

Agricultural development and investment opportunities in the Cap Haitien Development Corridor, Haiti

A rapid action market appraisal of the maize, manioc, peanut, and plantain value chains

Christopher Pienaar and Justin Sacks



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The authors wish to thank the many people, particularly the small farmers, who offered their time and energy to undertake this rapid action market appraisal and who continue to take action to improve the agricultural sector in Haiti. The authors also wish to thank Marlène Nicolas and Hérauld Museau, the two local facilitators, for their tireless effort and inspiration, and Jamie Rhoads, Ivonig Caillaud, Andy English, and Joe Leary for their valued contributions. All photos are copyright of the authors.

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Executive summary

The overall objective of this report is to provide baseline information on several key agricultural value chains in the Cap Haitien Development Corridor, a region targeted for long-term economic development by the United States Agency for International Development (USAID). An additional objective of this report is to identify short-term investment opportunities for the USAID Office of Transition Initiatives (USAID OTI) and long-term investment opportunities for other organizations that would contribute to sustainable value chain and livelihoods development in the region.

The results of this report have been generated using a methodology developed by the project team called rapid action market appraisal. The purpose of this methodology is to develop a coherent understanding of specific value chains, focusing on the role of small farmers and women, while also building local economic literacy and rapport among value chain actors that can sustain action in the future.

The rapid action market appraisal process and findings are organized around five steps: literature review, local implementation infrastructure, stakeholder interviews, market mapping workshops, and ideas for action. The four value chains explored in the workshops and in this report – maize, manioc, peanut, and plantain – were selected based on the combined results of the literature review and stakeholder interviews, with priority given to USAID focus crops and value chains presenting significant potential for development as well as inclusive and sustainable profitability.

The principal barriers faced by value chain actors include: lack of irrigation, lack of storage and drying facilities, lack of processing and packaging facilities, poor access to financial services, violence against *madame sarah*, gender inequity, and poor export infrastructure. The principle assets that can be leveraged include: idle land, underutilized physical assets, strong producer organizations, potential institutional purchasing, and strong social networks.

In addition to generating value chain knowledge and local economic literacy, the rapid action market appraisal developed a local implementation infrastructure that can be utilized by future organizations engaged in agricultural value chain development. In addition to the organizations listed in the report, the project team identified and trained a core local facilitation team that remains an asset to the region to conduct future rapid action market appraisal workshops.

The ideas for action, all generated by workshop participants, focused on the creation or reinforcement of small-scale storage and processing capacities. Such facilities enable small farmers to begin addressing the factors that trap them in poverty; namely, the ongoing need for cash that forces farmers to harvest early, which reduces yields and in turn compels farmers to borrow money from loan sharks at crippling interest rates. Small-scale storage and processing infrastructure enable producers to prolong the life of the crop and the processed products, that can then be sold throughout the year.

Finally, the long-term recommendations, deemed to be outside the scope of the USAID OTI program, address larger investments in underutilized infrastructure that can impact producer livelihoods at a broad level. These larger investments include the broken dam at Latendrie with an irrigation canal system serving 60 square miles, the sea salt flats at Caracol capable of producing more than 5,000 metric tons of sea salt per annum, and the Meds & Food for Kids Plumpy'nut processing facility that provides the most financially sustainable technical services package in the region.

In addition to these investments, strategic engagement with the industrial parks in Ouanaminthe and Caracol, which collectively require upwards of 10,000 meals per day for their workers, can create important and sustainable livelihoods for regional producers and kitchen merchants.

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Rapid action market appraisal seeks to improve local economic literacy

Methodology

The overall objective of this project was to rapidly assess key agriculture sector value chains in the Cap Haitien Development Corridor (Figure 2, page 13), a region targeted for long-term economic development by the United States Agency for International Development (USAID). Within this region, the project team focused explicitly on value chain development in the zone (Figure 1, page 12) targeted by the Office of Transition Initiatives (USAID OTI), a department within USAID that focuses on stabilization of fragile and transitional states. An additional objective of this project was to identify short-term investment opportunities for USAID OTI and long-term investment opportunities for other organizations that would contribute to sustainable value chain and livelihoods development in the region.

The results of this report have been generated using a methodology developed by the project team called *rapid action market appraisal*. This methodology integrates a rapid appraisal approach to market mapping with techniques to identify specific actions that value chain actors can take to improve their livelihoods. Rapid action market appraisal can be deployed as quickly as one week per value chain, ensures producers co-design solutions to value chain barriers, and generates specific actionable ideas.

There are five steps to rapid action market appraisal:

1. Literature review
2. Local implementation infrastructure
3. Stakeholder interview
4. Market mapping workshops
5. Ideas for action

These five steps seek to build a basic understanding of the value chain in a specific geographic area while creating the skills and personnel infrastructure to implement solutions independently in the future. Each step is summarized in this section and explored in the subsequent report.

The objective of these five steps is to enable communities, value chain actors, non-governmental organizations (NGOs), and institutions to co-design sustainable improvements to the value chain that are desired by the value chain actors, particularly small farmers and women. This process of co-design seeks to fortify relationships between these value chain actors as well as to create a more equitable share of power for producers and women, in turn increasing the likelihood of sustained action.

Literature review

Purpose: To create a baseline understanding and set of expectations for value chain development in Haiti that could be compared with the results generated by the other steps of the rapid action market appraisal.

The project team sought out and reviewed relevant literature within the last decade that dealt with agricultural value chains in Haiti, particularly the North and Northeast departments. In Haiti, the Inter-American Development Bank has produced a comprehensive series of analyses relevant to value chains (15 in total), USAID has produced five studies, and a small number of studies have come from NGOs and international development companies.

Information from the literature review places the stakeholder interviews and workshops in context of the rapid action market appraisal and highlights similarities and differences between how the value chain functions in the North and Northeast departments versus elsewhere in Haiti.

Local implementation infrastructure

Purpose: To create relationships with local organizations to deepen outreach for workshops and to identify a local facilitation team for workshops and shaping ideas for action.

Whether there is a local host organization or, as was the case for this project, the project team must operate autonomously, the need remains for a local infrastructure to deepen outreach to the local area necessary for inclusive workshop participation. This means creating relationships with respected and knowledgeable local organizations who have a complementary interest in value chain development and who have the capacity to link the project team deep into the community to ensure workshop participation is representative and inclusive, particularly of small farmers and women.

The project team also sought to identify and to develop a competent and passionate local facilitation team interested in the rapid action market appraisal approach. This local facilitation team was critical to the short-term success of the stakeholder interviews and market mapping workshops (run in Haitian Creole). In addition, this local facilitation team remains a lasting resource and implementation infrastructure in the region for future value chain development.

Stakeholder interviews

Purpose: To understand local perceptions of the most important value chains and the top barriers and enablers to value chain development and to identify communication channels to enhance outreach for the workshops.

The project team spent considerable time in the field prior to the market mapping workshops meeting with producers, farmer organizations, and local NGOs to understand what local people perceive as important crops and value added opportunities as well as the services, barriers, and enablers that would make their livelihoods less vulnerable to the shocks inherent to the agricultural sector, such as climate change, pestilence, and international trade policy. The value chains to be explored in the market mapping workshops were selected based on the combined results of the literature review and stakeholder interviews, with priority given to USAID focus crops and value chains presenting significant potential for development as well as inclusive and sustainable profitability.

Market mapping workshops

Purpose: To build an understanding of the actors, power relationships, assets, barriers, and services along the value chain, while also building local economic literacy, rapport among stakeholders, and ownership of solutions.

