

Haiti Coffee Supply Chain

Risk Assessment

March, 2010

THE WORLD BANK

Financed by:

All ACP Agricultural Commodities Programme

EUROPEAN COMMISSION

ACP GROUP OF STATES



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Acknowledgments

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Executive Summary

Coffee is an ecologically and economically significant crop for Haiti. It is not only the main source of income for more than 100,000 farmers, but the coffee 'ecosystem' also sustains a large part of the remaining tree cover (currently at less than 1.5 percent of land) of the country. Coffee production has been declining continuously since the 1970s and Haiti's inability to arrest this decline poses serious challenges to the livelihoods of thousands of households and the fragile ecosystem of the country.

The National Coffee Institute (INCAH) and the Ministry of Agriculture, Natural Resources and Rural Development (MARNDR) requested the World Bank to undertake a Risk Assessment to highlight and prioritize the main risks being faced by the coffee supply chain. This activity was financed by the European Commission's All ACP Agricultural Commodities Program (AAACP).

This report does not aim to detail the structural constraints impacting upon the Haitian coffee sub-sector. Instead, it describes the risks affecting the existing supply chain in terms of their potential impact and prioritizes the risks and areas requiring attention for risk management, investment, and capacity building.

The coffee industry in Haiti consists of five dominant supply chains: a) artisanal coffee supply chain for domestic consumption (58 percent of total volume) ; b) commercial/industrial coffee supply chain for domestic consumption (6 percent); c) 'café pile' supply chain for export (6 percent); d) coffee supply chain for informal trade with the Dominican Republic (28 percent); and e) specialty coffee supply chain for export (gourmet coffee, fair trade, etc.) (2 percent).

The Haitian coffee industry is constrained by significant systemic problems which have contributed to its decline over the years. Some of these major constraints include: (i) the structure of the coffee 'creole garden' which contributes to low on-farm coffee productivity; (ii) a land tenure system which inhibits long term investment; (iii) poor transportation and logistics infrastructure; (iv) limited access to credit and high interest rates; (v) aging coffee trees and farmers; (vi) waning government interest and support for the coffee sub-sector; (vii) lack of industry level coordination; and (viii) a lack of international and domestic promotion of the Haitian coffee industry.

The assessment identified multiple risks confronting the different Haitian coffee supply chains, which were classified under the categories of production, market, and other risks. The following **priority risks** were identified through an extensive consultation process with all the major stakeholders of the coffee supply chain in Haiti:

- Long term decline of national coffee production and the exodus of a number of major coffee sub-sector participants (producers, exporters, and traders) are leading to the long term decline of the coffee industry in the country. This decline poses the greatest risk to the continued existence of the Haitian coffee sub-sector.
- Environmental degradation in coffee producing areas is both a cause and an effect of the decline in national coffee production volumes.
- Significant coffee quality and yield reduction due to pest and disease, especially Scolyte (coffee berry borer) with annual infestation rates ranging from 20 to 50 percent and production losses between 15 and 20 percent.
- Coffee exporting cooperative failures due to managerial, operational and financial problems could damage higher-value gourmet and fair trade coffee supply chains. Cooperative failure could also affect the domestic supply chains by reducing competition for coffee, thereby lowering farm-gate prices.

Haiti is reliant on trans-border trade with the Dominican Republic to sell 28 percent of its coffee production. A decline or collapse of this activity due to trade issues, political reasons, or a fall in demand from the Dominican Republic could lead to a substantial reduction in sales and subsequent decline in the farm-gate coffee prices in Haiti.

Incentive systems in Haiti are poorly aligned to arrest the decline of coffee production. The rapid fall in production can be attributed to multiple factors including deforestation, replacement of coffee by more profitable cash crops (beans, cabbage, etc.), aging trees, aging farmers, disease attack, and lack of investment in the coffee crop. The wider constraints and longer term risks to the coffee sub-sector require a comprehensive plan to revitalize coffee production including the regeneration of plantations, national Scolyte control, supply chain integration, institutional strengthening, and environmental management (including reforestation) at the local, district, and national levels.

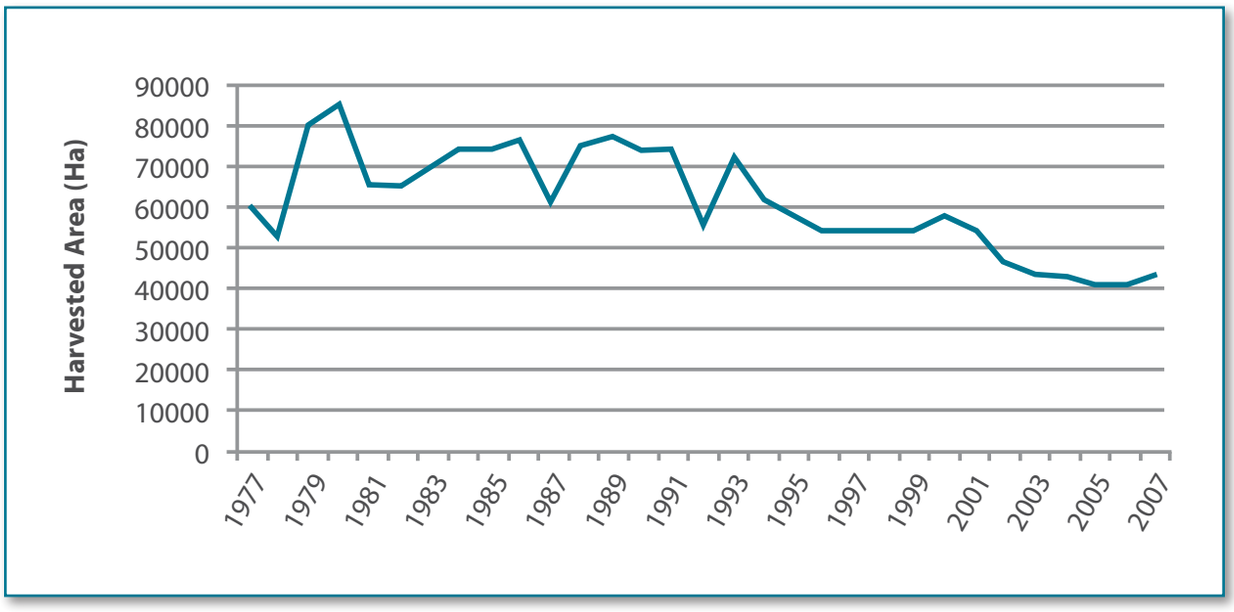
This assessment was carried out in November, 2009 and does not reflect the conditions after the disastrous earthquake of January 12, 2010. Given the informal character of Haiti's coffee supply chain, while the earthquake might have severed some links in the chain, it is not expected to cause major shock to production and distribution of coffee in the country. Even so, with increasing attention being paid to the revitalization of agriculture, this moment provides some concrete opportunities to place the coffee supply chain into a higher productivity path.

1. Background

Haiti, with 9.8 million inhabitants, is the most populous Caribbean country. Despite the progress made in the recent past, decades of political instability, violence, and environmental degradation have left Haiti as the least-developed nation in the Western Hemisphere and one of the poorest in the world. The past two decades have witnessed rapid migration in Haiti from rural to urban areas. While in 1990, 28.5 percent of Haitian population resided in urban areas, by 2010 this number will have increased to 49.6 percent.[1] Although the contribution and significance of agriculture to Haiti's economy has declined, it still accounts for 25.6 percent[2] of GDP, remaining as an important economic sector, especially for rural areas where it still is the mainstay occupation for the majority of the population.

Coffee is a culturally, economically, and ecologically significant crop for Haiti. French colonists started coffee plantations in the early 1700s and by the end of the 18th century Haiti had become a large coffee exporter. The decline of coffee that started in the early 20th century continues and Haiti, today, is a marginal producer and exporter of coffee. Land under coffee cultivation declined from 85,000 Ha in 1981 to 43,000 Ha in 2007 (Figure 1) while coffee production declined from a peak of 42,900 tons in 1980 to 21,000 tons in 2007.[3] During the same period, the value of coffee exports fell from a peak of $90 million to $3.2 million (Figure 2).[4] Coffee's share of agricultural exports was 76.6 percent in 1979-81 but had fallen to 17.2 percent by 2002.[5]

Figure 1: Harvested Area (Coffee Green) in Ha (1977-2007)



