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HAITI

SCALING UP THE SMALLHOLDER ALLIANCE FOR SORGHUM IN HAITI (SMASH)

(HA-M1050)

DONORS MEMORANDUM

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TABLE OF CONTENTS

PROJECT SUMMARY

SCALING UP THE SMALLHOLDER ALLIANCE FOR SORGHUM IN HAITI (SMASH)

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The project will support the Smallholder Alliance for Sorghum in Haiti (SMASH) program, which seeks to create a new and efficient value chain for sorghum that is based on international standards. Sorghum is one of the most widely grown staple crops in Haiti and plays an important role in food security for the rural population, especially in dry areas where higher value crops cannot be grown. In Haiti, the grain has typically been used for local human consumption and as fodder for animals. However, a new market for sorghum is emerging, driven by the private sector brewery Brasserie Nationale d'Haiti (BRANA). The company has committed to sourcing locally grown sorghum to supply its production operations with the objective of reducing its imports of malted barley. BRANA estimates that it will require 3,000 metric tons annually of high quality sorghum to meet its production targets.

The primary focus of this project is on the integration of smallholder farmers into the sorghum value chain. The project will be executed by Papyrus, a local project management firm with experience in agribusiness and supply chain development. The project seeks to provide access to markets and skills for up to 18,000 smallholder farmers, from five departments of Haiti, who are already or will be engaged in the cultivation of sorghum. Through a market-driven approach, the project will increase farmers' yields and thus their income by testing and introducing new varieties, providing training on good production and processing techniques, and improving access to finance. The project also expects to have a systemic impact by creating a new market, generating new jobs, and bringing greater organization and efficiency to the supply chain. The expansion of the sorghum value chain is also expected to increase the volume and quality of sorghum available for local consumption, thus enhancing domestic food security.

Sorghum also represents a more climate resilient crop, particularly with respect to increasing drought, soil salinity and higher temperatures. For this reason, this project will benefit from an additional US$450,000 in grant resources from the PROADAPT Facility. PROADAPT is funded by the MIF and the Nordic Development Fund and aims to build climate resilience in selected productive sectors in Latin America and the Caribbean. In this project, PROADAPT will build capacities for effective climate resilient agricultural practices in sorghum cultivation.

Under a separate loan operation, the SMASH program will benefit from US$3 million in reimbursable funding from the Pilot Program on Climate Resilience (PPCR), a funding window of the Climate Investment Funds. The proposed lending operation, which will be designed and managed by the MIF, is expected to provide long-term loans to selected microfinance institutions in Haiti, which will on-lend to sorghum farmers for investments in adaptive and productivity enhancing practices.

ANNEXES

ANNEX I	Logical Framework
ANNEX II	Budget Summary
ANNEX III	Quality for Effectiveness in Development (QED)

APPENDIXES

Draft Resolution

INFORMATION AVAILABLE IN THE TECHNICAL DOCUMENTS SECTION OF MIF PROJECT INFORMATION SYSTEM

ANNEX IV	Detailed Budget
ANNEX V	Preliminary List of Milestones
ANNEX VI	Diagnostic of Needs of the Executing Agency (DNA)
ANNEX VII	Project Status Reports (PSR), Compliance with Milestones, Fiduciary Arrangements and Integrity Due Diligence
ANNEX VIII	Procurement and Contracting Plan
ANNEX IX	Project Activities Schedule
ANNEX X	Operating Regulations
ANNEX XI	Terms of Reference of the Project Coordinator

ACRONYMS AND ABBREVIATIONS

AOP	Annual Operating Plan
BRANA	Brasserie Nationale d'Haiti
DNA	Diagnostic of Executing Agency Needs
HTG	Haitian Gourdes
IDB	Inter-American Development Bank
LAC	Latin America and the Caribbean
MIF	Multilateral Investment Fund
MT	Metric Tons
OR	Operating Regulations
PPCR	Pilot Program on Climate Resilience
PPI	Progress out of Poverty Index
QED	Quality for Effectiveness in Development
RND	Environment, Rural Development Disaster Risk Management Division of the IDB
SMASH	Smallholder Alliance for Sorghum in Haiti
SME	Small and Medium Sized-Enterprise
SYFAAH	Système de Financement et d'Assurances Agricoles en Haïti
TOR	Terms of Reference
USAID	United States Agency for International Development

PROJECT INFORMATION

SCALING UP THE SMALLHOLDER ALLIANCE FOR SORGHUM IN HAITI (SMASH)

(HA-M1050)

Country and Geographic Location:	Haiti: West, South, Artibonite, Plateau Central and North Departments		
Executing Agency:	PAPYRUS S.A.		
Access Area:	Access to Markets and Skills (AMC)		
Agendas:	Linking Small-Scale Farmers to High Value Markets Adaptation to Climate Change		
Coordination with Other Donors/Bank Operations:	The project will complement IDB operation HA-L1050/HA-G1022 "Pilot Program of Support to Productive Value Chains". A complementary PPCR loan program is being prepared in collaboration with the Bank's Climate Change and Sustainability Division (INE/CCS).		
Direct Beneficiaries:	Up to 18,000 smallholder farmers, who will benefit from training and services provided by the program. Approximately 20% of the beneficiaries are women.		
Indirect Beneficiaries:	90,000 dependents and family members of smallholder farmers (assuming 5 additional members per household)		
Financing:	Technical Cooperation:	US$ 2,020,807	24%
	PROADAPT Facility	US$ 452,796	5%
	Investment:	US$ 000,000	
	Loan:	US$ 000,000	
	TOTAL MIF FUNDING:	US$ 2,473,603	29%
	Counterpart:	US$ 5,794,455	71%
	Co-financing (if available):		00%
	TOTAL PROJECT BUDGET:	US$8,268,058	100%
Execution and Disbursement Period:	48 months of execution and 54 months of disbursement		
Special Contractual Conditions:	Conditions prior to first disbursement will be: (i) approval by the Bank of the Program Operating Manual and Annual Operating Plan for the first year; (ii) duly amended partnership agreement integrating the MIF as an equal voting member of the Steering Committee with BRANA, Papyrus S.A. and USAID;		

	and; (iii) executed agreement showing USAID's commitment to the project.
Environmental and Social Impact Review:	This operation was screened and classified as required by the IDB's safeguard policy (OP-703). Given the limited impacts and risks, the proposed category for the project is C.
Unit with Disbursement Responsibility:	MIF/CHA

1. BACKGROUND AND JUSTIFICATION

A. Diagnosis of the Problem to be addressed by the Project

1.1. **Background.** The growing demand for food and agricultural products worldwide has led to new economic opportunities for smallholder farmers in developing countries. More than half of the food produced in Latin America and the Caribbean, including most staple crops, comes from the region's 14 million smallholder farmers[1]. As more companies are tapping into smallholder value chains to secure a sustainable supply for their products, smallholder farmers can play an important role in meeting the demand for commodities in local and global markets.