The market mapping workshops utilize a customized format that focuses not only on securing critical information on the local value chain but also on building value chain literacy for all value chain actors so they are better able to engage in value chain development in the future, individually and jointly. This type of workshop is often the first time that all value chain actors have come together in the same space, so the market mapping workshops provide a forum to understand other perspectives and issues. The close working and joint reflection also begins to build a level of trust and rapport between the different value chain actors that contributes to sustained value chain development. The project team first held a workshop exclusively for producers, primarily small producers farming less than 0.25 hectares. This workshop was followed by market mapping workshops on peanuts, maize, and plantain, and complemented by a previous workshop on manioc organized by Agrisud, a French NGO.

Ideas for action

Purpose: To develop short-term projects and long-term recommendations for action that remove barriers and utilize existing assets, and to support self-identifying individuals and organizations from the workshops to refine their ideas for value chain improvement.

At the market mapping workshops, participants were asked to list their name and contact number on the ideas for action identified to overcome barriers in the value chain if they were interested in pursuing them further. The project team met with these people after the workshops, usually at the physical site relevant to their idea, such as a *cassaverie* (a processing facility where manioc is transformed into a flatbread called *cassave*) or an old storage depot. The site visits enabled the project team to assess the physical site as well as the personnel capacity and commitment of the organization to contribute financially or in-kind towards realizing the project idea. These meetings also allowed for some light business coaching to crystalize the idea for action.

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A market woman displays the typical spread of fresh and processed agricultural goods

Literature review

The purpose of the literature review was to create a baseline understanding and set of expectations for value chain development in Haiti that could be compared with the results generated by the other steps of the rapid action market appraisal.

The project team sought out and reviewed relevant literature within the last decade that dealt with agricultural value chains in Haiti, particularly the North and Northeast departments. In Haiti, the Inter-American Development Bank has produced a comprehensive series of analyses relevant to value chains (15 in total), USAID has produced five studies, and a small number of studies have come from non-governmental organizations (NGOs) and international development companies. Documents included in the final annotated bibliography (Annex, page 68) were vetted for robustness and objectivity.

The results of the literature review are organized into seven categories: national analysis, North region analysis, coffee and cocoa, cereals and produce, other sectors, finance and inputs, and maps.

National analysis and North region analysis

Several documents considered components of agricultural value chain development at a national or regional level. In addition to national considerations of environmental vulnerability and food aid, North region analysis identified a number of recommendations that relate to the value chain, services, and enabling context.

Value chain: Improve communications systems, increase presence of processing and packaging infrastructure, organize marketing and sales channels, and increase the level of technology and equipment.

Services: Improve financial and technical support, improve community hygiene and potable water conditions, improve access to affordable health services and medical care, enhance capacity of people who fish, enhance vulnerable families' capacity to diversify their livelihood activities, improve capacity to protect children from exploitation, and protect children's rights to a quality education.

Enabling context: Decentralize and strengthen public bodies in the region, create a research farm, create an incentive framework, address corruption and strengthen the police force, and strengthen cooperation with neighboring countries.

Coffee and cocoa

International institutions have paid a great deal of attention to coffee and cocoa, primarily as export crops. While coffee and cocoa grow in the Cap Haitien Development Corridor, they are insignificant crops in the USAID OTI zone, which is mostly semi-humid plain versus hillside.

Coffee: Prioritize work with most economically profitable geographic areas, coordinate with plantain cultivation, support a national laboratory for certification, partner with schools to train qualified personnel, support national disease control programs and technological innovation, establish quality management guides and standards for producers, develop and improve infrastructure for washed coffee, introduce process standardization and cupping laboratories for local producers, consider fair-trade organic certification to open markets, develop community banks, develop coffee drying centers in dry regions near coffee producing areas, develop small-scale coffee roasting businesses, and create financial instruments to enable producers to cultivate higher value added coffees.

Cocoa: Expand land area under cocoa production, develop and enforce quality standards, reduce the costs of using Haitian ports, create government backed producer-level guarantee fund, and expand research and development to improve productivity.

Cereals and produce

Most major staple commodities are covered in some way by the literature review. Mango and rice receive special attention, though these crops are similar to coffee and cocoa insofar as being important to the wider region but insignificant in the USAID OTI zone.

Mango: Establish new mango fields, evaluate technology packages, train producers and middlemen in best harvest and post-harvest techniques, improve local transportation services, and seek new markets.

Rice: Protect local rice, intensify rice production, educate value chain actors, and reduce rice consumption in favor of other products.

Cereals and produce (continued)

Cereals: [maize] Diversify types and end uses of maize, finance maize semolina, protect the maize sector, create an insurance fund, improve storage conditions, and organize producers into associations; [sorghum] Support research on sorghum production and processing, improve storage conditions, and encourage ethanol production.

Legumes: [beans] Establish or support seed production systems in each department and improve bean storage; [peanuts] Support the production of peanut butter and introduce new peanut varieties.

Plantain: Support intensification of plantain production through technical changes to crop cycle and rotation, support academic agronomic centers, increase organic plantain production, and improve and standardize presentation and marketing of plantains.

Fruits: [domestic] Experiment with early and late varieties, increase pest control, establish grazing regulations, subsidize transport, and analyze new wholesale markets; [export] Focus on mango to respond to US market, develop production in areas with staggered harvest schedule, diversify varieties exported, improve collection and transport techniques, promote pest control research, create tax and financial incentives, and formalize exchanges with the Dominican Republic; [processed] Finance equipment for small production units and provide technical support on processing methods.

Vegetables: [domestic] Support water management, create legal frameworks for associations, and support applied research; [export] Produce under contract with owners of 3-10 hectares, develop frameworks for training, create financing mechanisms; [processed] Finance equipment for small production units and provide technical support on processing methods.

Tubers: Diffuse propagation techniques, experiment with pest control methods, develop production in less infested areas, and test varieties desired by international market.

Flowers: Provide technical training, finance inputs, and support mountain water collection.

Other sectors

In addition to studies of staple agricultural crops, there have been studies of other agricultural products and sectors vital to the rural economy. These studies include: essential oil, livestock, renewable energy, sea salt, and sugar cane.

Essential oil: Improve productivity through raw material collection and distilling techniques, improve and standardize quality through production and processing techniques, coordinate and bundle sales, improve market information for essential oil producers, finance diversification into other essential oil products, and create government subsidy to the sector.

Livestock: Improve the available and quality of forage, improve conditions for livestock watering, improve access to land, support genetic improvement, improve animal health, and strengthen producer organizations.

Renewable energy: Promote use of biofuel crops such as sweet sorghum and jatropha, promote creation and use of biogas digesters, promote use of modified kerosene stoves, and develop markets for the other products created by biofuel crops.

Sea salt: Support producers to develop professional enterprises, facilitate access to finance to modernize production methods and maintain basins, protect existing basins from damage by flooding or rain, improve capacity to produce and commercialize iodized salt, and develop a strategy for future exports.

Sugar cane: Train distilleries to use *bagasse* (dry pulpy residue left after the extraction of juice from sugar cane) as the sole source of fuel, promote technological and process improvements to distilleries, create a technical support center, foster producer associations and networks to improve their market position and knowledge sharing, and promote new products like medicinal alcohol and bottled syrup.

Finance and other inputs

There are national level studies and recommendations concerning land, labor, seeds, pest control, and finance. The recommendations regarding seeds, pest control, and finance resonate strongly with the results of the value chain workshops.

Land: Provide legal assistance to producers, develop capacity to monitor land data, ensure that producers are part of land surveys prior to construction, and re-launch the School of Surveying at the University of Haiti.

Labor: Improve monitoring and knowledge base of rural labor, develop a social security plan for rural producers, provide access to finance for family farms, identify alternative employment activities, provide basic education and vocational training, develop a system to strengthen the organization of rural producers, and improve legal frameworks regarding land tenure and labor practices.

Seeds: Develop and identify varieties that are adapted to local conditions, develop sustainable decentralized seed production models, improve physical access to seed outlets, improve fertilizer use, improve access to information on production innovation, grow rural agroenterprises, and improve women's role in agriculture.