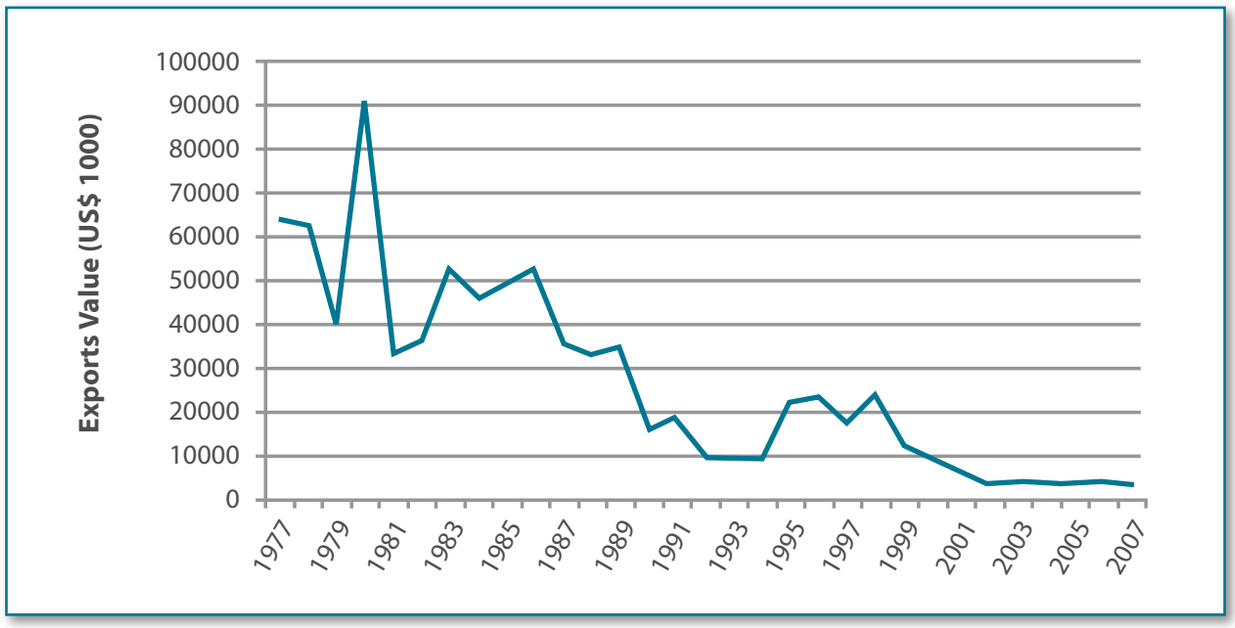
(Source: FAO Stat)

It is important to note that there are significant inconsistencies in data relating to coffee acreage, production, and exports. According to FAO Stat, the area under coffee cultivation in Haiti was 43,000 Ha in 2007. INCAH, however, cites several data sources which suggest that the area under coffee cultivation in 2007 was 100,000 Ha.

1 Source: UN Human Development Report (2009)
2 Source: World Bank: Haiti at a glance (2005)
3 Source: FAO Stat
4 Source: FAO Stat
5 Source: FAO Stat

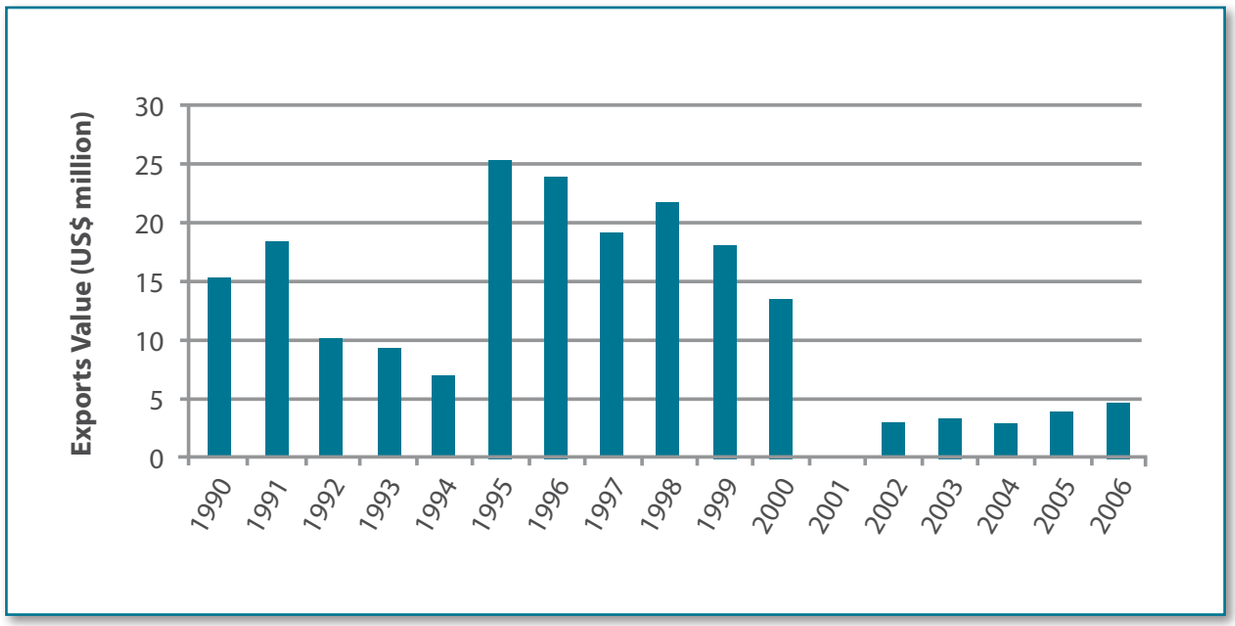
Similarly, FAO Stat reports that coffee exports in 2001 were US$5.4 million while INCAH reports that no coffee was officially exported in 2001(Figure 3). The Government of Haiti does not have a robust coffee data collection mechanism in place and therefore the lack of reliable numbers makes it difficult to quantify different aspects of the coffee supply chain in Haiti. Nonetheless, all empirical and anecdotal data points towards the rapid decline of the coffee sub-sector.

Figure 2: Haiti Coffee Exports (1977-2007)



(Source: FAO Stat)

Figure 3: Official Coffee Exports from Haiti (1990-2006)



(Source: INCAH)

Despite the decline of the sub-sector, coffee is still a major crop for Haiti. Two important considerations have prompted the Government of Haiti and donors to focus on it:

1. **Ecological considerations:** Haiti has less than 1.5 percent[6] of its land under tree cover in comparison with the neighboring Dominican Republic, which has 28.4 percent. Haitian tree cover is almost exclusively in the areas of coffee production. Since the tree cover is an essential element of the coffee ecosystem, loss of tree cover leads to the destruction of remaining coffee plants. Household fuel wood requirements, charcoal demand, and the replacement of coffee in favor of other more profitable crops are some of the factors responsible for the loss of forest cover. Furthermore, the replacement of coffee with other crops increases the vulnerability of the fragile ecosystem, leading to increased soil erosion, mud slides, and further loss of tree cover. A reversal in the decline of coffee production is seen as an integral part of restoring the ecological balance and increasing the level of tree cover in Haiti.

2. **Livelihoods considerations:** Coffee was a major foreign exchange earner for the Haitian economy in the past, and as recently as 1980 it generated export sales of US$90 million. Although its role and contribution to the nation's foreign exchange earnings has declined considerably in recent years (US$3.2 million in 2007), coffee still provides important income generating opportunities to a large segment of the Haitian population. According to various estimates, between 100,000 to 200,000 farmers are engaged in coffee cultivation in Haiti. Coffee is the main commercial crop for these farmers and the main source of income for their households. It also serves as a savings instrument for farmers, with the majority storing a portion of their coffee production to be traded during the lean season to meet household requirements. Given year-round strong domestic demand for coffee in Haiti, coffee can be readily sold and converted into cash. Besides coffee farmers, thousands of poor households are engaged in the trading and artisanal roasting of coffee, and a large portion of their incomes is derived from their involvement in the coffee sub-sector.

All coffee grown in Haiti is of the *Arabica* family, of which the *Typica* variety accounts for 90 percent[7] of planted coffee trees, the remainder being a mixture of other varieties such as *Bourbon*, *Salvadoreño*, *Mondo Novo*, *Catourra* and *Catimor*. Traditional varieties of *Arabica*, such as *Typica*, are shade coffee plants. Unlike most of the other coffee growing countries, there are very few commercial plantations (coffee estates) in Haiti. According to the National Coffee Institute's (INCAH) estimates, only 15 percent of Haitian coffee is grown on large estates, while 65 percent of coffee farmers are small growers and another 20 percent are marginal farmers, as shown on Table 1.[8]

Table 1: Distribution of coffee farmers by land size

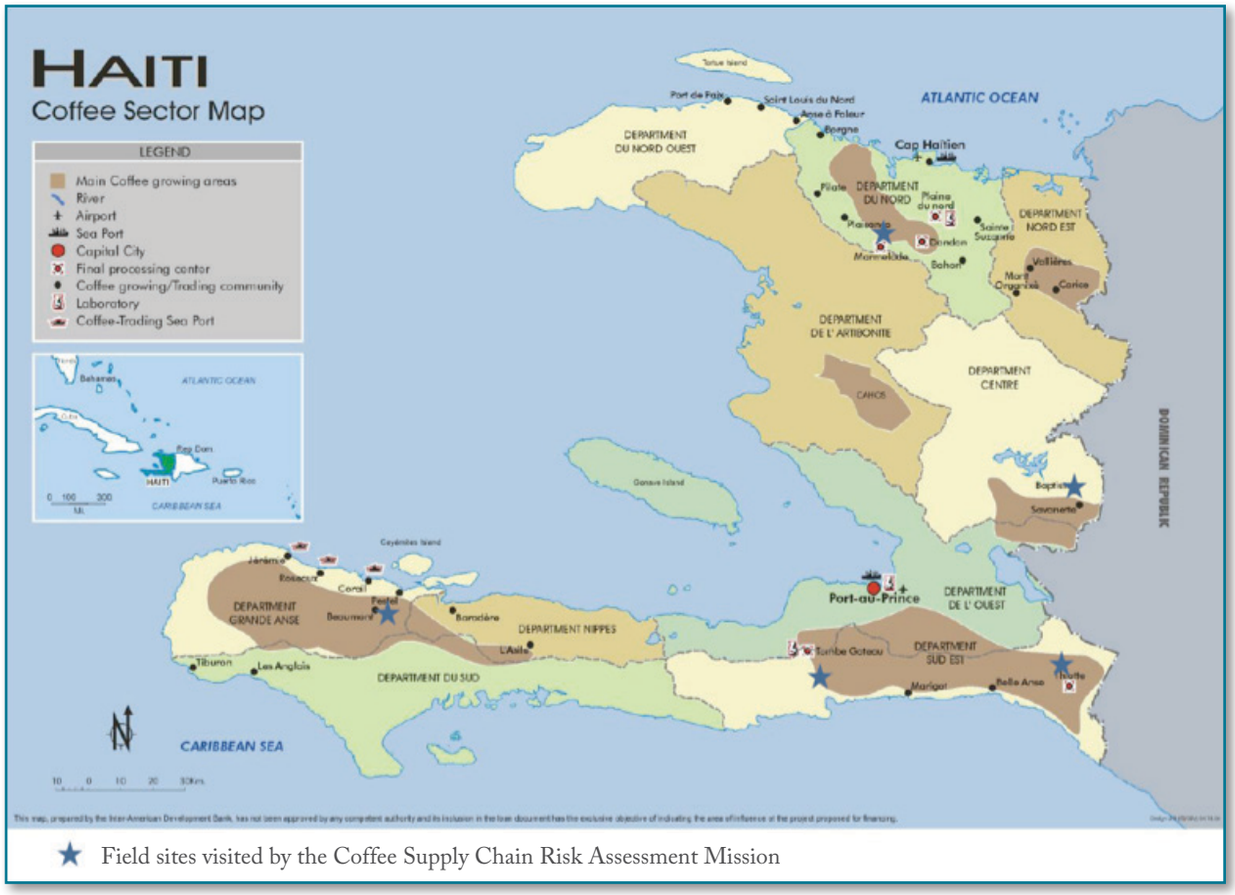
Category	Land size (in Ha)	Percentage of production
Large estate	7 to 10	15
Small farmers	.5 to 2	65
Marginal farmers	.25 to .5	20