1.2. In Haiti, one such opportunity has emerged for small-scale sorghum producers. Sorghum, a staple grain, is one of the most widely grown crops in Haiti and plays a role in food security for the rural population. Unlike traditional cash crops such as coffee and cocoa, sorghum has been cultivated as a subsistence crop receiving little support from the government or commercial actors. It is cultivated in some of the country's poorest regions by an estimated 200,000 farmers on plots which average less than two hectares. In 2013, the Food and Agricultural Organization estimated national sorghum production at 108,132 metric tons, an increase of 17.5% from the previous year. Traditionally, farmers grow sorghum to meet household food needs and sell surplus stocks to local traders[2]. In rural areas, sorghum plays a vital role as a food security crop because it is easy to grow, resistant to pests and weeds, and can thrive even in marginal and arid lands.

1.3. Although it is one of the world's most important staple crops for the rural poor, sorghum is also widely used in the global beverage industry as a main ingredient in the brewing of beer and malt drinks. Brasserie Nationale d'Haiti (BRANA)[3], the first and only brewery in Haiti, is driving the creation of a new local market for commercial quality sorghum to supply its brewing operations. Until recently, the company has relied on imported malted barley to produce a popular non-alcoholic drink, Malta H, for the local market. In July 2013, BRANA launched the SMASH program (Smallholder Alliance for Sorghum in Haiti), a local sourcing program to substitute its yearly purchases of imported malted barley with locally grown sorghum. As part of its shared value approach, the company is committed to empowering the communities where it operates by contributing to local sourcing for packaging and raw materials. Through its

[1] The Next Global Breadbasket: How Latin America Can Feed the World: A Call to Action for Addressing Challenges & Developing Solutions. Inter-American Development Bank. 2014

[2] Sorghum is traded by intermediaries knows as "Madame Saras" who purchase from producers and sell to urban merchants. Some Madame Saras purchase large stocks and sell in the main consumer centers of Port-au-Prince and Cap Haitien. The number of Madame Saras involved in the sorghum trade is estimated at 12,000.

[3] BRANA was acquired by multinational beer company Heineken in December 2011 making it a part of Heineken International.

Fondation BRANA, it supports activities in education, environment management, renewable energy, and drinking responsibly.

1.4. The SMASH program presents an opportunity for farmers to increase productivity and participate as suppliers in the new market for commercial sorghum. With BRANA committing to purchase 3,000 metric tons of sorghum annually, the SMASH program intends to create economic opportunities for entrepreneurial farmers. A pilot phase of the program is currently under way in the West department where more than 650 farmers have been trained and 409 metric tons of sorghum have been purchased through contracts with farmer organizations. To lead this effort, BRANA has committed to investing US$2 million of its own resources to build the local supply chain. In June 2014, the program received an additional $1.7 million in grants from USAID and currently MIF funding is being sought to expand the program and reach up to 18,000 small-scale farmers in commercial sorghum cultivation.

1.5. From a broader perspective, SMASH has the potential to create a new industrial value chain which could supply other local industries with grain. For example, Haiti Broilers, an industrial poultry farm, would be prepared to purchase local sorghum for animal feed once farmers are able to compete with imports on price and quality. Similarly, the local food industry is interested in sourcing sorghum as an ingredient for school lunch programs and baked goods. An estimated 1.5 million people consume sorghum, 33 percent of whom live in urban areas.[4] With new buyers in place, it is forecasted that the commercial sorghum market could demand upwards of 120,000 metric tons per year by 2017.[5]

1.6. **Problem analysis.** Sourcing the necessary volumes of commercial quality sorghum on the Haitian market has been challenging. The production base comprises small-scale farmers in various regions of the country who cultivate and process using subsistence practices. Producers lack access to improved inputs, technologies, infrastructure and financing to improve yields. Furthermore, low productivity and inefficiencies in the supply chain make local sorghum more expensive than imported grain. For example, as of January 2015, the purchase price of one ton of locally grown sorghum was approximately US$400 compared to $US220 for imported sorghum. This is a major cost disincentive for large buyers to source locally. **Thus, the central problem this project aims to address is that the sorghum production of smallholder farmers in Haiti does not meet the supply needs of commercial buyers.** This problem is linked to the following main causes:

1.7. Low productivity and yields: Low productivity among small-scale farmers is due to small farm size, poor inputs, and reliance on less efficient agricultural techniques. Producers generally use manual techniques for soil preparation, sowing and harvesting activities with no improved technologies. Because of poor seed storage, producers achieve only a 40% to 50% germination rate on their plots, compared to more than

[4] Paul, G. Identification de crénaux potentiels dans les filières rurales haïtiennes : Filières céréales, riz, mais, sorgho ; Filières des légumineuses, haricot, arachide et pois congo ; Filière banana. 2005.

[5] Forecast estimates provided by the executing agency, Papyrus S.A.

85% germination rate for well stored seeds. As a result, sorghum yields vary from 0.75 - 1.5 tons per hectare, whereas improved inputs and techniques would more than double yields to 3-4 tons.

1.8. Inadequate Processing Techniques: It is estimated that up to 20% of harvested sorghum is lost because of inadequate processing techniques and poor storage. Traditional processing consists of dehulling the grain by pounding followed by sieving. This method yields a poor-quality product. Sorghum must be properly dried, milled, sieved, bagged, labeled, and stored in order to guarantee the level of quality required for industrial food processing. Access to processing technologies and basic equipment (drying surfaces, tarps, sieves, and moisture meters) to dry and thresh sorghum is a major constraint. Furthermore, poor storage infrastructure leads to further losses for farmers in the processing stage.