Pest control: Introduce laws on plant protection and pesticides, undertake pest risk assessments, establish quarantine lists, set up pest and animal surveillance systems, train government staff to identify pests, and improve information communication systems.

Rural finance: Strengthen the legal framework of the financial system, expand the variety and availability of financing, facilitate rural savings, reduce the cost of financing, support development of insurance products, and strengthen producer organizations. These recommendations cover five types of credit: credit for short cycle crops such as vegetables, credit for average cycle crops such as coffee and cocoa, credit for equipment, credit specifically for mango production, and credit to producer organizations for tractors.

Maps

The literature review contains five maps, one showing the USAID Cap Haitien Development Corridor and four maps produced by the Famine Early Warning Network (Fewsnet) of production and trade flows of major staples (beans, maize, rice, and tubers).

Maps (continued)

Figure 1 shows the USAID OTI zone that served as the boundary of analysis for this rapid action market appraisal, while Figure 2 shows the wider Cap Haitien Development Corridor. Within the Cap Haitien Development Corridor, the USAID OTI zone covers the communes of Cap Haitien, Quartier Morin, Limonade, Caracol, Trou du Nord (Roucou and Garcin sections), Terrier Rouge (Fond Blanc section), and Fort Liberté (Bayaha and Dumas sections).

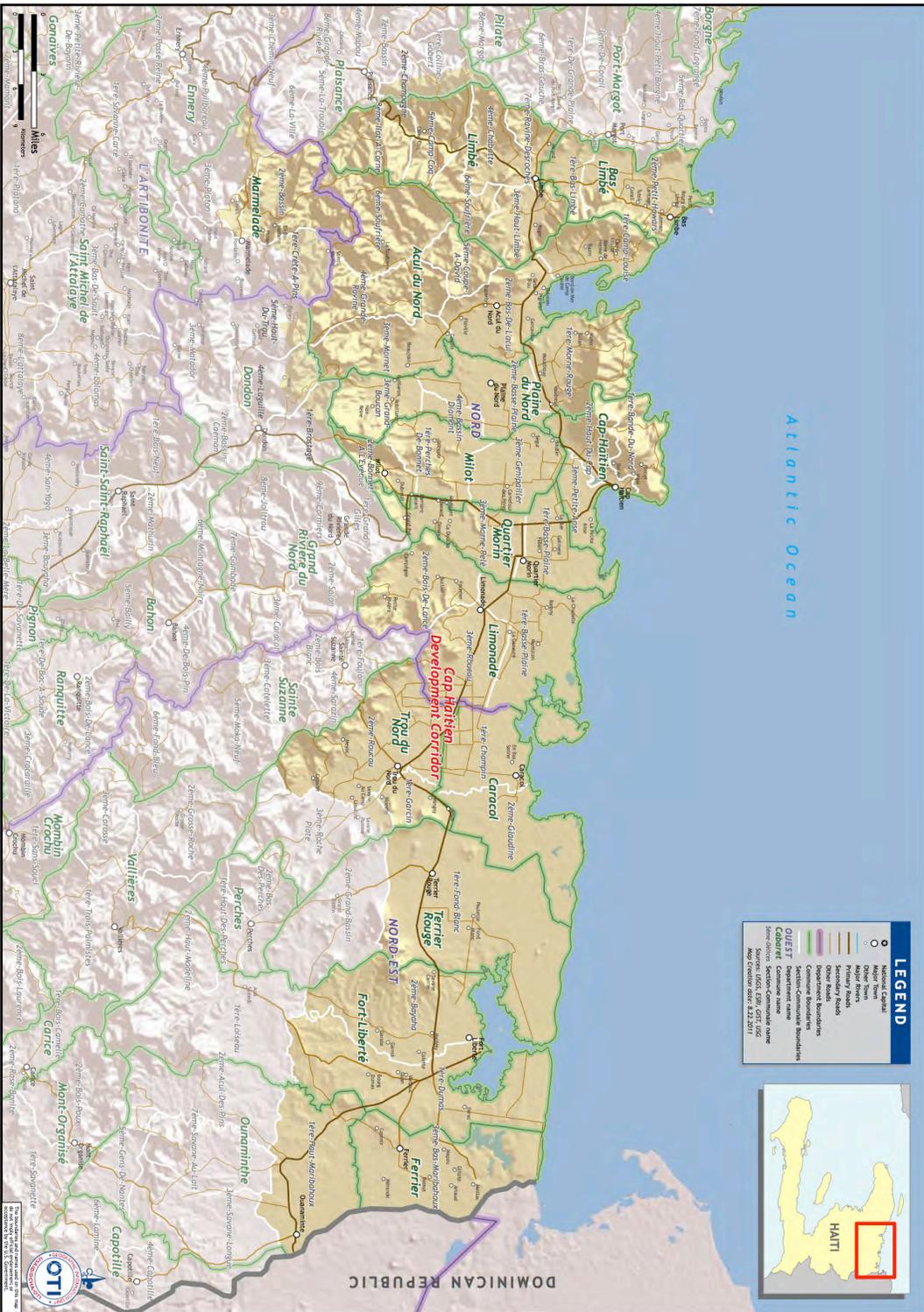
The Fewsnet maps (Figure 10, page 75), illustrate the prominent agricultural products in the region within a national context. The only staple crop that is grown in widespread surplus in the USAID OTI zone is maize, which stretches from Plaine du Nord to Trou du Nord. This area is also an area of significant production of plantain, though there is not a Fewsnet map for plantain. Within the USAID OTI zone, there is surplus production of tubers in Trou du Nord. Within the wider Cap Haitien Development Corridor there is surplus production of beans in Acul du Nord and rice in the Plaine de Maribahoux, which covers Ferrier and the eastern boundary of Fort Liberté.

The Fewsnet maps illustrate the relationship between the communes of the North and Northeast departments in terms of agricultural production. With the exception of Limbé and Bas Limbé, the communes traditionally regarded as breadbaskets are outside the Cap Haitien Development Corridor. These communes include Port Margot, Pilate, and Plaisance to the west and Dondon, Grand Rivière du Nord, and Sainte Suzanne to the south.

Figure 1: Map of the USAID OTI zone



Figure 2 : Map of the Cap Haitien Development Corridor



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The two local facilitators, Hérauld Museau and Marlène Nicolas, confer during a workshop

Local implementation infrastructure

Building a local implementation infrastructure served two purposes: (1) to create relationships with local organizations to deepen outreach for stakeholder interviews and workshops, and (2) to identify a local facilitation team for workshops and idea shaping.

Whether there is a local host organization or, as was the case for this project, the project team must operate autonomously, the need remains for a local infrastructure to deepen outreach to the local area necessary for stakeholder interviews and inclusive workshop participation. This means creating relationships with respected and knowledgeable local organizations who have a complementary interest in value chain development and who have the capacity to link the project team deep into the community to ensure workshop participation is representative and inclusive, particularly of small farmers and women.

The project team also sought to identify and to develop a competent and passionate local facilitation team interested in the rapid action market appraisal approach. This local facilitation team was critical to the short-term success of the stakeholder interviews and market mapping workshops (run in Haitian Creole). In addition, this trained local facilitation team remains a lasting resource and implementation infrastructure in the region for future value chain development.

Outreach organizations

The project team spent three weeks prior to the market mapping stage meeting with organizations in the region to identify priority value chains as well as to identify organizations embedded in rural communities that would be able to secure representative participation at the workshops. The project team relied on three organizations to reach out to rural communities, particularly small farmers and women: Agrisud, Meds & Food for Kids (MFK), and Veterimed. Agrisud is a French NGO focusing on staple food production and value chain development in the communes of Limbé, Bas Limbé, and Limonade. In addition to organizing the manioc workshop, Agrisud offers strong connections to value chain actors in maize and plantain. MFK, an NGO that produces peanut butter-based Plumpy'nut, undertook most outreach for the peanut value chain. Veterimed, a Haitian NGO that specializes in veterinary health and operates two dairies in the USAID OTI zone (Limonade and Terrier Rouge) offered additional producer relationships across all value chains.