(Source: INCAH)

6 Source: http://www.cbd.int/countries/profile.shtml?country=ht
7 Source: IDB (2006)
8 Source: INCAH

The altitude of coffee plantation ranges between 400 meters in the North to 1,300 meters in Thiotte and Beaumont. Coffee plantations were historically more widespread in nine departments of the country. Currently, however, except for the areas of Thiotte, Baptist, Beaumont and Dondon where the density of coffee plantation is still high, coffee plantations in other areas is limited (Figure 4).

Figure 4: Haiti Coffee Sector Map



(Source: IDB)

The majority of Haitian coffee is produced under the 'creole garden' agricultural system, whereby coffee is grown in a mixed tree cropping system. Coffee remains an integral part of the livelihood strategy of farmers in the mountainous regions of Haiti. While crops like maize, banana and yams are grown to meet household food requirements, coffee is the main cash crop for the majority of highland farmers. Besides being part of a diversified livelihood strategy, the 'creole garden' agricultural system is also considered ecologically sustainable and appropriate for the fragile ecosystem of Haitian highlands. However, despite many advantages, the 'creole garden' coffee system also imposes severe limitations on coffee production. The mixed cropping system impairs investment and systemic management of the coffee plants and, as a result, coffee productivity in Haiti is one of the lowest in the Latin America and Caribbean region.

2. Coffee Supply Chain Risk Assessment: objective and methodology

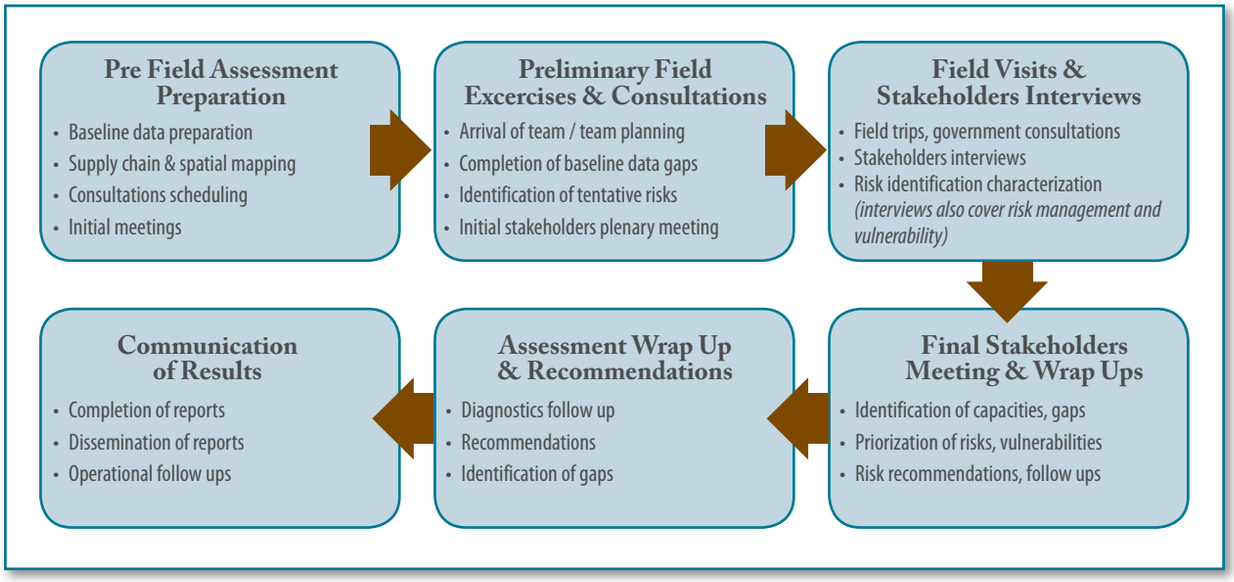
Objective of the Study: To understand and better manage the risks facing the coffee supply chain in Haiti, the National Coffee Institute (INCAH) and the IDB-financed Rural Supply Chain Project requested the World Bank Group to conduct a Coffee Supply Chain Risk Assessment for the country. The objectives of the mission were to:

i. identify and characterize the major risks being faced within the coffee supply chain;
ii. assess the current risk management approaches being applied;
iii. identify key short and longer term vulnerabilities in the coffee supply chain;
iv. identify areas requiring priority attention for risk management, investment, and capacity building.

Methodology: The findings and analysis of this initial assessment are based on a methodology designed by the Agricultural Risk Management Team (ARMT) of the World Bank for assessing risks in agricultural supply chains. This methodology is referred to as "Rapid Agricultural Supply Chain Risk Assessment" (RapAgRisk)[9] and is designed to examine and quantify major risks along specific agricultural supply chains. RapAgRisk provides a conceptual framework and set of detailed guidelines for conducting a system-wide assessment of risk, risk management and vulnerability within agricultural (commodity) supply chains. The assessment is devised as a consultative and time-bound process geared toward providing a 'first approximation' of key vulnerabilities and areas requiring priority attention in investment and capacity building.

The assessment team followed the sequence outlined in RapAgRisk, as shown in Figure 5.

Figure 5: Overall Sequence of Analysis and Consultative Steps



The assessment team held meetings with the various actors in the coffee supply chains and conducted field visits to Thiotte, Baptiste, Marmelade, Jacmel, and Beaumont from November 2-14, 2009 (Figure 4). The mission consulted with a broad range of stakeholders across the Haitian coffee supply chain including the Ministry

9 Source : http://siteresources.worldbank.org/INTCOMRISMAN/Resources/RapidAgriculturalSupplyChainRiskAssessmentConceptualFramework.pdf

of Agriculture (MARNDR), banks and microfinance institutions, coffee federations and cooperatives, exporters, roasters, processors, small (informal) and large (formal) traders, NGOs, and farmers. A full list of interviewed stakeholders is provided in Annex 1.

3. Coffee supply chains in Haiti

Multiple supply chains connect coffee producers in Haiti to their final consumers (Figure 6). According to INCAH, approximately 30 percent of total Haitian coffee production is washed (or semi-washed) and the remaining 70 percent is dry processed. The domestic market (64 percent of total production) is the largest one by volume, followed by the informal trade with the Dominican Republic. Although there are multiple supply chains operating in the coffee sub-sector in Haiti (also shown in Figure 6), the following are the five biggest categories by volume:[10]

a. Artisanal coffee supply chain for domestic consumption (58 percent)
b. Coffee supply chain for informal trade with the Dominican Republic (28 percent)
c. Commercial/industrial coffee supply chain for domestic consumption (6 percent)
d. 'Café pile' (unwashed, often considered inferior coffee) supply chain for export (6 percent)
e. Specialty coffee supply chain (gourmet coffee, fair trade coffee, etc.) (2 percent)

3.1 Artisanal coffee supply chain for domestic consumption

Coffee is a traditional beverage in Haiti and the country's domestic consumption is substantial. Haiti's per capita annual consumption of coffee is 2.1 kg, which is highest among the low-income coffee producing countries.[11] Approximately 58 percent of the coffee produced in Haiti is delivered to domestic consumers through the artisanal roasters' supply chain, an informal, fragmented and decentralized chain that consists of thousands of traders, roasters, and retailers of coffee. The capital requirements are low and this supply chain has relatively low entry and exit barriers. Farmers sell the unwashed coffee to 'madam sara' (trading microenterprises) in rural markets and the coffee eventually flows to the urban and suburban markets through few intermediaries. Thousands of informal microenterprises roast coffee in their households for eventual sale in the markets. In rural areas, household roasting dominates but, gradually, roasted coffee from the microenterprises is making inroads.