1.9. Limited access to finance: Only 22% of the Haitian population has access to formal sources of finance and financial services compared with 39% of the population in LAC.[6] This problem is even more acute in the agricultural sector. While 23% of the Haitian economy is linked to agriculture, only 0.02% of the banks' credit portfolio is allocated to this sector.[7] Without access to credit on reasonable terms, farmers are often unable to purchase improved inputs (seed, fertilizers etc.) or to hire tractor services for planting and harvesting. Moreover, they are unable to cover regular household expenses during the harvest season. Their immediate need for cash creates pressure to pre-sell the harvest to intermediaries at a deep discount. The result is a significant loss in potential earnings and a missed opportunity to access higher value markets.

1.10. Inefficient and fragmented supply chain: The sorghum supply chain is highly fragmented and inefficient. Generally, sorghum is not cultivated as a cash crop and therefore few well-functioning farmer organizations are organized around its production. As a result, the sector is underpinned by a large number of small-scale producers who farm independently and to a lesser extent a handful of well-functioning farmer organizations. Trading tends to be regionally organized and is carried out by an estimated 12,000 intermediaries who buy and sell in hundreds of provincial, regional and city markets. A high percentage of the grain is sold in the same region where it is produced and prices can vary significantly from one region to another. Building a commercial level supply chain requires greater economies of scale and efficiencies to deliver the product with fewer steps and better quality management. Thus, an important challenge is to design and pilot an efficient supply chain model to bring more organization to the supply chain and to promote direct purchasing from farmers and well-functioning farmer organizations.

1.11. Given the climate change challenge to this and other crops, this project will also aim to build a climate resilient supply chain. Climate change introduces a cross cutting challenge to the growth of a sustainable sorghum value chain. Haiti has been categorized as one of the countries facing extreme risks from the impacts of climate

[6] World Bank

[7] Daniel Boutaud et al. 2014. "Etude Thématique: Rapport Final Intégré." (Commissioned by the MIF)

change by 2025[8]. The Haitian Ministry of Environment has predicted a minimum of 0.7°C to 1.3°C increase in temperature between 2011 and 2070, a reduction in rainfall, and rise in the sea level. In order to sustain productivity and adapt to these changing conditions, firms and farms in the agricultural sector will need to make adjustments to the "business as usual" approach. This will require the implementation of various adaptive measures including new or improved cropping practices, crop diversification, drought resistant crop varieties, and improved small scale infrastructure.

1.12. Due to the combined effects of the challenges described above and the absence of a secure market, commercial sorghum production is not yet profitable for the small-scale farmer. According to data collected by the executing agency on the group of pilot farmers, it costs approximately HTG 12,000 ($250) to plant and harvest each hectare of sorghum (with hired labor and basic tools yielding 800kg) but the expected revenue of selling in the market is roughly HTG 8,500 ($180). In practice, many farmers are able to reduce production costs and improve their margins by relying on household labor for plowing, sowing, and harvesting.

1.13. Overall, the creation of a new value chain for sorghum is expected to have a positive impact on producers' incomes. Under a low-case scenario, farmers who apply some improved practices and use hired labor can expect to have yields of at least 1.5 metric tons per hectare. Estimated revenues ($481) and costs ($374) result in a net margin of $107 at the current price of HTG 18,600/US$395 per metric ton[9]. Should the price decline by 20% to HTG 14,800/US$316 over the next 3 years, margins will remain positive but will decline to US$31 per hectare. Under a high-case scenario, farmers who apply improved practices, hired labor, and tractor services would have yields of at least 2 metric tons, increase their profit margin to $282 per hectare, and thus be more insulated from fluctuations in the local price.

1.14. The project is expected to double yields to 3-4 tons and establish a secure farm gate price which pays farmers a premium compared to selling to intermediaries in the spot market. Currently sorghum farmers receive $213 per metric ton on the local market from intermediaries (Madame Saras) compared to $395 paid by BRANA for higher quality sorghum. Since launching SMASH in 2013, BRANA has set an initial price close to about $400 per metric ton and going forward its strategy is to adjust this price seasonally based on both local and international price developments. Eventually higher sorghum production and greater efficiencies in the value chain will result in a more competitive local price. However, productivity gains by farmers and a more secure market are expected to offset the effect of lower prices on profit.

[8] Global survey from the U.K. risk analysis firm Maplecroft.

[9] Under these estimations it is assumed that farmers sell up to 70% of the sorghum crop to BRANA, a portion to Madame Sara, and keep a small amount for household consumption.

B. Project Beneficiaries

1.15. In Haiti, almost 80% of households engage in farming and agriculture is the main source of livelihood for a large share of the population, especially in rural areas[10]. The project will benefit up to 18,000 farmers in five of the ten departments that make up Haiti. It is estimated that about 10,000 will ultimately become sorghum suppliers under the SMASH program. The pilot phase has already been launched in the surrounding areas of Port-au-Prince[11]. MIF funding will be used to expand the program to additional farmers and other sorghum growing regions. The project will target farmers in the following departments where there is high potential for commercial sorghum cultivation: North and North East Departments: Limonade and Malfety (2,000 farmers); Artibonite: Gonaives and St. Michel (2,000 farmers); Center: Hinche (3,000 farmers); West Department: Croix des Bouquets (4,000 farmers) Cabaret and the surrounding areas of Port-au-Prince (3,000 farmers); and South Department: Les Cayes, Camp-Perrin, and Cavaillon (4,000 farmers).

1.16. Data collected on the pilot group of 650 sorghum farmers already participating in the SMASH program indicate that the average SMASH farmer is male, 43 years old, and cultivates sorghum on several small plots averaging less than half a hectare. Women farmers account for 26% of the sample. Typically women have less access to agricultural credit, education, training than their male counterparts. Under the SMASH program, women will have equal access to the inputs, training sessions, credit and financial services provided.

1.17. There is a high poverty incidence among sorghum farmers in the sample. Using the Progress out of Poverty Index (PPI)[12], the data indicated an average poverty likelihood of 50.7% for farmers in the sample. In other words, there is a 50.7% probability that a farmer in the sample is poor, i.e. has expenditure of less than $1/day. With respect to gender, women in the sample fared worse than men. Overall, women in the sample had a poverty likelihood of 61% compared to a poverty likelihood of 40% for men.