Workshop team recruitment

The workshops needed to be wholly conducted in Haitian Creole by Haitian people in order for both participants and the project team to gain the most from the workshops. To achieve this result, the project team recruited two facilitators and one Haitian Creole-English translator. Aligned with the emphasis on gender equity, the project team sought out at least one female facilitator, who became the lead facilitator for the workshops. The two facilitators, Marlène Nicolas and Hérauld Museau, were selected for their passion for social development and existing facilitation skills. Hérauld Museau also possesses master's-level academic knowledge, extensive local field expertise, and extensive personal networks across the region.

Workshop team training

During the workshops, the project team primarily sat back and interacted discretely with the facilitators only when problems arose. To make this dynamic successful, the project team trained the two facilitators on the rapid action market appraisal approach as well as light business coaching methods designed to anchor belief, reflection and action within the community. These approaches provided a backbone for the workshop format; however, the workshop format was adjusted iteratively with each workshop, adjusting for the cultural context and current level of economic literacy.

Training also entailed field visits before and after the workshops and post-workshop reflection. These field visits enabled the facilitators to understand the workshop context prior to facilitating the workshops and, for field visits after the workshops, supported rapport building with organizations presenting ideas for action that could be utilized in the future. Through this process, the local facilitators also gained exposure to the utilization of business coaching to move ideas into concrete action.

Local infrastructure legacy

The rapid action market appraisal has shown that there are a number of people in the local area who can adequately meet the responsibilities of facilitator and interpreter, and some of the workshop team has been used subsequently on projects managed by other organizations. The two facilitators are now a legacy resource in the region. With more than four multi-million dollar programs deploying in the Cap Haitien Development Corridor within the next year, this local implementation infrastructure can support effective program implementation as well as provide skilled and meaningful employment in the region.

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The project team interviews the managers of the Limonade cassaverie

Stakeholder interviews

The purpose of stakeholder interviews was to understand local perceptions of the most important value chains and the top barriers and enablers to value chain development. The project team also met with a number of international and Haitian NGOs and community-based organizations to identify additional communication channels to extend outreach for the workshops.

The following table divides stakeholders into two categories: international organizations and Haitian-based organizations. Almost all international organizations operating in the USAID OTI zone across the four value chains studies are represented in the table. There are many producer organizations across the USAID OTI zone, and the table represents a sampling of these organizations. In addition to the organizations interviewed, the project team met with many local residents, not listed, but whose contact information has been recorded.

Please contact USAID OTI for all contact information.

Figure 3: Stakeholder interviews

International organizations	Principal contact	Commune
AFDI	Quentin Gustot	Cap Haitien
Agrisud	Ivonig Caillaud	Cap Haitien
AIDG	Nadine Mondestin	Cap Haitien
Cesvi	Ludovica Ghildardi	Cap Haitien
Chemonics International	Régine Zamor	Cap Haitien
Grand Marnier	Youssef Narbesla	Cap Haitien
Grupo M	Mercedes Capellán	Ouanaminthe
Oxfam Great Britain	Frank Letaro	Cap Haitien
Pro-Huerta	Jackingston	Cap Haitien
Root Capital	Christina Blot	Port-au-Prince
SOIL	Ashley Dahlberg	Cap Haitien
Welthungerhilfe	Sabine Greiner	Cap Haitien
World Central Kitchen	Fredes Montes	Washington, DC
World Food Program	Eugene Ndianabo	Limonade
Haitian-based organizations	Principal contact	Commune
Article 29 Organization	Amber Munger-Pierre	Anse Rouge
Chambre d'Agriculture de Limonade	Leventz Pierre	Limonade
Association of Codevi kitchen merchants		Ouanaminthe
Direction Départementale Agricole Nord	Eberle Nicolas	Cap Haitien
Fonkoze	Katleen Félix	Port-au-Prince
Grameen Creative Lab	Claudine François	Port-au-Prince
Intervet	Pierre Wilbert	Limonade
Kombit Developman Lakay	Celestin Cola	Quartier Morin
Latendrie farmers' association	Simon Pierre	Grand Rivière du Nord
Meds & Food for Kids	Jamie Rhoads	Cap Haitien
North Coast Development Company	Andy English	Terrier Rouge
Veterimed	Edner Rozier	Limonade

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Facilitator Marlène Nicolas explains the livelihoods asset model to the workshop participants

Livelihoods

The foundation of the value chain is producers, namely small farmers, yet producers are often the last people consulted and least likely to benefit from interventions aimed at improving the value chain.

The producer workshop was attended by approximately 45 producers, of which at least 25 percent were women. This producer-only workshop, which takes place before the market mapping workshops, seeks not only to elucidate the assets, barriers, and opportunities that producers perceive but also to build producer literacy on their own value chain and their ability to have influence in the development of this value chain. The producer workshop provided insight into both the baseline literacy level of producers regarding value chains to inform the value chain workshop format as well as the value chains considered important by producers.

Sustainable livelihoods approach

The sustainable livelihoods approach (SLA) is used by most international development organizations to contextualize development program interventions in terms of reducing the short-term and long-term vulnerability of producers. A core feature of the SLA originally

developed by the United Kingdom's Department for International Development (DFID) is the livelihoods asset model (Figure 5, page 25), which seeks to enable producers to identify and develop their existing asset base. Assets are categorized as: financial, physical, social, human, and personal.

Sustainable livelihoods assets

Financial assets: Producers consistently identified three financial assets: loans from the cooperative bank, mutual aid from family and neighbors, and small personal savings. In the later market mapping workshops producers also named Fonkoze as an asset, which is a national microfinance institution.

Physical assets: All producers named land and tools as physical assets, signifying that land tenure, while notoriously tenuous in Haiti, is deemed reasonably accessible by producers in this region. The majority of producers named rivers, wells, rain, tractors and roads as assets. The Cap Haitien Development Corridor is neither the most agriculturally productive nor the harshest of regions. The USAID OTI zone is almost totally flat and therefore reasonably navigable, especially by the sealed national road that bisects the entire zone. The physical asset most frequently mentioned by producers in both the producer and market mapping workshops was the broken dam at Latendrie and the irrigation canals stemming from this dam.

Social assets: Producers consistently named the following social assets: *kombit* (collective labor with neighbors, usually in return for meals or small payments), sharing seeds and bartering with neighbors, small levels of technical assistance, manpower, farmer organizations, and the local market. A striking feature in this producer workshop was the high level of awareness of social assets and the value that these provided producers. The *kombit* was named ubiquitously, signifying that producers frequently support each other in cultivating their land and have built up significant social capital and trust with each other. This same asset also featured strongly as a sales channel for distributors/middlemen and processors.

Human assets: The two human assets named by every producer were willpower and family solidarity. These assets again signify the strong social capital in this region, for which family and neighbors should be considered an important asset for any value chain development intervention. Producers seem to recognize that farming is a tough life and that those who farm must have the can-do attitude and tenacity to do so instead of abandoning land for Cap Haitien or Port-au-Prince.

Personal assets: The two personal assets named by all producers were the different skills and experience associated with farming.

Barriers

After identifying assets, which is critical to building a constructive and solution-oriented atmosphere in the workshop, producers then focused on barriers to making their livelihoods more sustainable. The barriers named by producers were consistent with barriers faced by producers globally and elsewhere in Haiti.

The barriers most consistently named and for which producers felt the strongest were:

- Irrigation
- Poor quality seeds
- Lack of credit and lack of affordable credit
- Food dumping (low-quality, low-price imported goods on the local market)
- Poor storage techniques

Other barriers named by most producers included: expensive tools, flooding, drought, erosion, and bad roads. Important barriers named by women were: lack of personal revenue, lack of education, lack of physical strength to cultivate gardens without help, and physical insecurity.

