availability of finance and the cost thereof whereas not all commercial banks offer price risk management services either.

Developing Domestic Price Risk Management Services : In early 2011 both the Vietnam Commodity Exchange in Ho Chi Min City (VNX) and the Buon Ma Thuot Coffee Exchange Center in Dak Lak (BCEC) commenced offering Robusta coffee futures trading but as of April 2011 turnover was negligible. VNX was established as Vietnam's first fully fledged commodities exchange in September 2010. The VNX Robusta contract (5 MT) is linked to both the London NYSE Liffe and Singapore SICOM exchanges and offers the choice of either quality specification at the time of initiating a trade. VNX can offset contracts on either exchange should local liquidity not be sufficient. Exchange licensed warehouses will store coffee to be tendered and the intention is to try and arrange that in future samples may be sent to London for grading at the NYSE Liffe exchange. If this becomes reality then over time such an arrangement could lead to Liffe certified coffee being available ex warehouse HCMC. Potentially this could assist the holders to raise finance against such stocks and increase liquidity on VNX.

BCEC on the other hand commenced operations in 2005 as a spot market for physical coffee that before sale would be warehoused and inspected by the Exchange. The intention was to provide an open market system that allowed farmers to access all available information and so negotiate better prices, whereas buyers would be assured of both contract integrity and quality. However, by early 2011 just 1,000 MT of green coffee had been transacted in this way with farmers seemingly objecting to having to deliver coffee to Buon Ma Thuot, preferring to sell to more easily accessible collectors instead. Nevertheless, the new futures contract is intended to offer individual farmers, traders, collectors and exporters the possibility of selling and buying coffee forward. To enable individual farmers to take part, the contract is for just 2 MT. BCEC currently has no links with any foreign exchanges but expects to develop linkages with VNX.

These are potentially interesting initiatives but it should be noted that to date no serious alternatives to the London and New York exchanges have evolved. Turnover at SICOM in Singapore remains very small and coffee futures trading in India stopped some years ago. Coffee turnover at the Tokyo Exchange too has fallen to negligible levels. The only serious alternative is the Brazilian Exchange (BM&F – Bolsa de Mercadorias y Futuros) in Sao Paulo with over 640,000 contracts of 100 bags Arabica each traded in 2010 – the exchange has close links to the New York market and offers opportunities for arbitrage between the two. In theory Vietnam too, with annual production of over 1 mln MT, should be able to support a viable coffee futures exchange but only if sufficient liquidity appears. That is, there has to be interest from both sellers and buyers, including producers, collectors, exporters, domestic roasters and investors (speculative traders): if only sellers or only buyers appear then trading becomes unfeasible. This is what terminated the otherwise interesting Indian initiative and in this respect the VNX link with NYSE Liffe may offer some answers. But there also have to be links with the physical market in that there have to be parties that are interested to receive or deliver actual coffee. Current domestic demand in Vietnam is still too small to be a factor so it remains to be seen who might be interested, both locally and abroad, to take delivery through the exchanges.

Futures exchanges can only operate successfully in an appropriate legal environment, i.e. the integrity of all contracts is guaranteed, there is adequate independent supervision, and the status of both Public Warehousemen and Negotiable Warehouse Warrants is clear. Many coffee growers view price volatility as a major risk and might want to hedge that risk, especially if active trading were to emerge on one or both of the exchanges.