C. Contribution to MIF Mandate, Access Framework and IDB Strategy

1.18. This project will contribute to both poverty reduction and private sector development by reducing competitiveness bottlenecks that limit the participation of small holder sorghum farmers in agricultural value chains in Haiti. The project will increase farmers' productivity and thus income from sorghum sales by providing direct training and facilitating finance. It will also contribute to the creation of a new value chain in Haiti, anchored by improved agricultural techniques, improvements in the supply chain

[10] Investing in People to Fight Poverty, World Bank Group and NPES Haiti. http://www.worldbank.org/content/dam/Worldbank/document/Poverty%20documents/Haiti_PA_overview_web_EN.pdf

[11] In June 2013, Papyrus began execution of the pilot phase in the West Department. The firm has been retained as executing agency to scale the project to additional regions.

[12] The PPI is an example of an indirect poverty measurement methodology. Although there is no official poverty line for Haiti, the Progress out of Poverty Index (PPI) employs a methodology that is able to estimate the likelihood that a person has expenditure of less than $1/day

(organized collection points, improved storage, better packaging, transport and handling), and established quality standards as well as innovative contracting and payment methodologies.

1.19. Link to the Agenda and MIF Haiti Strategy. The project is aligned with the MIFs Agendas on "Linking Small-Scale Producers to High Value Agricultural Markets" and "Adaptation to Climate Change". This project will contribute to reducing the Agenda/Topic's knowledge gaps by generating knowledge and lessons learned on: (i) local sourcing for local markets as a strategy to contribute to sustained participation of smallholders in value chains over time; and (ii) making the business case for small-scale producers to adopt resilience solutions. The project is also aligned with the document MIF Priorities in Haiti: An Agenda for Change (MIF/GN-196), which identifies the domestic sorghum market as a high potential value chain for smallholder inclusion and poverty reduction.

1.20. Alignment with IDB Country Strategy. The Bank's Country Strategy identifies six priority sectors for support in Haiti. This project falls under the priority of promoting and supporting private sector development, particularly the development of SMEs in strategic areas such as agriculture. It is aligned with this strategic priority area by promoting the expansion of a high potential value-chain and by encouraging the integration of large numbers of smallholder farmers into an inclusive agricultural business model.

1.21. Collaboration with the Bank Group. The project team explored synergies with a number of Bank programs focused on the agricultural sector in Haiti. The first is a $40 million investment grant from the Bank supporting technology transfer to small farmers (HA-L1059/HA-G1025) for crops such as sorghum, cocoa, maize, mangoes, coffee, and beans. This operation provides smart subsidies to farmers incentivizing them to adopt new inputs, technologies, and agricultural practices. Its approach is to reduce risk, cost, and informational barriers to access new technologies for farmers in a broad range of crops. Alternatively, the SMASH program is focused on market development and the sustainable integration of farmers into a single value chain where a commercial opportunity has emerged. The strong market incentives and supply chain approach already built into the SMASH program (guaranteed market, secure prices, farmer trainings) do not warrant the use of subsidies to farmers. However the team will continue to reevaluate opportunities for future coordination.

1.22. Second, a proposed Pilot Program of Support to Productive Value Chains (HA-L1050/HA-G1022, investment grant of $23 million including co-financing and counterpart funds) aims to create employment opportunities in value chains that are led by anchor companies. As this operation in early stages of design and not yet under implementation, the demonstration effect of the SMASH project will contribute important lessons learned for completing the project design and for supporting inclusive business models in other high potential value chains.

1.23. Third, the Northern Economic Pole Business Accelerator Program (HA-L1068) offers opportunities for small enterprises to boost their productivity and reach new markets. This operation can complement the SMASH project by offering business development services and seed capital to interested SMEs and producer organizations seeking to

expand their operations in the sorghum supply chain. The project will promote dialogue with the accelerator program to identify specific areas for collaboration.

1.24. Lastly, the Bank's Climate Change and Sustainability Division (INE/CCS) will collaborate with the project team to develop the final PPCR proposal seeking $3 million in loan funds to increase the supply of agricultural finance available to the sorghum value chain and promote climate resilient agricultural practices.

2. PROJECT DESCRIPTION

A. Objectives

2.1. The project objective at the impact level is to increase the incomes of small-scale sorghum farmers in Haiti. The project objective at the results level is to enhance the capacity of small scale producers to supply quality sorghum to commercial buyers and local markets on a long-term basis and at a competitive price.

B. Description of Model/Solution/Intervention

2.2. The primary focus of this project is on the integration of smallholder farmers into the sorghum value chain in Haiti. The SMASH program has been designed to leverage the expertise of a combination of partners to solve key constraints to the development and expansion of the sorghum value chain. The model combines the comparative advantages of the following actors: lead firm Brasserie Nationale d'Haiti (BRANA), sustainable agriculture and crop experts from the EARTH University (Escuela de Agricultura de la Región Tropical Húmeda) in Costa Rica, the social investment fund Root Capital[13], and the agricultural finance guarantee program SYFAAH (Système de Financement et d'Assurances Agricoles en Haïti)[14].

2.3. The intervention has been designed to address four key areas: access to markets, access to technology and training, access to finance, and the development of an efficient supply chain.

2.4. Access to market: BRANA'S commitment as a buyer is expected to create price stability and a favorable climate for producers to invest in production capacity. As a key partner, BRANA will be a major off-taker but the project will promote commercial links with other potential buyers in the value chain (i.e. the poultry industry, bakeries, and school feeding programs). BRANA's pricing policy has been designed to effectively compete with the large number of intermediaries that buy sorghum to trade in regional markets.

[13] Root Capital is a nonprofit social investment fund that grows rural prosperity in poor, environmentally vulnerable places by lending capital, delivering financial training, and strengthening market connections for small and growing agricultural businesses.

[14] SYFAAH is a project funded by the government of Canada that aims to set up an agricultural finance and insurance system in Haiti that will structure the financial services offered to agro-entrepreneurs with the ultimate goal of rebuilding the rural and agricultural economy, creating jobs and improving food security in Haiti.

BRANA is expected to adjust the price each year based on both local and international price developments but would aim to keep the price relatively stable so that farmers will perceive it as reliable. The company requires higher quality sorghum and thus pays a higher than market price in order to incentivize farmers to comply with quality checks and sell into the commercial supply chain.

2.5. Access to technology and training: Earth University has extensive experience in researching and formulating innovative solutions to challenges in sustainable agriculture. Technical experts from the university will contribute new knowledge and technology by developing special sorghum varieties adapted to local climate conditions. Based on the results of seed testing, they will assemble a climate smart technical package of inputs and training materials to deploy to farmers. A team of up 17 to 20 extension agents (both male and female) will be trained and hired to deliver this new knowledge to farmers and farmer organizations.