Ideas for reducing vulnerability

Producers considered how they could remove barriers and use existing assets better to improve their livelihoods and reduce their vulnerability. Several ideas were ubiquitous:

- Obtain technical assistance on cultivation and pest control
- Create or strengthen a cooperative farming supply bank
- Identify and use better seed varieties
- Improve access to credit
- Make supply stores accessible to farmers, e.g. seeds, fertilizer, insecticides, tools
- Create or enforce legislation to protect the domestic market against dumping
- Empower farmers' organizations

Three additional ideas were mentioned by a large proportion of producers:

- Create more processing facilities
- Create the means to access the export market
- Run regular training for farmers

Producers were also asked to consider ideas that would specifically support women's participation and economic leadership. The most common ideas were:

- Provide skills training through existing women's organizations
- Create new opportunities in the peanut market, such as joint processing ventures
- Create or strengthen mutual aid societies among women
- Create a revolving credit facility or a women-only credit institution
- Strengthen women's collective gardening

Producers considered the two or three big ideas that would offer them the most benefit in the next four months. The level of debate was high during this period, with general consensus on two ideas: medium/large-scale processing and irrigation. Through discussion in later workshops, producers added storage to this list of top priorities.

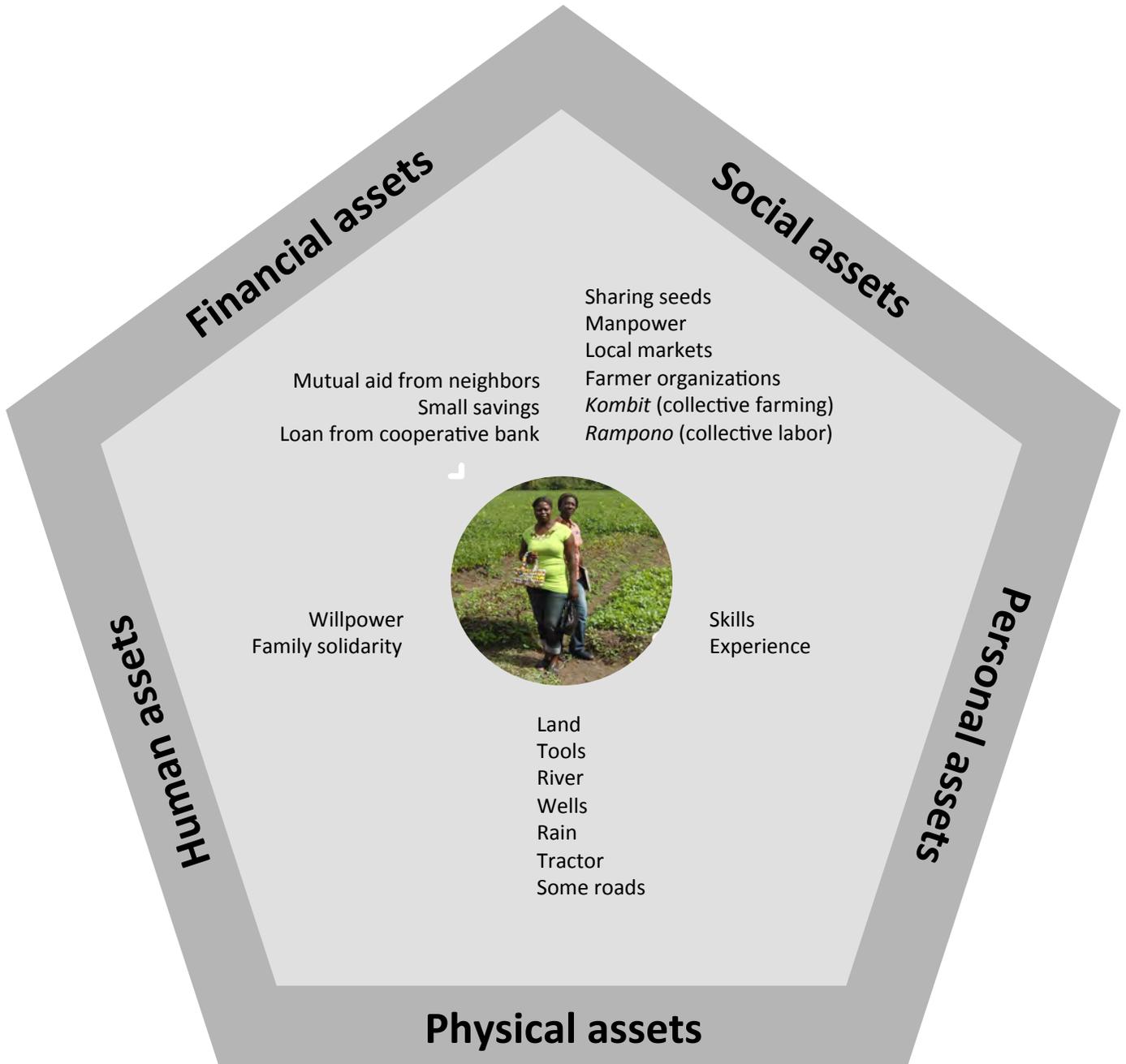
The results of these discussions show that producers are very much aware of the assets they possess and barriers they face to securing their livelihoods. In both the producer and market mapping workshops, producers demonstrated a cognizance of the fragility of their current situation and the strategies available to them to better secure their livelihoods through improved production methods and value added activities. Producers equally demonstrated awareness of their shortcomings, such as pest control and seed varieties, which require widespread producer self-organization in the absence of state or NGO service provision.

Figure 4: Producer workshop format

Time	Activity	Purpose
0900	Breakfast	To engage socially and feel more at ease prior to workshop discussions
1000	Welcome and introduction	To assemble small producers to consider what helps them and stops them from developing their farms and to better understand their market and increase their influence and value
1015	What are assets?	To explain the types of assets that people have to help develop their livelihoods
1045	What assets do we have?	To identify what assets producers have within their households and communities that can help them to develop their farms
1130	What are the barriers to developing our farms more and what helps us?	To better understand what stops producers from developing or doing better and what helps them.
1200	Lunch	
1300	What are the particular barriers and enablers for women?	To better understand what stops and helps women to increase their incomes and their leadership opportunities
1330	What ways are there of removing these barriers and using our enablers better?	To discuss and identify more sustainable opportunities for producers to develop their farms
1400	What would my farm look like in five years if I could do anything that I wanted?	To release creativity, stretch belief, and anchor the vision in the minds of small producers
1430	What are the four biggest ideas that in the next four months could really help us to have sustainable improvement?	To identify projects that could make a real and sustained difference to small farmers and processors
1500	What next?	To identify possible projects and who would like to either undertake or support these projects
1530	Workshop ends	

Figure 5: Livelihoods assets map

The livelihoods assets map below was developed by producers in the producer workshop.



Methodology
Literature review
Local implementation infrastructure
Stakeholder interviews
Livelihoods
Market mapping workshops
Ideas for action
Case study: Codevi
Services and enabling context
Gender equity
Crosscutting assets and barriers
Recommendations
Annex: Annotated bibliography



Value chain actors demonstrated a high level of understanding of their own assets and barriers

Market mapping workshops

The purpose of the market mapping workshops is to build an understanding of the actors, power relationships, assets, barriers, and services along the value chain, while also building local economic literacy, rapport among stakeholders, and ownership of solutions.

The market mapping workshops utilize a customized format that focuses not only on securing critical information on the local value chain but also on building value chain literacy for all value chain actors so they are better able to engage in value chain development in the future, individually and jointly. This type of workshop is often the first time that all value chain actors have come together in the same space, so the market mapping workshops provide a forum to understand other perspectives and issues. The close working and joint reflection also begins to build a level of trust and rapport between the different value chain actors that contributes to sustained value chain development.