The bulk of domestic consumption consists of unwashed coffee, called 'café pile', in which cherries are simply dried into a thick black crust around the bean and then removed with the aid of a mortar and pestle. The dried coffee bean is subsequently roasted in an artisanal kitchen and mixed with sugar to produce roasted coffee ready for consumption. Household coffee roasting for family consumption is a common practice in rural Haiti. The majority of the farmers interviewed during the mission noted that they kept a portion of their coffee harvest (varying between 2 and 10 pots of dried cherry) for their household consumption.

3.2 Coffee supply chain for informal trade with the Dominican Republic

The Dominican Republic is a large buyer of Haitian coffee and most of it is traded informally across the border. INDUBAN, the biggest roaster in the Dominican Republic, has established a coffee roasting facility in close proximity to the Haitian border. Most of the roasted coffee coming originally from Haiti is sold in the domestic

10 Source: Béhal, Joseph (2007). The assessment team received this data from INCAH
11 Source: http://earthtrends.wri.org/searchable_db/index.php?theme=6&variable_ID=294&action=select_countries

and local tourist markets. In addition, the Dominican Republic roasters also sell significant volumes of roasted coffee to nearby Caribbean islands including Puerto Rico.

The majority of the coffee produced in the Thiotte and Baptiste regions is currently being sold to traders in the Dominican Republic due to their geographical proximity, competitive prices, and the incentives they offer. Initially, trade with the Dominican Republic buyers was undertaken by informal traders on a much smaller scale and consisted largely of unwashed 'café pile'. In recent years, the activity has evolved and now the bulk of the trade consists of semi-washed coffee.

A large number of Haitian microenterprises collect wet coffee beans from the farmers and transport them to small de-pulping machines scattered throughout the region. De-pulping reduces the weight of the coffee so traders can carry it on mules across the border. Roasters in the Dominican Republic have set up washing stations nearby where they weigh and collect the coffee for washing and drying before sorting it for further roasting.

The roasters in the Dominican Republic offer multiple incentives to microenterprises and bigger traders to keep them engaged in supplying coffee across the border. They offer credit for the purchase of coffee and de-pulping machines, payment in pesos (the Dominican Republic's currency), and performance incentives in the form of goods like radios and shoes. These incentive structures have led, over the years, to the development of a reliable supply chain which transports approximately 28 percent of the coffee produced in Haiti to its neighboring country. Despite the rugged mountainous terrain and risk of injuries to mule and traders, every season, hundreds of traders cross the border to sell their coffee to the roasters in the Dominican Republic. This trade is quite lucrative for traders and even a few cooperative leaders are engaged in it. Some of the cooperatives also sell their lower quality coffee, which they cannot sell directly to their international specialty coffee buyers, to the roasters in the Dominican Republic.

3.3 Commercial/industrial coffee supply chain for domestic consumption

Currently, the industrial/commercial coffee supply for domestic consumption is relatively concentrated and dominated by two roasters, Rebo International and Weiner. Besides these two, Maribou and Claudia are two other roasters who sell branded coffee (unwashed 'café pile') in the domestic markets. Large roasters get most of their green coffee from selected big traders. Most of the coffee received from the traders is in the form of un-differentiated green beans which need to be sorted and manually graded before roasting. The share of such branded coffee in the domestic market is very small. Besides these big players, there are other small roasters (8 to 10) who sell mostly un-differentiated and unbranded roasted coffee in the domestic market. They buy their coffee beans from big and small traders alike.

3.4 'Café pile' supply chain for export

Coffee (consisting exclusively of unwashed low quality coffee also known as 'café pile') was one of the principal exports of Haiti in the 1960s and 1970s and a large number of exporters were engaged in this supply chain. Exports of "café pile" generated US$90 million in sales in 1980; however, this amount declined to US$3.2 million in 2007.[12] There was a much bigger supply chain in the 1950s and a large number of coffee exporters had vertically-integrated supply chains consisting of collection points in the coffee growing areas, systems of 'speculators' and *voltigee* (intermediaries), and some of them even used to sell small volumes of washed coffee. This supply chain suffered a series of major shocks (described in Table 2) during the past 60 years, including

12 Source: FAO Stat

ports' closure in 1958, an exodus of speculators in 1986, a US trade embargo (1991-1994), and an international coffee crisis in 2000 which led to multiple restructurings of the chain.

Table 2: Major shocks in the coffee supply chain for export

Year	Event	Impact
1958	Ports closure	Re-organization of coffee supply chain from regions to Port au Prince
1986	Exodus of speculators	Supply chain break-up
1991-1994	Trade embargo	Rapid decline in exports
Early 2000	International coffee crisis	Further decline in exports
2001	Steep rise in interest rates	Bankruptcy of exporters

(Source: Authors)

The last major shock to this supply chain was in 2001, when steep increases in banks' interest rates led to the bankruptcy of many coffee exporters. As a direct consequence of this shock, Haitian coffee exports fell from 157,700 bags in 2000 to 38,965 bags in 2002. While there were approximately 30 exporters selling 'café pile' in the late 1990s, currently only four coffee exporters (Weiner, Rebo, Maison Paultre St Marc and Novella) are exporting approximately 20,000 bags of 'café pile'. In the past, many exporters used to pay a part of the harvest in advance to their 'committed' farmers. The bankruptcy of exporters led to the collapse of this source of financing and had a negative impact on coffee production. The few remaining exporters currently get a big share of their green coffee from selected big traders who mostly deliver un-differentiated green coffee beans which are then sorted and manually graded before packing the high quality ones for export.

3.5 Specialty coffee supply chain

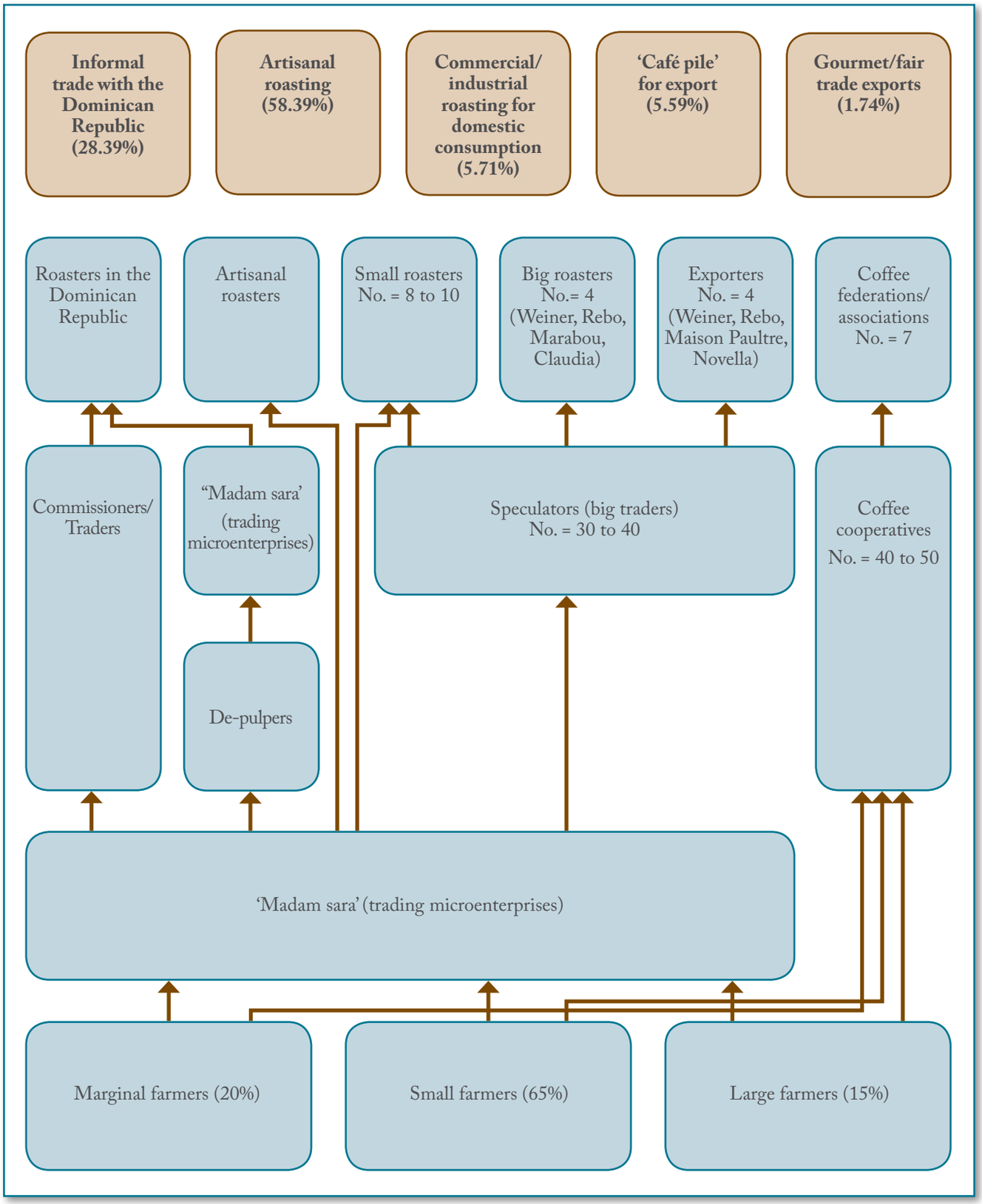
In the past two decades, donor investment in upgrading coffee to provide greater returns to the coffee producers has led to the emergence of a specialty coffee supply chain. While some of this coffee is sold as gourmet coffee (mostly under the *Haitian Bleu* brand) part of it is also sold as fair trade coffee. The chain consists of approximately fifty (primary) cooperatives and seven federations/associations (secondary level cooperatives) which were promoted by different non-government organizations (NGOs) over the past two decades. In this two-tiered cooperative structure, primary cooperatives are the main interaction point with the farmers and they are responsible for coffee collection, washing, drying, transportation, and the implementation of development programs for coffee growers. The associations/federations are responsible for finishing (milling, grading, and packing), marketing, selling (largely exports, but limited domestic sales as well), fund raising, development planning, administration, and coordination.