2.6. Access to finance: The project will address the critical need for working and investment capital to finance inputs, labor and services needed for production. First, the project will work with SYFAAH to increase the supply of agricultural finance available to sorghum farmers and SMEs in the value chain. In coordination with the Haitian government, SYFAAH has established an agricultural loan guarantee program which reduces risk for pre-selected financial institutions that make loans in certain agricultural sectors. Going forward, there are plans for this guarantee to cover lending in the sorghum value chain[15]. Second, the project will collaborate with Root Capital's financial advisory program to provide targeted financial management training to producer organizations in order to grow their businesses and qualify for lending. Root Capital will contribute to in-kind counterpart resources by providing advisory services for the benefit of producer organizations.

2.7. Building an efficient supply chain: Lastly, the project will promote commercial links between smallholder farmers and buyers to build an efficient supply chain. Through focusing on improved post-harvest techniques (such as drying and milling) and by investing counterpart resources in tools, equipment, storage and collection points the quality of sorghum is expected to increase. The project will introduce technological innovations into the supply chain such as cloud-based mobile platforms to identify farmers, track sorghum, undertake contracting and facilitate payments. An electronic purchasing and traceability platform will be developed to purchase sorghum from small holder farmers via 15 collection centers. This innovation is expected to bring greater transparency to the supply chain and will increase efficiency. In addition, the project will support the implementation of a mobile payment mechanism to address the pressures facing farmers to pre-sell the harvest.

[15] In a letter dated 30th September 2014, SYFAAH announced that it had officially included the sorghum value chain in its work plan for the second phase of the project covering the period from 2014 to 2018.

C. Components

Component I: Developing a Climate Smart Production System. (MIF/PROADAPT: US$359,296; Counterpart: US$142,400).

2.8. The objective of this component is to develop a modern and climate smart agricultural system for smallholder sorghum production. PROADAPT will undertake a climate vulnerability assessment and implement related tools to support the introduction of improved technologies and climate-smart practices, with the aim of improving yields and making producers more resilient to extreme weather events such as increased temperature and drought. This component will focus on determining specific climate vulnerabilities and testing practical measures for reducing smallholder climate risks, including: a) testing and developing improved seed varieties adapted to growing conditions in various regions of Haiti; b) testing and development of improved cropping practices for smallholders; c) seed replication and treatment; and d) testing and identification of complementary crops for intercropping with sorghum to promote income diversification and lowering climate risks.

2.9. The expected outputs of this component are the following: a) four rounds of seed variety testing completed; and b) one suitable seed variety replicated and ready for distribution to farmers.

Component II: Raising Farmer Productivity. (MIF/PROADAPT: US$866,026); Counterpart: US$824,000).

2.10. The objective of this component is to improve the productivity and entrepreneurial skills of small-scale farmers though training and extension services. The component will focus on the following activities: a) developing a five-module farmer training curriculum[16]; b) recruitment of extension agents and technicians to conduct farmer training (including female extension agents and technicians to enhance extension services for women); c) establishing climate smart demonstration plots; d) farmer recruitment and training on climate smart sorghum cultivation[17]; e) developing productivity management tools such as a GPS-enabled database to track farmer registration, agronomic practices, and yields.

2.11. The expected outputs of this component are the following: a) one five-module training curriculum and a technical manual available in Creole; b) 114 demonstration plots established; c) 20 extension agents and 350 technicians recruited and trained in climate smart sorghum production; d) 10,000 farmers trained in climate smart production practices and farming as a business; e) one GPS-enabled monitoring database operational.

[16] Developed a five-module training approach which consists of: soil preparation, correct plant density, crop treatment and management, disease control, and harvest and post-harvest management

[17] Climate smart sorghum cultivation is defined as promoting activities that minimize impact on the environment while improving yields. It includes training on soil preparation, natural fencing, rain water harvesting, drainage, water management, crop synchronization, and exclusion of hillside farming.

Component III: Improving Post Harvest Quality and Consolidating the Supply Chain (MIF/PROADAPT: US$205,714; Counterpart: US$2,094,704).

2.12. The objective of this component is to improve post-harvest handling and treatment of sorghum as it moves through the supply chain. Commercial sorghum buyers enforce strict quality standards, requiring that grain be free from mold, dirt and excess moisture. Reaching this level of quality requires both training and improved access to small-scale infrastructure.

2.13. This component will focus on the following activities: a) Establishing and disseminating quality standards for commercial sorghum (moisture levels, etc.); b) improving farmer access to small-scale infrastructure such as storage facilities and collection points for bulking grain; c) promoting efficient and low technology solutions for post-harvest processing (solar drying, threshing, dehulling etc.) d) training on post-harvest conditioning and storage techniques for producers; e) creating a web-based information system to track purchasing and delivery of sorghum as it moves through the supply chain; e) developing a mobile payment mechanism to reduce payment lags and mitigate security risks; and f) establishing a centralized conditioning center to conduct quality checks, condition, and store grain.

2.14. The expected outputs of this component are the following: a) 10,000 producers trained on post-harvest processing; b) 20 collection points established with improved drying and storage facilities; c) 1 web-based buying platform and traceability system operational; d) mobile payment component of buying platform operational; e) 1 central conditioning center established for final processing and storage of grain.

Component IV: Improving Access to Finance for MSMEs in the Value Chain. (MIF/PROADAPT: US$257,000; Counterpart: US$175,000).

2.15. The objective of this component is to strengthen organizational capacity and access to finance for farmers, producer organizations, and other MSMEs in the sorghum value chain. The component will focus on: a) organizational capacity building for select producer organizations to facilitate direct purchasing with buyers in the value chain; b) implementing systems to improve market information and transparency in pricing; c) financial diagnostics and training for a group of pre-screened producer organizations to be carried out by Root Capital's Financial Advisory Services; and d) implementing a pilot credit program with Root Capital for potential clients. The component will also finance the development and design of specially adapted financial products to be used in the PPCR loan program for agricultural credit to sorghum farmers. These products will be developed by SYFAAH with local microfinance institutions upon approval of the PPCR loan operation.