The market mapping workshops focused on four crops: maize, manioc, peanut, and plantain. Each of these four crops were selected because they were important staple crops to regional food security and presented significant value chain development and processing potential. The value chain actors and the assets and barriers identified for each value chain were similar, so the aggregate results of these four workshops are presented as a composite map (Figure 7, page 35).

Below is a summary of the four types of value chain actors identified during the rapid action market appraisal. For each value chain, the report presents an overview of the value chain based on the literature review and the ideas for action identified during the workshops. During the workshops, participants were asked to identify broad ideas for action and then prioritize the top four ideas among these ideas for action that they wished to pursue in the next four months. In the tables below, ideas for action are ordered by the number of tables (6-10 people per table) identifying the idea, while the four big ideas were arrived at through voting. From these four big ideas, participants volunteered specific project ideas, detailed in the *Ideas for action* section.

Producers (small, medium, large)

Small farmers, working 0.25 to 0.5 hectares of land, comprise the vast majority of producers in the USAID OTI zone. Across the four focus crops, there were no medium- or large-scale producers. There are many producer groups across the USAID OTI zone, though, with a healthy number of mixed and women-only producer groups throughout the region. The only active large-scale producer in the USAID OTI zone is Grand Marnier, which manages a 72-hectare plantation to supply bitter orange essential oil for its liquor products. This plantation is effectively separated from all agricultural development in the region, though there exists a long-term opportunity to engage with Grand Marnier on technological transfer to small farmers.

Madame sarah (distributors, middlemen)

Local distribution is dominated by the madame sarah. The madame sarah is the Haitian Creole term for the ubiquitous market trader, which is almost always a woman. There are male madame sarah, but women dominate this activity of the market, and this level of market domination is considered unique to Haiti. Madame sarah operate at multiple geographic levels. Local madame sarah buy produce direct from farms and sell it at the local markets and the regional market capital of Cap Haitien. These madame sarah are linked through bonds of trust with national level madame sarah, who buy produce from the regional markets for resale and distribution in metropolitan Port-au-Prince. Standing at two million people and growing, Port-au-Prince contains one quarter of the country's population and is 10 times more populous than any of the regional capitals, so trade naturally gravitates towards the capital. Madame sarah generally do not own their own transport and rent space on taxis and trucks to transport goods to the market.

Processors (micro, small, medium, large)

The rapid action market appraisal considered all levels of processing, from microprocessing in the home to large-scale processing facilities. Within the USAID OTI zone, the only medium/large processor among the four crops studied is the MFK facility, currently operating in Cap Haitien but moving soon to a purpose built site in Quartier Morin. Établissements Novella is a historic processor and exporter of orange peel for Grand Marnier and also exports (but does not process) coffee and cocoa. At the small-scale level, there is one cassaverie and one maize processing facility in Limonade. The remainder of processing takes place at the micro level, often on site at the farm or within the home. Among the four crops studied, the most common types of microprocessing sold in local markets were peanut butter, maize meal, and fried plantain chips (*papita*).

Markets (local, wholesale, institutional, retail, catering)

Prior to consumption, fresh produce and processed products are sold to a range of markets, including: local markets, wholesalers, institutional purchasers, retailers, and caterers. The local markets and regional capital of Cap Haitien are the principal outlets for most fresh and processed products. Through the workshops, there were only a few wholesalers identified, focusing on the Cap Haitien market. There is great institutional potential, both at the regional level, such as schools and hospitals, and at the national level, such as the World Food Program (WFP) and Unicef. Nevertheless, for the four crops considered, institutions do not appear to buy directly from regional value chain actors currently. These institutions buy from larger and more organized suppliers who can guarantee larger volumes and consistent quality, while the larger institutions, like WFP, have strict hygiene standards that preclude most local processors at the moment. Caterers and retailers, primarily in the form of small local shops and roadside vendors, are a market for all four crops in fresh and processed form, though producers and distributors did not identify their purchasing patterns as different than household consumers.

ALKO, below, is one of many microprocessors in the region, producing chocolate and preserves



Maize

Maize is produced throughout Haiti. Maize has multiple uses beyond maize meal: animal feed, cereal products, extruded snack products, beer, sweeteners, oils, cosmetics, adhesive and as a petroleum product substitute. In Haiti, producers consume up to 60 percent of their crop and the remaining yield is transformed into three products: maize meal (60 percent), grain (20 percent), and smoked cob (20 percent). Small processors dominate, and these processors rarely separate the grain components. Despite a push in the 1990s to commercialize the maize sector, with conversion of sugar cane field to maize production and the creation of technical centers and a national maize meal processor, maize imported from North America is growing its market presence in the same way that imported rice has previously. Haitians prefer imported maize meal because it looks cleaner (no residues) and cooks faster (ground finer) than domestic maize meal. Producers lose up to 25 percent of their crop due to pre- and post-harvest pestilence and mold.

Specific assets and barriers: There is a high demand for maize meal for animal consumption in addition to human consumption, but the proximity to the Dominican border means the region is especially vulnerable to imported maize meal that is better quality and price competitive with local maize meal.

Ideas for action	Frequency
Irrigation, e.g. repair dam at Latendrie	7
More technical support	7
More storage facilities, e.g. silos, depots	6
New processing facilities and equipment	6
Better farming equipment	6
More access to credit	6
Training and support on developing markets	6
Better transport security for madame sarah	6

Four big ideas for action	Priority
Improve irrigation, repair dam at Latendrie	1
Improve storage facilities for food conservation and crop drying	2
New processing facilities and equipment	3
Separate taxis for passengers with goods (madame sarah) as better security	4

Maize was the only value chain workshop in which the idea for creating separate and secure transport for madame sarah made it to the four big ideas for action. While technical support, access to credit, and training to develop markets were originally rated of equal importance, they were deemed to be longer-term solutions; whereas, several workshop participants volunteered specific ideas for improving storage and processing facilities, detailed in the *Ideas for action* section.

Manioc

Manioc is a tuber grown around the world in dry and semi-humid regions. Manioc cultivation dominates tuber production in Haiti, representing 45 percent of all tuber production and an average annual yield of 340,000 metric tons. Unlike many commodities, 99 percent of manioc and manioc-based products are produced domestically. Manioc is transformed into two products: starch and *cassave*. Manioc starch is used for confectionary and laundry, while cassave is a flatbread produced by shredding and baking manioc root, often mixed with desiccated coconut. Cassave is typically eaten as a breakfast or snack food with peanut butter.

The North and Northeast departments of Haiti are renowned for cassave production and also have high consumption levels. Manioc, along with other tubers such as yam and sweet potato, were the primary source of carbohydrate calories in Haiti prior to the influx of cheap imported rice. In addition to a solid domestic market, there is a North American market for cassave, which is dominated by Dominican companies.

Specific assets and barriers: The bitter manioc variety that prevails in the region can only be consumed after intensive preparation, which creates many opportunities for value added activities. In addition to the cassaverie in Limonade, there are cassaveries in Bas Limbé and Trou du Nord, which fell outside the USAID OTI zone but warrant future assessment and investment.

The manioc workshop was designed by Agrisud and followed a different format than the other workshops so frequency of ideas for action could not be measured. The workshop still generated strong mutual understanding of the manioc value chain and specific ideas for action. Workshop participants were first organized by type (producer, madame sarah, cassaverie) to discuss the challenges they face, which they then shared with the entire group of workshop participants. In the second half of the workshop, workshop participants regrouped based on geographic area (Bas Limbé/Limbé and Limonade), for which the focus was solutions to the challenges identified earlier in the day.