Approximately 25,000 farmers are enrolled in different cooperatives. However, only 1.74 percent of the total coffee production was channeled though the cooperative supply chain which exported 6,084 bags (each containing 60 kg) of coffee in 2006. In the past, farmers preferred to sell to the cooperatives because of the possibility of receiving *ristourne*, a second payment or dividend from the sale of the coffee paid by the cooperative at the end of the season. More recently though, owing to the financial difficulties of the cooperatives and associations, many of them are finding it difficult to fulfill their obligation to disburse dividends to the coffee farmers. Because of this and other reasons, the majority of the cooperatives is able to procure only a marginal proportion of its farmers' coffee production as these prefer to sell most of their coffee beans through alternative channels.

In Thiotte and Baptiste, traders are able to match the prices offered by the cooperatives and, furthermore, they provide up-front cash payments, unlike the delayed payments made by many cooperatives. These traders are providing stiff competition to the cooperatives in some regions. In others, where competition for coffee is limited, farmers are nevertheless compelled to sell their coffee at much lower prices to domestic traders because of the limited procurement offered by cooperatives. While the secondary cooperatives could easily sell more coffee to their international buyers (they have significant greater demand for coffee than they can currently fulfill), the cooperatives are generally unable to buy larger volumes from farmers due to limited working capital and insufficient production of high quality coffee beans.

The higher profit margins of selling gourmet (specialty) coffee to importers in Europe and Japan have attracted the attention of two of the leading roasters/exporters (Rebo and Weiner) to enter this chain. Both have collaborated with farmers' cooperatives/federations and between them, have exported two/three containers of gourmet coffee. The two companies have also made substantial investments in coffee production areas, and installed washing and drying stations in the mountains to improve the efficiency of their operations and the quality of coffee beans.

Figure 6: Haiti Coffee Supply Chain Map



4. Constraints in the coffee supply chain

All of the above mentioned supply chains are in a constant state of flux and competing against each other to procure coffee from the farmers and capture a large share of their respective markets. Each of these supply chains has its unique characteristics, stakeholders, structures, and processes but, at the same time, they all suffer from some common limitations and constraints which impact them, albeit differently. Some of the shared constraints, which have eroded the competitiveness of the coffee sub-sector and contributed to its overall decline, are:

i) Environmental degradation (loss of tree cover)

Haiti's tree cover is estimated at less than 1.5 percent of the total geographic area (compared to 28.4 percent for neighboring Dominican Republic) and this remaining tree cover is almost exclusively associated with areas of coffee production, where farmers maintain it as a source of shade for their coffee trees and coffee plantations. When farmers migrate from coffee production to other crops, they not only cut down their coffee trees, but also the trees that provide them with shade. Furthermore, fuel wood and charcoal requirements of the Haitian population has lead to greater loss of tree cover. Environmental degradation has rendered vast acreage of upland areas unfit for coffee production. Presence of shade trees is critical for coffee production and the loss of tree cover is threatening the survival of the coffee ecosystem in Haiti. The incentives to maintain the tree cover are fast disappearing due to competing pressures for alternate land use, fuel wood and charcoal requirements, and low remuneration from coffee sales. Farmers' decision to cut down shade-providing trees has long term repercussions, not only for their own 'creole gardens', but also for 'creole gardens' in lower laying regions. Removal of shade cover renders that area unfit for coffee cultivation and negatively impacts the productivity of the remaining crops in the 'creole garden'. It also poses significant challenges for neighboring farmers whose 'creole gardens' lie downhill, due to a decline in humidity and soil fertility levels, as well as an increase in soil erosion. Additionally, reduction in tree cover speeds up environmental degradation resulting in increased mud slides and flooding. To a large extend, managing this trend is beyond the capacity of the coffee supply chain actors alone and a large scale concerted action through public-private partnerships on maintaining and restoring tree cover is required.

ii) Access to credit

Haiti does not have a well functioning credit system for the rural market. Credit for the agriculture sector is highly rationed and the majority of the farming households are unable to make productive investments on their land due to lack of access to credit. The coffee sub-sector is in dire need of re-plantation but farmers have no access to credit which limits investment in coffee tree replanting and management activities. Furthermore, interest rates for credit, when available, are very high. The presence of microfinance is very limited and offers interest rates that are approximately 60 percent per annum. Such high interest rates make it unviable for farmers to borrow for longer-term investment in coffee production.

iii) Poor infrastructure

Coffee in Haiti is produced in the mountainous regions and the majority of the coffee production areas have limited access to roads. Farmers have to walk for hours before they can reach buying centers and it takes even longer to transport coffee cherries from the collection centers to the processing centers. While a few cooperatives have set up washing and drying stations at remote areas closer to the farmers, the majority of the producers do not have access to any washing or drying infrastructure, preventing them from producing high quality, higher value coffee.

iv) Unsecured land tenure situation in certain areas

In certain parts of the country, political instability in the past has led to a situation where the landowners are absent and farmers have been tilling the land for years, without formal property rights over it. Because they

fear being evicted, these farmers have no incentive to invest in the land they till, especially when it involves tree crops like coffee. In other areas, while the customary land rights are in place, absence of legal land registration and clear land titles often create ambiguity and conflict, especially when inheriting the land from parents/ relatives. Finally, in some areas farmers have been doing cultivation on public lands and do not have legal or customary entitlement on the land they supposedly control. While all these situations are common to the whole agricultural sector, the fact that coffee is a tree crop further exacerbates the problem as it involves a longer investment timeframe.

v) Aging coffee trees

The majority of Haitian coffee trees are between 30 and 40 years old, and some even older, a fact that reduces yields and limits the production of coffee beans. Coffee trees older than 15 years have passed their prime production period and old age makes them more susceptible to pest and disease attack. Aging coffee trees are a big constraint for the coffee sub-sector competitiveness and large-scale re-plantation efforts are required to boost coffee production.

vi) Aging farmers

Haiti has seen large-scale migration from rural to urban areas over the past two decades, primarily of younger people. This has resulted in the bulk of the farming currently being done by the older population. Besides affecting the agriculture sector in general, this also has serious implications for the long-term sustainability of the coffee sub-sector in Haiti, as there are fewer new farmers to replace the older ones that retire or die.

vii) Structure of the 'creole garden'

While the 'creole garden' system is considered ecologically sustainable and it ensures food security for the farming households by providing a wide variety of food and commercial crops, it is also a major impediment to improving productivity of coffee plants. The structure of the 'creole garden' is not suitable for intensive and proper management of coffee plants, leading to lower harvest levels and lower remuneration from coffee. Coffee was the primary cash crop during the 1970s and 1980s; however, in recent years its importance has diminished and become marginal in the mixed cropping system. According to a study (cited in Béhal, Joseph, 2007), coffee currently represents only 10 to 30 percent of the value added of peasant labor in the 'creole garden'.

viii) Waning government interest

There has been a gradual decline of government support to the coffee sub-sector. During the 1970s, the National Office of Coffee (ONCAF) provided a large range of services to the coffee sub-sector. Over the years, established organizations were abandoned and replaced by newer ones, often with fewer resources and smaller budgets. Institutions in the past used to have a budget from the public treasury which was complemented by the funds provided by international donors. INCAH was established with the goal of providing national coordination for the coffee sub-sector by bringing all coffee stakeholders, both in the private and public sector, into the forum. Since its inception, funds for INCAH have been reduced by the government and today it is currently staffed by only three people, thus being widely perceived as having insufficient resources to fulfill its mission of promoting the coffee sub-sector in Haiti.

5. Major risks in Haitian coffee supply chain and capacity to manage those risks

The coffee supply chain in Haiti confronts multiple risks. These risks are detailed below in Table 3 and grouped into three main categories: production risks, market risks, and other risks. The table also establishes a preliminary

identification of the group of stakeholders that is most likely to suffer losses from the realization of the enlisted risks. Due to the scarcity of data regarding coffee production, acreage, weather phenomena, and others at the national and regional level, quantification of risks and associated losses is problematic so the majority of this exercise has been of qualitative, rather than quantitative nature.

Table 3: Major risks in the coffee supply chain in Haiti

Identified Risks	Who suffers the most?
Production Risks	
Scolyte (coffee berry borer)	Farmers
Hurricanes	Farmers
Non-cyclone excess rain	Farmers
Failure to regenerate plantations/Non replacement of aging trees	Farmers
Market Risks	
International coffee price volatility	Exporters, cooperatives
Sharp exchange rate appreciation	Exporters
Steep increase in banks' interest rates	Exporters
Fall in domestic consumption	Local roasters
Decline of cross-border trade with the Dominican Republic	Farmers, traders
Exporters default on loans	Exporters, banks
Contract failure	Exporters, cooperatives
Transportation blockage due to damaged roads	Exporters, cooperatives
Cooperative failure	Farmers, cooperatives
Other Risks	
Political risk (changing government, coup, riots)	Exporters, traders, cooperatives
Labor risk	Commercial farmers/estates

(Source: Authors)

It is also necessary to contrast the identified risks in terms of the potential to produce losses to the industry and also in terms of the frequency of such events occurring. The combination of both variables (intensity and frequency) is captured in Table 4 below.