Annex 6. Coffee Supply Chain Risk Assessment Schedule

Date	Place	Time	Meeting/activity
11.4 (Monday)	DONG NAI	9:00 - 11:00	Nestle VN company (Roaster)
12.4 (Tuesday)	HCMC		Day off (National Holiday)
			Team 2 takes flight to Lam Dong province
Team 1: Dak Lak Team (Mr Vikas + Ms Oanh + Mr Hung + Mr Jan)			
13.4 (Wednesday)	HCMC	09:00 - 11:00	VINACAFÉ Bien Hoa joint stock company (Processor and Roaster)
		13:00 - 15:00	Vinacontrol in HCMC (Quality control and certification)
		15:30 PM	Taking flight to Buon Ma Thuot (Dak Lak)
14.4 (Thursday)	Dak Lak	08:00 - 11:30	Department of Agriculture and Rural Development (include Extension Center, Plant Protection Center) of Daklak province
		13:30 - 16:30	The EaKmat Coffee - Cocoa research center - The Western Highlands Agro-Forestry Scientific and Technical Institute (WASI)
15.4 (Friday)	Dak Lak	08:00 - 10:00	Joint Stock Investment and Export Coffee Highlands - Buon Ma Thuot Vinacafe. (state-owned company)
		10:30-11:30	Buon Ma Thuot Coffee Exchange Center (BCEC)
		13:30 - 14:30	Nam Nguyet Company (Private company)
		15:00 - 16:00	4C Vietnam (Mr. Đỗ Ngọc Sỹ, Vietnam Coordinator)
		16:30 - 17:30	DAKMAN Company
16.4 (Saturday)	Dak Lak	09:00 - 11:30	Interview farmers in Eatu village
		13:30 - 17:00	Interview farmers in Hoa Thuan and Cu Mgar village
17.4 (Sunday)			Flight to Hanoi
Team 2: Lam Dong team (Mr Roy + Ms Ha)			
13.4 (Wed)	Lam Dong	08:30 - 11:30	Department of Agriculture and Rural Development (include Extension Center, Plant Protection Center) of Daklak province
		13:30-14:30	AgriBank in Lam Dong
		15:00 - 16:30	Interview farmer in Duc Trong district
14.4 (Thursday)	Lam Dong	07:00 - 08:00	Travel to Lam Ha district
		08:30 - 11:00	Meeting Thai Hoa company
		13:30-16:30	Other stakeholders link to the Thai Hoa company:
15.4 (Friday)	Lam Dong	07:00 - 08:00	Travel to Di Linh district
		08:30 - 11:00	Di Linh sustainable coffee cooperative
		13:30-16:30	Other stakeholders link to the Di Linh cooperative.
16.4 (Saturday)	Lam Dong	08:00-11:30	Interviewing farmers/farmer group which grow coffee on the area (The members of Di Linh co-operative)
		13:30-16:30	- Visiting and interviewing 2 collectors/collecting stations, 2 roasting coffee stations on the area
17.4 (Sunday)			Flight to Hanoi
Team 1: Dak Lak Team (Mr Vikas + Ms Oanh + Mr Hung + Mr Jan)			
18.4 (Monday)	Ha Noi	08:00-10:00	VICOFA Mr Luong Van Tu
		9:00 - 11:00	Mr Doan Trieu Nhan
		10:15-11:30	National Agro - Forestry - Fisheries Quality Assurance

			Department. Chamber of Agro - forestry - Fisheries and salt quality assurance.
		13:30 - 15:00	Thái Hòa company
		15:30 - 17:00	Headquarter of AgriBank in Ha Noi
19.4 (Tuesday)	Ha Noi	08:00 - 10:00	Department of crop production, MARD
		10:30 - 11:30	Department of processing, MARD
			Moving to Noi Bai Airport:
Team 2: Lam Dong team (Mr Roy + Ms Ha)			
18.4 (Monday)	Ha Noi	In the morning	Team 2 joined team 1 in meeting with VICOFA and National Agro - Forestry - Fisheries Quality Assurance Department.
		2:30 - 5:00 PM	Vietnam bank for social policies
19.4 (Tuesday)		08:00 - 10:00	Vietnam farmer's union
			Moving to Noi Bai Airport:
Team: Mr Roy + Mr Jan + Ms Oanh + Ms Ha			
20.4 (Wed.)	HCMC	10:30 - 12:00	Coffee Taskforce: Yara Vietnam company
		13:30 - 15:00	Techcombank
		15:30 - 17:00	Mr Mai Thanh Phung (National Center for Extension)
21.4 (Thursday)	HCMC	08:00 - 10:00	Intimex joint stock export - import company
		10:30 - 11:30	VINACAFE (Vietnam national coffee corporation)
		13:30 - 15:00	Sacombank
		15:30 - 17:00	Vietnam Commodity Exchange
22.4 (Friday)	HCMC		Trung Nguyen company
Team 2: Mr Vikas + Mr Hung			
20.4 (Wed.)	Lam Dong	whole day	Interview farmers and traders in Di Linh district
21.4 (Thursday)		whole day	Interview farmers and traders in Lam Ha district
22.4 (Friday)		whole day	Interview farmers of OLAM company
25.4 (Monday)	Da Lat	10:00 – 10:45	Presentation of the preliminary findings to stakeholders during the coffee price risk training in Dalat
Mr. Jan			
29.4 (Friday)	HCMC	10:00- 12:00 AM	Mr Doan Thanh, Sales Mngr, Syngenta Vietnam ltd