2.16. The expected outputs of this component are the following: a) 600 producers trained in business and financial management; b) 300 producers participating in Root Capital pilot credit program; c) 3 producer organizations strengthened.

Component V: Knowledge Management and Communications Strategy. (MIF/ PROADAPT US$40,500; Counterpart US$0).

2.17. The objective of this component is to systematize, document, and disseminate the experience and knowledge generated by the SMASH project. Local sourcing is emerging as a profitable and sustainable business model that benefits both companies and their local suppliers. This project is among the first and the largest initiatives to procure locally by working directly with small-scale farmers in Haiti. It is also unique in that it aims to create a new value chain, anchored by a local company and entirely supported by smallholder production. The project will generate knowledge that can be adopted not only by large food and beverage companies and retailers, but increasingly also by small and medium sized enterprises.

2.18. In this context, the knowledge gap the project will aim to address is: how can agro food companies in Haiti (e.g. grocery chains, poultry producers, grain processors etc.) catalyze the development of new value chains by sourcing locally from smallholder farmers? In addressing this knowledge gap, the learning generated by SMASH will take into account the experience of Heineken's local sourcing initiatives in Sierra Leone and Nigeria which have stimulated local entrepreneurship, created employment opportunities, and increased farmers' incomes. Some of the key questions are: What pre-existing conditions are necessary to successfully implement local sourcing in value chains? What players need to be involved? What is the most effective way to ensure buy-in from lead firms, farmers and producer organizations? How can the business case be made for local sourcing programs?

2.19. The following audiences have been identified for the purposes of dissemination and communication of knowledge and experiences generated by the project: potential anchor companies with an interest in sourcing locally from smallholder farmers such as Haiti Broilers, Les Moulins d'Haiti, Meds and Foods for Kids, and Singing Rooster; donors and implementing agencies interested in supporting value chain development and inclusive business initiatives such as the Opportunities for the Majority and the Capital Markets and Financial Institutions Divisions of the IDB, Technoserve and Catholic Relief Services; and investors in agricultural value chains in Haiti such as the Clinton Guistra Enterprise Partnership. The main channels to reach these audiences will be meetings, special events (such as the Climate Investment Funds Partnership Forum) and online media to share knowledge products.

2.20. For purposes of satisfying the knowledge needs of those audiences, the main knowledge product financed by this component will be an in-depth business case study to capture the experience of building an inclusive supply chain driven by the creation of shared value between smallholder farmers and a local anchor company. This business case study will provide guidance and good practice for other companies in Haiti and donor facilitators that are seeking to build inclusive value chains in the country. Other knowledge products will include the following: a video on integrating farmers into the sorghum value chain and the project's efforts to promote climate resilience, and a project fact sheet prepared according to MIF guidelines. The expected outputs of this component are the following: a) one detailed business case study on local sourcing from smallholders, b) one mini video documentary describing the SMASH program and

its efforts to promote climate adaptation; and c) one project fact sheet. All knowledge products produced by the project will be made public.

D. Project Governance and Execution Mechanism

2.21. The project will be executed by Papyrus S.A., a development oriented Haitian management firm, through its headquarters in Petion-Ville. Papyrus has established a SMASH project execution unit, which is under the supervision of the company's President. The execution unit is staffed by a Project Manager, a Deputy Project Manager, an Administrative Assistant, an Accountant, a Monitoring and Evaluation Specialist and a Monitoring and Evaluation Assistant. The Project Manager is responsible for the implementation of the work program and management of project staff. The project execution unit will be supported by a field based technical team consisting of three Regional Extension Leaders. A Supply Chain and Buying Manager, and a Crop Science Manager will be contracted to implement crop extension and supply chain development activities.

2.22. A Steering Committee has been established to provide strategic oversight and guidance on project implementation. Its role is to oversee delivery of the project outputs and the achievement of results. The committee consists of a representative from each of the project's financial sponsors: BRANA, USAID and MIF and the President of Papyrus. Furthermore, a non-voting representative from the IDB's RND division will sit on the Steering Committee to contribute lessons learned and facilitate collaboration with IDB programs and tools. Other members may be invited to participate on an ad-hoc basis. The committee meets quarterly to align with the milestones and reporting schedule of the project.

2.23. One year before the project ends, a sustainability workshop will be held with all key stakeholders to identify specific actions needed to ensure the continuity of the project's activities after the project funding has been expended. The workshop will be organized by the executing agency.

E. Sustainability

2.24. The project has been designed with three key elements to ensure sustainability. First, it is focused on a local market that is suitable for small-scale farmers where they have the potential to be market ready and compete against imports. Second, sustainability is greatly enhanced by partnering with an established anchor firm that has a successful business model and a clear business case to source locally. This creates favorable long term prospects for the development of the market. Third, the project will engage local financial institutions to finance the supply chain and channel the necessary capital to farms and producer organizations so that they can grow. At the end of the project, sustainability will be determined by the ability of small-scale farmers and BRANA to maintain and expand mutually beneficial supplier relationships in the market for

sorghum. In the long term, services provided to farmers such as extension and training will be scaled back but are expected to be absorbed into BRANA's supply chain management operations as part of its business model.

F. Experience and Lessons Learned from MIF or other Institutions

2.25. The project has incorporated lessons learned from MIF interventions in access to markets and value chains. The recently published document on MIF Priorities in Haiti (MIF/GN-196), finds that Access to Markets projects are more effective when they identify markets suitable for small businesses and when there is a clear understanding of how the particular market functions. In the case of SMASH, the team has worked closely with the main market player for sorghum to understand demand, market forces and quality requirements needed to create a new value chain.

2.26. The MIF's experience with HA-M1034 Mango as an Opportunity for Long-Term Growth highlights the importance of ensuring that smallholders are cultivating the right varieties demanded by buyers and lead firms. To take this lesson into account, the project has already engaged the main buyer and will test a number of sorghum varieties to determine the specific ones that are suitable for beverage production and animal feed.

2.27. Papyrus has gathered the following preliminary lessons learned from the pilot phase of the project:

(i) Farmers are cautious about adopting new agricultural practices right away. It takes at least a full growing season after recruitment and training for farmers to feel confident in adopting the new growing practices. The project will make use of demonstration plots and aim to engage lead farmers to create a powerful demonstration effect.

(ii) Delayed payments can be very difficult for poor producers. The project will work with BRANA and financial institutions to facilitate pre harvest loans and timely payment, which helps to promote trust, loyalty and discourage side selling.