The identified risks located in the darkest brown area (upper right corner) of Table 4 represent risks that need the most urgent attention because they can potentially cause the highest losses (even at catastrophic levels) and are more likely to occur than other risks. The second level of importance is represented by the light brown boxes, whereas the clear boxes (on the left side of table) represent identified risks that, either have low potential

to cause damages, or their frequency of occurrence is also low. In the following paragraphs, only the risks mentioned in the brown shaded boxes will be addressed.

Table 4: Summary of risks: severity vs. probability

		Potential Severity of Impact				
		Negligible	Moderate	Considerable	Critical	Catastrophic
Probability of Event	Highly probable	International coffee price volatility	Transportation blockage due to damaged roads	Failure to regenerate plantations Political risk	Scolyte	
	Probable	Labor risk	Non-cyclone excess rain Hurricanes		Cooperative failure	
	Occasional	Contract failure			Exporters default of loans	
	Remote				Fall in domestic consumption Sharp exchange rate appreciation Steep increase in banks' interest rates	Decline of cross-border trade with the Dominican Republic
	Improbable					

5.1 Production Risks

Production varies in response to rainfall, temperature, floods, farmer decisions, and pest and diseases. Some of the major production risks for the coffee supply chain in Haiti include:

a. **Scolyte (coffee berry borer):** Coffee supply chains in Haiti suffer from a high risk of Scolyte infestation (the coffee berry borer is an insect that makes holes into coffee cherries damaging the coffee bean). Scolyte infestation leads to reduced coffee bean production, lower quality coffee and lower yields. The impact of this risk is multifaceted, with a reduction in high quality coffee for export, a reduction in income for farmers and an incentive for farmers to migrate away from coffee production. This risk is already prevalent across the Haitian coffee industry with infection rates ranging geographically between 20 and 50 percent. Key respondents interviewed for this Study, assert that 15 to 20% of the coffee production is lost annually as a result of this pest. Furthermore, Scolyte infected coffee cherry is purchased at a discounted price,

especially by the cooperatives. It also damages the stored coffee beans. Due to the existing prevalence of Scolyte in Haiti, the failure to tackle it effectively, and the losses suffered by the farmers, the impact of this risk has been classified as critical.

Scolyte is manageable and there are three well-known and effective means for controlling it (a triple-action integrated pest management approach). The three methods/techniques are: (i) cultural control; (ii) biological control; and (iii) ecological control (trapping control). If all three approaches are adopted consistently and implemented rigorously by coffee stakeholders, Scolyte infection can be greatly reduced. Over the years, many of the programs and practices in place for managing Scolyte have been cut back or disappeared entirely (including government agricultural extension services) and the incentives for the effective management of Scolyte have also banished. The inability to sell damaged crops to the domestic and Dominican markets at full price, greatly reduce the incentive for farmers to spend both time and money on controlling Scolyte at their plantations.

b. **Failure to regenerate plantations:** The risk of farmers failing to renew their coffee trees in a timely manner leads to an increase in the average age of the trees and important reductions in yields. This risk is highly probable as the average age of trees is already high (many are more than 50 years old whereas a tree starts to reduce its yield after 15 years of age). Farmers' continued limitations to plant new trees will keep increasing the average age of Haitian coffee trees. This risk is classified in vulnerability terms as medium level, based not on the harm that aging coffee plantations cause to the supply chains (which is high), but rather on the historically proven ability for coffee production to continue even with increasingly old coffee trees. The Haitian coffee industry continues to produce coffee even as the trees exceed the age of 50 to 60 years and hence, capacity to deal with this risk is reasonable (involving farmers accepting lower yields and lower incomes from coffee). Losses generated are significant but manageable, as proven by the continued production of coffee on aged and low yielding trees. However, the reductions in yield directly reduce farmer incomes thereby encouraging them to migrate away from coffee production.

c. **Hurricanes:** Certain areas (those near the coast) are more prone to hurricanes and coffee farmers frequently recount severe hurricanes (2004 and 2008) that affected production. Hurricanes damage coffee production by blowing the coffee cherries off the trees, consequently reducing that year's yield; by causing stress to trees, diminishing the following year's yield; and by knocking down trees, which will in turn, reduce longer term yields. Damage varies by region and the strength of the hurricane. The yield loss in the year of a hurricane for directly affected coffee plantations could range from 30 to 100 percent.

The historic frequency of hurricanes affecting coffee producing areas and coffee producers is reasonably high with two significant events recorded in the past five years. The coffee industry, however, has not been severely impacted by hurricanes and, as one exporter pointed out, the industry has been 'lucky' so far. Considering that the country lies in a hurricane prone zone, the Haitian coffee industry is at probable risk of damage from future hurricanes. However, the impact of hurricanes is perceived to be only moderate based upon the historic ability of the coffee supply chain to cope with their impact.

Hurricane damage can be mitigated by preventative action at the farm level by cutting off larger tree branches to minimize damage should the hurricane hit that farm (falling branches are a significant cause of hurricane related tree damage). However, farmers are often unwilling to invest in such measures, as they are not sure if a hurricane will hit their specific farm. In addition, even with preparatory actions, the high winds will anyway cause substantial cherry loss for that season. The impact/financial losses from hurricanes are

rated as medium rather than extreme based on the fact that, while the farmers' financial situation is adversely affected for that year (depending on the scale of cherry loss), they have historically been able to continue coffee production in subsequent years and self-manage the financial losses that occur.

d. **Non-cyclone excess rain:** Excess rain causes significant problems to the coffee sub-sector and generate financial losses usually based on the level of damage to quality, when beans cannot be effectively dried. Rainfall impedes coffee drying and the inability of farmers to perform this activity in a timely manner can lead to a dramatic reduction in quality as the coffee turns acidic due to inappropriate fermentation. Excess rainfall can also cause flooding which may prevent timely harvesting of cherries and may also result in disruption to transportation, further damaging the quality of the coffee and raising costs for the supply chain actors.

   The frequency of this problem, however, has led to many and varied coping strategies that have given Haitian coffee producers and stakeholders capacity and techniques to manage this risk, including the creation of drying tables with plastic covering, at-home drying (where coffee is speedily gathered inside should rain occur), transportation via alternative routes, and thorough waterproof packing of the coffee being transported. As such, the capacity to deal with this risk is good and therefore the actual vulnerability from non-cyclone excess rain is reasonably low.

5.2 Market risks

The majority share of the coffee trade in Haiti falls within the informal sector and, as such, its exposure to conventional market risks, usually associated with the coffee sub-sector elsewhere, is comparatively low. Yet the sector, especially the export supply chain, is exposed to currency volatility (sharp appreciation of the Haitian currency – the gourde), interest rates volatility and counterparty risk (exporters' default). Furthermore, both the risk of falling domestic consumption and the risk of the decline of cross-border trade with the Dominican Republic could have far reaching implications for the entire coffee industry in Haiti. All these risks are addressed in this section.

a. **Decline of cross-border trade with the Dominican Republic:** The Dominican Republic currently purchases approximately 28 percent of Haitian total coffee production and the risk of decline or collapse of this cross-border trade could have a significant impact on the coffee sector in Haiti. In many ways, the Dominican Republic traders are partially responsible for setting the Haitian coffee price (for cherries, 'café pile' and parchment). Their withdrawal might lead to a collapse in prices paid to farmers since they would face a decrease in demand and have no alternative but to sell domestically at lower prices. However, the likelihood of the Dominican Republic roasters/traders withdrawing from Haiti is seen as remote. Nonetheless, political reasons or trans-border trade issues could lead to a decline of coffee trade with the Dominican Republic.

   Such a decline in price would likely speed up the migration of farmers away from coffee to alternative crop types, particularly in those areas bordering the Dominican Republic. The capacity of Haiti to manage this risk is very low as, ultimately, the Haitian coffee sub-sector has no influence over the managerial expertise of the Dominican coffee roasters, the market conditions in the Dominican Republic, or the political situation between the two neighboring countries.

b. **Fall in domestic consumption:** At present, domestic consumption of both roasted coffee and 'café pile' accounts for over 64 percent of Haiti's total coffee production. Currently, the average Haitian annual per capita consumption of coffee is 2.1 kilograms; however, anecdotal evidence suggests that coffee is most

heavily consumed amongst older people. Should younger Haitians, who make up a large proportion of the country's population (over half of Haitians are less than 25 years old), fail to adopt their parents' coffee consumption habits, domestic demand for coffee may gradually decline in the medium to long term. The impact of falling domestic consumption would be a significant reduction in demand and, potentially, a surplus of lower-grade coffee on the market, driving down farm-gate coffee prices for farmers. Such a fall in prices would result in farmers being further pressured to migrate away from coffee production to alternative crops.