Ideas for action	Frequency
Use seed varieties with a shorter cycle	-
Develop training on cultivation	-
Create and enforce measurement standards for cassave sales	-
Improve cassava storage conditions	-
Reorganize space for better waste management	-
Improve packaging for better presentation	-
Diversify products, e.g. <i>kouchkouch</i> , <i>doukounou</i> , <i>paindou</i>	-

Four big ideas for action	Priority
Find better seed varieties with a shorter cycle	1
Reinforce factory capacity by adding <i>platines</i> to bake cassava	2
Enhance hygiene conditions through training	3
Conserve soil through training	4

Peanut

Peanut cultivation is a critical component of agriculture in the drier areas of Haiti, with concentrated cultivation in the Northeast department. Nationally, the typical small farmer cultivates under one hectare of peanuts, and 95 percent of the yield is consumed by the producer. Of the remaining five percent of peanut yield, 95 percent is processed into peanut butter, which is an important protein source in Haiti. The remaining five percent is processed into *tablette* (peanuts coated in sugar and spices), for which there is a considerable commercialization opportunity. Small processors, which process peanuts into peanut butter without machinery, dominate the market and are concentrated in the North department communes of Cap Haitien, Quartier Morin and Limonade. The value chain suffers from poor peanut varieties that require considerable tilling, poor storage methods that lead to bacterial growth, expensive input costs in the form of glass jars, and erratic quality control.

Specific assets and barriers: The presence of MFK is a major asset to the region. In addition to its role as a large buyer of peanuts from regional producers, value chain actors identified MFK as providing the following assets: provision of seeds, training to farmers cooperatives, technical advice on production, technical advice on peanut butter processing, and collection and transport of peanuts. Producers also recognized MFK as providing a low risk proposition with high reward, assuring fair and pre-agreed prices. In the region, women favor peanuts as a crop and play a large role as producers and microprocessors.

Ideas for action	Frequency
Technical support/training	8
Access to credit	8
Improving irrigation system/boreholes	7
Better varieties of seeds	4
Access to exports	2
Better security for Madam Sara's regarding transport	2

Four (five) big ideas for action	Priority
Irrigation, repairs and access to existing system	1
Improve storage facilities	2
Improve access to credit	3
Improve access to appropriate equipment	4
Technical support on disease control	5

The presence of storage facilities as a top priority even though it was not identified as an issue earlier in the workshop reflected the growing awareness of producers over the course of the workshop regarding the diversity of value chain opportunities available if they can improve storage conditions.

Plantain

Plantain is one of the most profitable crops for farmers. Plantain is typically intercropped, but there is a pocket of historic monoculture in the Grand Rivière du Nord watershed that traverses Quartier Morin and Limonade. Domestic production has declined due to disease and cultivation practices, with Haiti producing 320,000 metric tons per annum to meet domestic demand that totals 500,000 metric tons per annum. The export market is substantial, but Haiti currently exports no more than 5,000 metric tons per annum. While plantain is frequently purchased raw at the final consumer level, commercialization opportunities exist for *banane pesée* (fried plantain coins), *papita* (thin plantain chips), and *tablette* (confectionary coated in sugar and spices). As second class plantains from the Dominican Republic, which look better than Haitian plantains that are poorly stored and transported, gain market share, improving cultivation and pest control practices is critical to the future success of the Haitian plantain value chain.

Specific assets and barriers: The dam at Latendrie, though currently not functional, is a major asset to all food production in the USAID OTI zone but particularly so for plantain. Plantain also offers export potential, but the export infrastructure of the region requires applied investment.

Ideas for action	Frequency
Irrigation, repair dam at Latendrie	6
More technical support, better seed varieties	6
More processing choices, e.g. plantain flour, chips, flakes	6
More shops for equipment, seeds, fertilizer, tools	6
Access to credit, cooperative bank and farming supply bank	6
Better transport security, separate transport for goods/passengers	6

Four big ideas for action	Priority
Improved irrigation	1
Quality seeds	2
Technical support	3
Cooperative bank	4

Although plantain presents good export and processing opportunities, value chain actors focused on improving primary production, such as seeds, cultivation, and irrigation. There is a lack of confidence in the ease of sale and return on investment of processed plantain. Although workshop participants recognized the potential for exporting plantain, export infrastructure was perceived to require investment that extended well beyond the short-term.

Figure 6: Market mapping workshop format

Time	Activity	Purpose
0900	Breakfast	To engage socially and feel more at ease prior to workshop discussions
1000	Welcome and introduction	To bring together the various members of the market to consider existing market elements and to understand how stakeholders can work together to build relationships, understand their market and add sustainable value, especially for small farmers
1015	What is a market map?	To explain value chains, services, and context enablers
1030	What is the current market map?	To find out what the market map looks like in the Cap Haitien Development Corridor
1130	What are the barriers and what helps us?	To discover what situations in each part of the value chain stop or help stakeholders from growing or doing better
1230	Lunch	
1330	What are the particular barriers and enablers for women?	To discover what stops and helps women from developing or doing better
1400	What would an improved value chain look like?	To create a better value chain that would add sustainable value, relationships, and influence for all stakeholders
1445	What are the four biggest ideas that in the next four months could really help us to have sustainable improvement?	To identify projects that could make a real and sustained difference to the market and to stakeholders
1500	What next?	To identify possible projects and who would like to either undertake or support these projects
1530	Workshop ends	