(iii) Working with subsistence farmers with limited exposure to commercial agriculture requires a high degree of attention to bring about cultural change. The project will work closely with producers to foster a change in outlook and behavior among farmers and producer organizations to facilitate their successful participation in a more organized and commercially oriented value chain.

G. MIF Additionality

2.28. Non-Financial Additionality. The project will benefit from MIF's experience in working with agricultural value chains and its access to strong partner networks in agricultural finance. The design of intervention model has benefitted greatly from MIF participation. First, the project team was able to engage partners such as Root Capital and SYFAAH to participate in the project and take an interest in the sorghum value chain as a new and growing area for agricultural finance in Haiti. Second, the project

team also highlighted the need for improved payment mechanisms in order to build trust and confidence between buyers and producers. Third, MIF was able to present a successful case to the project sponsors to include climate resilience measures in the project in order to reduce vulnerability to both buyers and producers in the supply chain.

2.29. Financial Additionality. MIFs financial contribution will enable the project to be executed on a larger scale. Without this funding, the number of farmers and regions benefitting from the project would be reduced by half of what is expected. Furthermore, MIFs contribution will mobilize complementary PROADAPT funding to promote climate resilience in the supply chain. In addition, further investments to reduce risk in and increase financing to the supply chain are expected to come from funding approved under the Climate Investment Funds Pilot Program for Climate Resilience (PPCR).

H. Project Results

2.30. The project is expected to achieve the following results by the end of the four-year implementation period: (i) 10,000 farms selling to new domestic or export markets (CRF 330601); (ii) 100% increase in average yield per hectare for SMASH farms compared to the baseline; (iii) 10,000 farms that have adopted new technologies or practices (CRF 230100); (iv) 4 institutions access the project's knowledge products (CRF 150100)

I. Project Impact

2.31. The project is expected to achieve the following impacts by the end of the four-year implementation period: (i) 75% growth in sorghum revenues of SMASH farms compared to the baseline; (ii) 7,600 metric tons of sorghum purchased by BRANA during the project implementation period; (iii) cumulative US$ 2.7 million in annual sales to new domestic market by SMASH farms (CRF 330600);

J. Systemic Impact

2.32. The project aims to create a new sorghum market in Haiti that will be worth between two and four million USD per year by the end of the project and beyond the year 2017. Furthermore, the successful development of the sorghum value chain is expected to catalyze new markets for sorghum, both for animal feed and school feeding programs, which small-scale producers can also supply. The project can also be used as a model to promote local sourcing and shared value for any other crop in Haiti. Through this model, more companies can be encouraged to purchase their raw materials by supporting local production. Systemic impact indicator: one new market or value chain that emerged with MIF support.

3. MONITORING AND EVALUATION STRATEGY

3.1. The project will form a dedicated team for monitoring and evaluation consisting of an M&E specialist and an assistant. The M&E team will be responsible for establishing the project's monitoring systems, ensuring the collection of baseline, mid-term and end line data, contributing to progress reports, and ensuring the completion of mid-term and final evaluations.

3.2. Baseline: Baseline data will be collected for all farmers and farmer organization upon their recruitment and registration in the SMASH the program. For individual producers, the baseline survey will include data on membership in farmer organizations, hectares under cultivation, sorghum production, yields, sales, access to credit, agricultural practices, access to agricultural equipment, access to post harvest services and infrastructure. GPS capability will also be integrated into the database to map and monitor farmer fields. This information will be gathered by extension agents with support from the M&E team. All baseline findings will be disaggregated by sex where appropriate and for measuring results in the project's annual report and final evaluations.

3.3. Monitoring: The project will establish a monitoring system in which all farmers and farmer organizations participating in the project will be registered with a unique identifying code. This identifying code will be used to track all training and services each farmer receives from the project e.g. attendance at training events, extension visits, credit etc. Similarly, it will track key production data such as yields and sales. Data will be gender disaggregated where relevant. All SMASH extension agents will be trained and equipped with tools to capture data and complete field reports. Data collected will be shared with BRANA for the development of its supply chain and potentially with financial institutions looking to provide financing to farmers and producer organizations. Data on each farmer is expected to be updated with each harvest/training season.

3.4. Evaluations: The project will have both a midterm and final evaluation. The mid-term evaluation will be conducted at the mid-point of the project or when 50% of the resources have been disbursed. The midterm evaluation will cover, among other issues: (i) the efficacy of farmer training and the degree to which farmers are adopting improved production practices; (ii) progress in meeting production and sourcing targets; and (iii) progress related to improving access to finance for producers and SMEs. The terms of reference of the mid-term and final evaluations will be approved by the Steering Committee and will be fully financed by USAID.

3.5. The final evaluation will be conducted upon project completion and will compare the baseline against the endline data to determine the extent of the impact in the program's targeted areas. The project will employ a mixed quantitative and qualitative evaluation methodology using data from the project database, PPI surveys, and interviews with producers, SMEs, and project stakeholders. The M&E teams will develop an evaluation plan for both the final and mid-term evaluations to determine the specific methods and resources as appropriate. Key evaluation questions for the final assessment may include: (i) To what extent has this business model created shared value for small holder producers and local businesses; (ii) How successful was the

project in helping farmers to integrate into the value chain and to improve their incomes? (iii) How can the effectiveness and sustainability of the SMASH local sourcing business model be enhanced? What lessons can be identified as good practice? (v) What recommendations arise from this project for the design of similar initiatives in the future? Findings, recommendations, lessons learned and suggestions on the potential for replicability will be disseminated widely to all involved stakeholders through conferences, roundtables, and the use of social media.

4. COST AND FINANCING

4.1. The project has a total cost of US$8,268,057, of which US$2,473,603 (29%) will be provided by the MIF and US$5,794,455 (71%) by counterpart resources. Counterpart resources will be provided by BRANA and USAID. The execution period will be of 48 months and the disbursement period will be of 54 months.

4.2. Retroactive Recognition of Counterpart Funds. Up to US$720,000 in costs incurred with counterpart resources since 1 April 2014 for salaries of key personnel, training and extension activities, equipment, travel, vehicles and office expenses will be recognized retroactively. These counterpart expenses are related to the project start-up and are considered essential to achieving project objectives.