c. **Sharp exchange rate appreciation:** Coffee exporters sell their produce in US dollars while their input and production costs are exclusively in gourdes (HTG), the local currency. As such, any sharp appreciation in the Haitian currency against the US dollar could lead to profitable contracts turning into loss generating ones. Traditionally, the gourde has depreciated against the US dollar; however, on rare occasions, the reverse has occurred with short-term bouts of currency appreciation (for example, in 2007 the currency appreciated from 39 HTG per US$ to 35.5 HTG per US$). The coffee sub-sector and stakeholders have little control over movements in the Haitian domestic currency against the US dollar. While the government does have some control through the Central Bank, it is also very unlikely that they would intervene to protect the coffee industry should a sharp appreciation of the gourde occur. As such, the capacity for exporters and second level cooperatives (those in the coffee supply chain who are at risk from sharp appreciations) is limited. While risks could be reduced by shortening the time between purchasing coffee from farmers and delivering coffee to buyers, the reality of the Haitian coffee sub-sector prevents this from occurring. Additionally, all international coffee orders are set in US dollars preventing currency risk to be mitigated by selling in the local currency. Fortunately, the risk of sharp currency appreciation is relatively unlikely and the impact, should this occur, would be felt largely by the Haitian coffee export sector which accounts for less than 7 percent of total coffee production, limiting the industry wide impact.

d. **Steep increase in banks' real interest rates:** The coffee trading businesses in Haiti are reliant on access to borrowed funds for working capital to enable them to purchase, process, transport and deliver coffee to their international coffee buyers. Profit margins on coffee trading are reasonably tight and therefore a significant rise in the cost of finance could result in a profitable position turning into a loss making one. Such a scenario occurred in 2001 when interest rates rose from approximately 10 to 30 percent overnight. The 2001 dramatic rise in finance costs directly hit the Haitian coffee export sub-sector and bankrupted all Haitian coffee exporters (one continued to operate after 2001 following a recapitalization by its owners). This interest rate induced crisis destroyed the Haitian coffee export trade, and export volumes fell from 157,700 bags in 2000 to 38,965 bags in 2002.

   Should interest rates escalate dramatically again, there is the potential for coffee exporters to find themselves with significant losses and being forced to abandon the coffee exporting business in favor of more profitable commodities and economic activities. The likelihood of bank rates escalating so dramatically is remote, but the ability of the Haitian exporters to manage this risk is relatively low (there are few opportunities to borrow funds at fixed interest rates). The losses, should this risk occur, would not be very severe on the Haitian coffee industry as only the commercial exporters would be impacted and they account for a small percentage of total Haitian coffee sales. Additionally, the secondary level cooperatives that are also exporters remain immune to this risk as they are unable to currently borrow from commercial banks, and are already borrowing from international socially oriented lenders and higher-interest rate domestic credit unions.

e. **Exporters default on loans:** There is always a latent risk of exporters defaulting on their existing bank loans due to adverse shocks that could hamper their ability to fulfill coffee deliveries to their buyers. Shocks

may include weather related causes, quality or logistical issues, theft or violent destruction of property, all of which are outside of the exporters' control. The shocks would result in coffee either being destroyed or damaged and hence not saleable at the anticipated price. With the coffee business based upon borrowed working capital and repayment based upon the sale of coffee to buyers, this ultimately results in losses and the failure to fully repay bank loans. The probability of such events arising is occasional, but the impact would be critical, as any loss of one of the two remaining exporters would specifically do significant harm to the export coffee supply chain. However, overall vulnerability is reasonably low as the exporters have techniques and practices for dealing with shocks and ensuring that loans are repaid. The main shock-reducing mechanism is to cross-subsidize coffee trading with other, more resilient and less risky business activities, ensuring that if coffee revenue is not enough to cover any outstanding loan, they will still be able to repay it in a timely manner.

f. **Cooperative failure:** Federations have the potential to play a key role in the Haitian coffee supply chains even though they are responsible for processing and exporting less than 1.5 percent of the country's total coffee production. Their involvement in the higher value specialty coffee sub-sector enables them to pay higher prices to farmers than domestic or Dominican traders. In addition, these higher prices also increase competition for coffee and arguably raise the prices offered by commercial traders and intermediaries.

   Cooperatives and federations are democratic farmer organizations and while this can support their operation by ensuring solidarity amongst members, it can also prevent and limit effective managerial decision making and operational efficiency. Recently, some Haitian cooperatives/federations have experienced managerial and operational difficulties, leading to financial losses. However, these losses have been covered by donor organizations enabling the cooperatives to continue trading. Going forward, it is quite probable that losses may continue at one or more cooperatives, resulting in the ceasing of their operation. Should this happen the impact would be potentially critical as demand for coffee berries within that region would be reduced and local commercial traders may start to offer lower prices to coffee farmers.

g. **Transportation blockage due to damaged roads:** In general, road infrastructure in Haiti is in bad shape and the dilapidated rural road conditions are further aggravated during excessive rainfall and cyclones. Exporters and cooperatives narrated many incidences where the trucks were stuck in transit due to road blockage caused by extreme weather events. As a result, a small volume of coffee is lost every year. Vulnerability is reasonably low for this risk. While the losses can be high, if coffee is damaged by transport delays, the industry has developed coping strategies that have reduced the occurrence of losses (for example, by packing coffee with waterproof materials, using alternative transport routes when existing ones are blocked, etc.). Additionally, Haiti is reliant on a single port (Port au Prince) for exporting most of its coffee. Any unexpected event leading to a closure of the port (strikes, political unrest, an earthquake, etc.) could block coffee shipments leading to significant damages to the export supply chain.

5.3. Other risks

a. **Political risk:** Haiti has witnessed many political upheavals in the recent past and although the current regime is relatively stable, the UN peacekeeping force is assisting the Government of Haiti in maintaining peace and stability in the country. While political risk is high, the historically proven ability of coffee supply chains to cope, adapt and deal with political uncertainty, as shown by their continued existence through Haiti's most turbulent events, reduces the level of vulnerability to medium. Without a doubt, increased political stability and government focus on coffee would support the industry; however, at the present

time, as in the past, the industry has developed coping mechanisms to assist it in dealing (at a cost) with political risk.

6. Vulnerability to risks

Based on the risk assessment and capacity to manage risks described in the previous chapters, this section offers an additional step to identify the key weaknesses for each identified risk and group it under different levels of vulnerability – high, medium, and low. For the purpose of this exercise we can define vulnerability as a function of the expected losses from an adverse event and the capacity to respond to this risk. For instance, vulnerability is high when expected losses are high and the capacity to manage the risk is low. Vulnerability is low when the expected losses are low and the capacity to manage the risk is high. This last step in the analysis of risks not only allows a more comprehensive assessment of the level of risk, but also helps **to identify priorities to improve current risk management approaches**, pinpointing to circumstances where prevailing practices are unlikely to be sufficient given the potential severity of loss.

Even though at this stage the analysis is more qualitative than quantitative, the results shown here are useful for contrasting these findings with current risk management practices by stakeholders in the supply chain. Based on the information that was collected during the November 2009 mission and other background data, the effectiveness and current capacity for managing pertinent risks has been reviewed and rated utilizing the 1 to 5 scale outlined in Table 5 below, where scale 5 means high existing capacity to manage risks, and scale 1 stands for low capacity to manage them. Table 5 also ranks the risks in terms of expected losses from high to low.

Table 5: Vulnerability to risky events based on expected loss + capacity to manage risk

	- Capacity to manage risks +				
Expected losses	1	2	3	4	5
High		Scolyte T1	T2	T3	T4
Medium	Decline of cross-border trade with the Dominican Republic T1 T2	Failure to regenerate plantations T3	Sharp exchange rate appreciation Cooperative failure Hurricanes Political risk Steep increase in banks' interest rates T4	Non-cyclone excess rain Transportation blockage due to damaged roads Exporters default on loans T5	T5
Low					

The resulting matrix provides us with 5 sets of vulnerabilities to the identified risks in terms of their priority, from risks with the highest vulnerability in the boxes with the darkest shade, marked as T1 (Tier 1) in the upper left corner, to the risks ranked with the lowest vulnerability shown in the boxes with lighter shades at the right bottom corner of the table, marked as T5 (Tier 5). Between them lie three additional intermediate vulnerability levels.

Though risks for Tier 5 were not explicitly addressed in the assessment of each risk in the text of this document, they would definitely have to be taken into account when designing an integrated risk management framework. The importance of this matrix is that, through a process of prioritization, it is possible to identify those risks in Tier 1 and Tier 2 that are the ones mainly responsible for causing volatility of earnings for the various stakeholders. Managing these risks will, to a large extend, reduce risks for the entire coffee industry.

7. Priority measures for risk management

Though 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, **an illustration on how this next step can be approached** is presented in Table 6.

To think in terms of a comprehensive risk management framework it is useful to classify the measures or tools for risk management in terms of three main groups:

Risk Prevention/Reduction (ex ante). Actions taken to eliminate or reduce events from occurring (e.g. water draining infrastructure, crop diversification, extension, etc.).

Risk Transfer (ex ante). Actions that will reduce the exposure to such risks. Financial transfer mechanisms that will trigger compensation or reduce the losses in the case of a risk generated loss (e.g., purchasing insurance, re-insurance, financial hedging tools, etc.).

Risk Coping (ex post). Actions that will mitigate the losses caused by a risk event (e.g. government assistance to farmers, debt re-structuring, etc.). It could also be managed by shifting a country's focus from a post-disaster response to a proactive (ex-ante) risk management (e.g. through financial provisioning).