Components	MIF/PROADAPT	Counterpart	Total
Component 1: Developing a Climate Smart Production System	359,296	142,400	501,696
Component 2: Raising Farmer Productivity	866,026	824,000	1,690,025
Component 3: Improving Post Harvest Quality and Consolidating the Supply Chain	205,714	2,094,704	2,300,418
Component 4: Improving access to Finance for MSMEs in the value chain	257,000	175,000	432,000
Component 5: Knowledge Management and Communications Strategy	40,500	0	40,500
Executing Agency/ Administrative	289,531	2,300,026	2,589,557
Baseline, Monitoring and Evaluation	187,720	217,200	404,920
Ex-post reviews	100,000	0	100,000
Contingencies	43,016	41,125	84,141
Sub-total	**2,348,803**	**5,794,455**	**8,143,258**
% of Financing	0	**71%**	**100%**
Impact Evaluation Account (5%)	94,800	0	94,800
Agenda Account	30,000	0	30,000
Grand Total	**2,473,603**	**5,794,455**	**8,268,058**

5. EXECUTING AGENCY

A. Executing Agency

5.1. Papyrus S.A. will be the Executing Agency of this project and will sign the agreement with the Bank. Papyrus is a development-oriented project management company whose senior managers have more than 40 years of experience in Haiti[18]. The company has been selected to execute the SMASH program due to its experience in agriculture, agribusiness, microfinance, donor project management, field project development and management, and NGO development and management. Papyrus also has capacity-building, supply chain and farmer institutional training expertise.

5.2. An extensive search for an implementing agency evaluated a range of organizations including NGOs, international implementing agencies and local research institutes. The search revealed that there was no single "good reputation" institution capable of implementing the project, given its wide range throughout the country, having the competencies needed and charging reasonable indirect costs when compared to execution costs of similar Heineken projects in Africa.

5.3. Papyrus was selected because of its strong track record in the implementation of projects at the national scale, its private sector focus, and its competitive overhead costs. The company's core business is providing project management, market research, consulting, and capacity building services to the government, international organizations, donor organizations, and private sector in Haiti. Papyrus' past performance, particularly implementing a national commercial trade census for BRANA, has made the firm a trusted implementing partner. Papyrus' ability to manage a project requiring the deployment of 140+ international and local staff across the seven main cities of the country, while respecting deadlines, surpassing expectations, and remaining within budget is one of the principal reasons for which it was chosen as implementing partner of the project.

5.4. Papyrus has established an executing unit and the necessary structure to effectively and efficiently execute project activities and manage project resources. Papyrus will also be responsible for providing progress reports on project implementation. Details on the structure of the execution unit and reporting requirements are in Annex 7 in the project technical files.

6. PROJECT RISKS

6.1. The project team has identified the following risks: (i) **Execution risk**: Farmers are reluctant to adopt new practices and continue to use their old planting, storage and

[18] http://papyrusconsulting.com/about-us/

harvesting methods. Mitigating action: The project will invest in demonstration plots in various regions to demonstrate the productivity benefits of adopting new techniques for the next harvest season. Similarly, farmers and producer organizations will be incentivized to comply with new standards for quality control through a new price structure under which higher quality sorghum receives a higher market price.

6.2. (ii) **Sector risks**: Critical logistics services in the value chain such as conditioning and bulk storage are not fully available to facilitate sorghum trade between organizations and BRANA. Mitigating action: BRANA will contract this function to a qualified service provider and has invested in commercial equipment to improve the quality of conditioning. The company is also prepared to invest additional resources in a national conditioning center.

6.3. (iii) **Market risks**: Overproduction of sorghum may exceed BRANAs absorption capacity, resulting in farmers not being able to find a buyer for their harvest. Mitigating action: There are other potential buyers in the market, particularly local bakeries, school feeding programs, and companies that need sorghum for animal feed like Haiti Broilers. For example, the potential sorghum market for animal feed is estimated at 5,000-10,000 MT annually, albeit at a lower price. The project will build capacity at the level of producer organizations so that they develop the business skills and sophistication to engage directly with these alternative buyers.

6.4. (iv) **Reputational risks**: During the analysis phase, the project team identified the risk of a potential conflict of interest in the management structure of the SMASH project. The SMASH Project Manager, an employee of Papyrus S.A., is the spouse of the General Manager of BRANA, who is the project's main sponsor. There is a perceived risk that BRANA may have undue influence in the management of project activities and decision making through its family connection, compromising the role of Papyrus as an independent third party implementer. Mitigating action: After consultation with LEG and FMP it was recommended that a) the MIF contribution not be used to fund the salary of the project manager; b) a Steering Committee be established to oversee the project; and c) the direct lines of reporting have been structured to minimize the potential for undue influence between the Project manager and the General Manager of BRANA. The Project Manager will report directly to the President of Papyrus. In turn, the President of Payprus will report directly to the members of the Steering Committee on the project's progress at the quarterly meetings. This structure excludes direct reporting and decision making contact between the Project Manager and the General Manager.

6.5. **Climate risks**: Flood, extreme drought, and tropical storms could destroy the sorghum harvest, thus reducing farmers' income. Mitigating action: While the likelihood of catastrophic events cannot be discounted, geographical dispersion will help to mitigate that risk.

7. ENVIRONMENTAL AND SOCIAL EFFECTS

7.1. The project is expected to have positive social and environmental externalities. First, promoting the cultivation of a drought resistance food staple will help to improve the

climate resilience of smallholder farmers. The creation of a new supply chain for sorghum and a secure market will allow more farmers to sustain their livelihoods in the face of climate change. Second, the project will promote environmentally sustainable growing practices and will actively discourage cultivation of sorghum on hillsides which leads to erosion and environmental degradation. Third, by promoting the adoption of climate resilient agricultural crops and practices, the project will contribute to reducing Haiti's exposure to climate risk and uncertainty. Lastly, the project is expected to indirectly improve food security due to the increased production of sorghum for direct consumption at a more competitive market price.

8. COMPLIANCE WITH MILESTONES AND SPECIAL FIDUCIARY ARRANGEMENTS

8.1. **Disbursement by Results and Fiduciary Arrangements.** The Executing Agency will adhere to the standard MIF disbursement by results, procurement and financial management arrangements specified in Annex 7.

9. INFORMATION DISCLOSURE AND INTELLECTUAL PROPERTY

9.1 **Information Disclosure.** This project is categorized as public for the purpose of the Bank's information disclosure policy.