Table 6: Illustration of measures for a Risk Management Framework

Identified Risks	Proposed Risk Prevention/Reduction Actions (ex ante)	Proposed Risk Transfer Tools (ex ante)	Proposed Risk Coping Actions (ex post)
Scolyte	Integrated Scolyte control (biological control, insect traps, sanitary control, etc.) Premiums for controlling Scolyte (financial incentives) National program for collection of all cherries on the ground and on the trees at the end of the season		Boiling of infected cherries
Decline of cross-border trade with the Dominican Republic	Search for alternate markets Lobbying efforts/arrangements to maintain the trans-border trade		Search for alternate markets
Failure to regenerate plantations	Large scale program for coffee plantation regeneration Financial incentives for replanting coffee and shade tree Access to planting material Access to finance		
Sharp exchange rate appreciation		Currency hedging mechanisms	
Steep increase in banks' interest rates	Lock-in interest rates (fixed price borrowing) Credit facilities with international banks		
Hurricanes	Catastrophic insurance		Compensation programs Replanting
Cooperative failure	Capacity building External audit Commercialization of cooperatives Recruitment of good managers Prosecution of fraudulent activities		Integration with private players Market restructuring

8. Final remarks

Total production of Haitian coffee has already fallen by 50 percent between 1980 and 2007. There is a risk of further reduction in national coffee production over the longer term (10 to 20 years) which might limit Haiti's ability to supply coffee to commercial markets. This risk affects all the Haitian coffee supply chains, as reduced volumes would result in significant shortages for export (mainly to the Dominican Republic) and the domestic supply chains.

The factors contributing to the long term reduction in Haiti's coffee supply are complex, interrelated and challenging to control, address, and manage. Long term supply failure is occurring due to a large number of factors including: low coffee prices; higher income earning opportunities for farmers from alternative crop types; lack of affordable and accessible finance preventing investment in both plantation regeneration and infrastructure; significant disincentives to invest in improved coffee production (land security issues); volatile yields for coffee based on both climatic/weather and pest occurrences; insufficient and uncoordinated government and NGOs agricultural coffee extension services for farmers; and managerial issues and constraints at both the primary and secondary cooperative levels reducing market access to higher value coffee sales channels. All of these factors are compounded by a high level of political uncertainty in Haiti, and a lack of clear public policies, support and leadership for the coffee sub-sector.

After visiting multiple field sites, interviewing the entire spectrum of stakeholders in the coffee supply chain, and analyzing the significant literature on the sector, there is a consensus about the risks that threaten the existence of the coffee supply chain in Haiti. Managing those risks will require concerted efforts of multiple stakeholders and strategic investment from donors in risk prevention, risk transfer, and risk coping mechanisms.

The wider constrains and longer term risks to the coffee sub-sector need public sector interventions to strengthen livelihood at the household level and a comprehensive plan to revitalize coffee production, including the regeneration of coffee plantation, national Scolyte control, supply chain integration, institutional strengthening, and natural resources management (including reforestation) at the local, district, and national levels. Piecemeal efforts, often targeting the niche supply chain (gourmet market) will have a limited impact since they affect a very small number of producers. Domestic roasters and commercial exporters provide some opportunities for improvement in the sector owing to their ability to influence a sizable volume (12 percent) of the coffee flow. Achieving large scale improvement in the sector, however, will require direct engagement with the artisanal coffee supply chain and the informal trade with the Dominican Republic since these two chains constitute 86 percent of the coffee supply (by volume) in Haiti.

This document highlights and prioritizes risks in the Haitian coffee supply chain and it can be used to stimulate discussion and inform the planning of a long-term coffee revival strategy. While immediate and short terms measures need to be taken to address some of the inminent risks, revival of the coffee sub-sector will be determined by the long terms measures taken to build resilience of the Haitian coffee supply chain against internal and external shocks and its ability to manage economic, demographic and environmental changes.

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Annex 1. Haiti Coffee Supply Chain Risk Assessment Agenda

List of interviewed stakeholders

Date	Organization	Category
Nov 2nd: Port au Prince	INCAH	Government
	IDB Rural Supply Chain Finance Project	Government
Nov 3rd: Port au Prince	IDB	Donor
	Rebo	Exporter
	Alternative Insurance Company	Insurer
	FACN	Cooperative Exporter
Nov 4th: Port au Prince	USAID MarChE Project	Donor Project
	ICEF – DA	NGO
	EU PRIMA Project	Donor Project
	Jean Louis	Independent Consultant
Nov 5th: Baptiste	COOPECLAS (Las Cahobas)	Credit Union
	CAB (Cooperative Agricommercialization Baptiste)	Cooperative
	UCOCAB	Cooperative Union
	Commercial farmer	Commercial Farmer
	Visit to two washing and drying stations	
	Visit to one farmer's field	
Nov 5th: Thiote	Department of Agriculture	Agronomist
	Visit to Government Lab (Scolyte treatment lab)	
	COOPCAB	Cooperative Exporter
	Tour of the Coopcab Milling and Processing Plant	
	ABCAB	Credit Union/MFI
	Credit Sud (CRIPSE)	Credit Union
	Small estate farmer	Commercial Farmer
Nov 6th: Baptiste	Visit to pulping machine	Processor
	Meeting with two *commissionaires*	Intermediary/trader
	Visit to a 'madam sara' who collects cherries at farm-gate	Intermediary/trader
	Visit to a 'madam sara' in the market	Intermediary/trader
	Visit to market	
	Visit to a small farmer	Farmer
Nov 6th: Thiote	Small estate farmer	Commercial Farmer
	AVSF (Regeneration Process)	Regeneration Project (funded by WB)
Nov 6th: Jeremie	CAPAJ	Credit Union
	COHIMRU (Haitian Humanic Centre for Intervention in Rural and Urban Areas)	NGO
	Fonkoze	MFI

Nov 7th: Marmelade	Visit to popular market in Pont-sonde	
	Interview with two 'madam sara' who sell roasted coffee	Intermediary/trader
	Farmer	Farmer
	Visit to FACN facilities	Cooperative Exporter
	Meeting with Cooperative president	Cooperative
Nov 7th: Bomo	ADAIB (Association Development AgroIndustry Beaumont)	Association
	FACN	Cooperative Exporter
Nov 8th: Marmelade	Meeting with artisanal roaster	Artisanal roaster
	Meeting with ex-speculator	Intermediary/trader
	Meeting with one current speculator	Intermediary/trader
	Meeting with farmers in the hill	Farmer
Nov 8th: Bomo	Meeting with farmers	Farmer
	Visit to Weiner's washing station	Exporter and roaster
	Bomo Cooperative	Cooperative
Nov 9th: Jeremie	USAID Consultant	Cocoa consultant
Nov 9th: Port au Prince	Wiener	Exporter and roaster
Nov 10th: Port au Prince	Fonkoze	MFI
	FDI (Fonds de Development Industriel)	Investment Fund/Lending Institution
	CNIGS (Centre National De Information Geographic System)	Ministry of Agriculture
	Water Resource Authority	Ministry of Agriculture
	Agriculture Training Institute	Ministry of Agriculture
	General Director and team	Ministry of Agriculture
Nov 11th: Port au Prince	IICA	International Organization
	Oxfam GB	NGO
Nov 11th: Jacmel	Federation De Association	Cooperative
	Farmers' Association	Cooperative
	Commercial farmer	Farmer
	2 small farmers	Farmer
	Visit to cooperative washing stations	
Nov 12th : Port au Prince	Data analysis and mission meeting	
Nov 13th: Port au Prince	Preliminary result presentation and multi-stakeholder meeting	

Annex 2. List of participants at the Haiti Coffee Supply Chain Risk Assessment Meeting: November 13, 2009

Name	Organization
Angred Hobert	INCAH
Paul Webber	European Commission
Maurice Weiner	Geo Wiener SA (exporter and roaster)
Normal Weiner	Geo Wiener SA (exporter and roaster)
Douglas Weiner	Geo Wiener SA (exporter and roaster)
Marcelin Gary	ANACAPH
Cedric Brandt	USAID MarChe
Lhermite Francois	FDI
Alfredo Mena	IICA
Edouard Sanon Guercin	FACN
Frank Robert	PRIMA/EU
Jean Marc	Rebo SA (Roaster)
Gilbert Gonzaces	Rebo SA (Roaster)
Paula Maria Valdettaro	OXFAM

Annex 3. Glossary of key terms

***Arabica* coffee:** One of the two major species of coffee, the other being *Robusta*. *Arabica* coffee grows at higher elevations and contains half the caffeine of *Robusta*. It is considered the premium variety; nearly all specialty coffee is *Arabica*.

'Café pile': Low quality unwashed coffee in which coffee cherries are simply dried into a thick black crust around the bean and then removed with the aid of a mortar and pestle.

Coffee cherry: A coffee cherry consists of four layers which are removed sequentially. The coffee bean is the seed of the coffee cherry and is covered with silver skin, parchment, pulp, and an outer skin layer. The method of removal of these layers dramatically alters the flavor.

Dry-processing: A coffee processing method that involves removing the husk or fruit after the coffee berries have been dried, also known as the natural method. The result is often inferior to washed coffee or coffee that is wet-processed.

Green coffee: Unroasted coffee beans that look and taste green.

Parchment: The thin crumbly paper-like covering that is left on wet-processed coffee beans after the coffee berries have had the pulp removed and the beans dried.

Semi-washed coffee: In semi-washed processing, the cherries are de-pulped to remove the pericarp. After this, the removal of the slimy mucilage layer that covers the bean takes place. This is done mechanically by feeding the beans into a cylindrical device which conveys them upward. While the friction and pressure exerted on the beans by this process is enough to remove most of the mucilage, a small amount of it will still remain in the centre cut of the beans.

Washed coffee: Coffee prepared by removing the pulp and skin from the beans while the coffee bean is still moist.