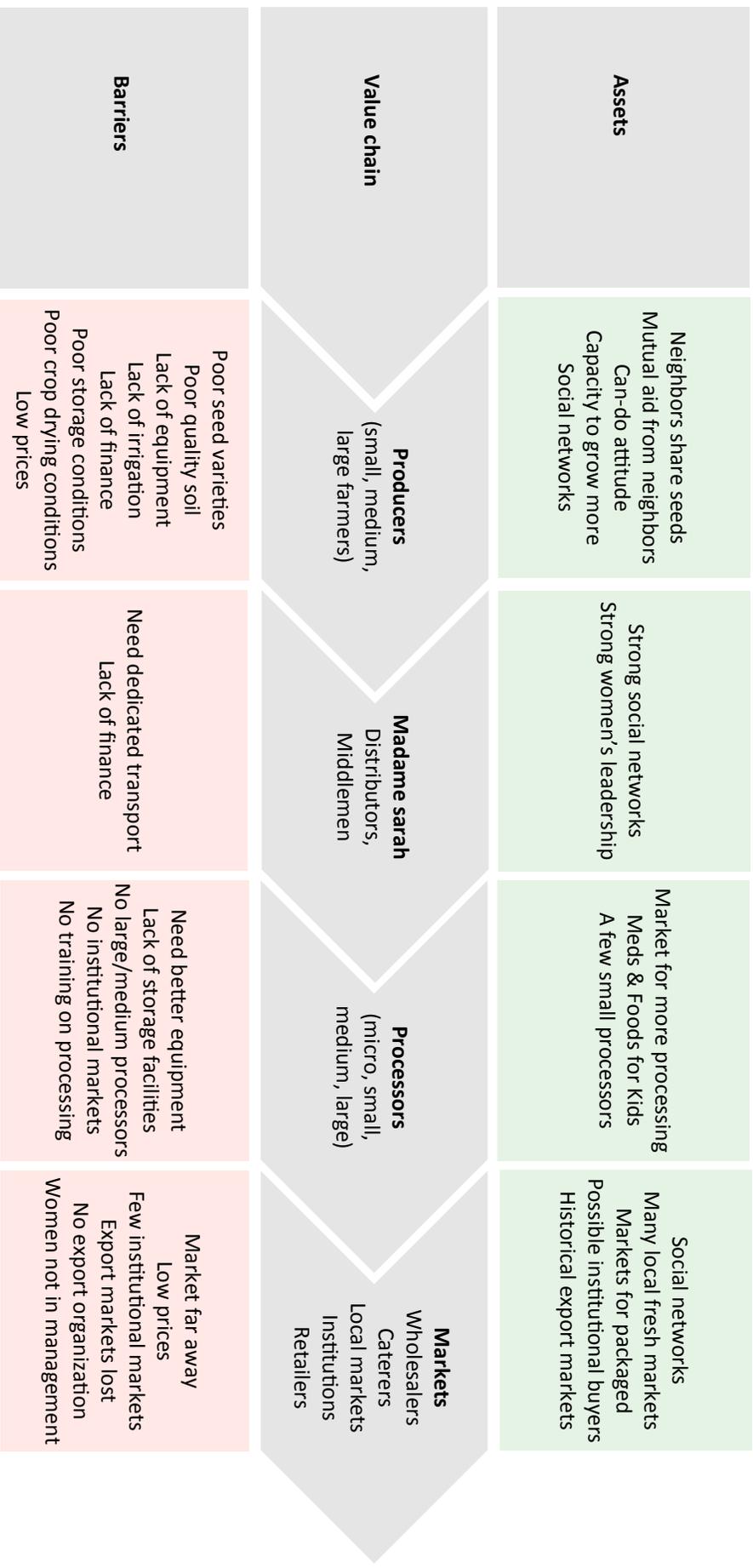


Figure 7: Map of assets and barriers across all value chains

Methodology
Literature review
Local implementation infrastructure
Stakeholder interviews
Livelihoods
Market mapping workshops
Ideas for action
Case study: Codevi
Services and enabling context
Gender equity
Crosscutting assets and barriers
Recommendations
Annex: Annotated bibliography



A KDL representative shows the idle grain silos at the state-owned site in Grand Pré

Ideas for action

At the market mapping workshops, participants were asked to list their name and contact number on the ideas for action identified to overcome barriers in the value chain if they were interested in pursuing them further. The project team met with these people after the workshops, usually at the physical site relevant to their idea, such as a cassaverie or an old storage depot. These meetings allowed for some light business coaching to crystalize the idea for action. The site visits also enabled the project team to assess the physical site as well as the personnel capacity and commitment of the organization to contribute financially or in-kind towards realizing the project idea.

The themes of irrigation, storage, processing and violence against madame sarah arose for every value chain. When asked to prioritize which ideas could be implemented with some real impact in the next four months, priorities tended to shift towards storage and small- and medium-size processing. The USAID OTI zone is significantly underserved in terms of processing and value added activities, which limits the opportunities for producers to reduce the vulnerability of their livelihoods to market and weather-related fluctuations.

The criteria for developing short-term ideas for action were:

- Must come from value chain actor directly
- Must provide an equitable stake and increased influence for small farmers
- Must address major barriers identified in the workshops
- Sponsoring organizations must be credible and competent
- The idea must be completed by June 2012

All the ideas that were prioritized and shaped addressed storage or processing of maize, manioc, and peanuts.

- Cassaverie upgrade, Limonade, sponsored by Intervet
- Maize treatment and packaging facility, Limonade, sponsored by CALI
- Peanut and maize storage and processing facility, Limonade, sponsored by Intervet
- Maize storage and processing facility, Quartier Morin, sponsored by KDL

One of the most remarkable findings of all was the number of underutilized assets that do exist in the USAID OTI zone. All of the ideas for action identified by value chain actors, who were all producer associations, addressed the upgrading of existing infrastructure. This existing infrastructure ranged from a half-built concrete storage depot in Limonade to a 4,800 square foot idle processing facility in Quartier Morin.

Manioc

The manioc workshop brought together value chain actors from several communes in the Cap Haitien Development Corridor, representing several cassaveries. Of these cassaveries, one is inside the USAID OTI zone, in the Bois-de-Lance section of Limonade. This cassaverie is on commune-owned land but managed by a regional cooperative association called Intervet (*Ètervèt*). While Intervet was originally created by Haitian NGO Veterimed to respond to veterinary issues, the organization has diversified how it uses its technical capacity. The cassaverie in Limonade is in decent condition compared to other cassaveries in the region due to recent investment from Agrisud. All of the cassaveries identified similar barriers and solutions in the workshop, which tended to focus on cassaverie hygiene, storage, and baking capacity. Upon further scoping by Intervet after the workshop, members identified three key improvements:

- Extend the roof to keep out the rain, as this affected food hygiene and the quality of the cassave
- Add *platines*, the circular stoves used to bake cassave, as this was identified as the principal production bottleneck and a cause for manioc spoilage
- Improve the storage room for cassave so it is more hygienic and reduces spoilage

All of these improvements are reasonably simple, yet they significantly affect the quality of the final product, cassave. All value chain actors agreed that they must ultimately produce cassave of a consistent quality in order to obtain brand recognition that would enable them to command a higher price. Currently, inconsistent quality within each cassaverie means that consumers cannot assess cassave quality until after purchase and, therefore, they pay the same price for all cassave. Intervet also felt incorporating training for cassaverie workers alongside these infrastructure improvements would maximize progress towards ensuring consistent quality.



Women peel manioc at the Limonade cassaverie

A member of CALI demonstrates how the maize grinder works using a customized bicycle gear



Maize and peanut

The maize and peanut value chains presented the most opportunities for short-term actionable ideas. Poor storage conditions and the absence of accessible processing facilities are shared barriers, which limit producer livelihoods to the sale of raw produce and also contribute to regional food insecurity. Through the workshops, three groups identified existing assets in the USAID OTI zone that could be readily transformed into functional storage and processing facilities. The three project ideas essentially presented a similar solution to the same, shared barriers in multiple locations of the USAID OTI zone. A multiplicity of small and accessible storage and processing facilities is preferable at this stage to the concentration of storage and processing in one location because smaller facilities throughout the USAID OTI zone are more accessible to small producers.

Maize treatment and packaging facility: The most immediately actionable project is the maize treatment and packaging facility in Limonade that is managed by the Chambre d'Agriculture Limonade (CALI). The building and old machinery are in place, previously used to supply the World Food Program (WFP) with maize grain. The long storage periods for sizeable but infrequent payments from WFP created cash flow problems for CALI. In recent years, CALI experienced infestation levels in their grain that precluded them from supplying WFP. CALI's initial idea was to purchase heat treatment machinery, which would enable them to supply WFP. Further light business coaching highlighted the opportunity to diversify into retail sale of maize meal and even maize-based snacks. Retail maize meal, meaning small amounts of maize meal for sale to households, ensures small but frequent payments, which spreads out cash flow for a small organization like CALI. The project idea therefore entailed augmenting existing equipment with a heat treatment and packing machine and improving the storage conditions in the existing facility.

Peanut and maize storage and processing facility: Intervet owns land near the cassaverie in Limonade on which it has begun to build a concrete structure intended to be a storage facility for maize and peanut (and possibly other products). The use of land for this purpose and the investment in infrastructure is an important indicator of an organization's appetite to incorporate agricultural value added activities. After attending the maize workshop, Intervet also became very interested in processing maize. Light coaching at a subsequent site visit resulted in a decision to also process peanuts as snack foods. The project would entail finishing the concrete structure, buying machinery for processing, and providing basic training to Intervet to ensure effective operation of the facility.

Maize storage and processing facility: Tucked away in the southern end of Quartier Morin, in the village of Grand Pré, lies a 4,800 square foot American-built processing facility accompanied by three industrial grain silos and a slaughterhouse (abattoir). This is the asset that the local farmers' cooperative, Kombit Developman Lakay (KDL), identified. The facility is located on state-owned land, which diminishes the likelihood of completing investment in a short timeframe, but conversations with the Minister of Agriculture and the mayor have been promising. The existing infrastructure is solid, and the key improvements identified included repairs to the roof of the main building and to the silos, installation of processing machinery, and basic training to operate the facility effectively.

All of the maize projects would benefit from training on improving pre- and post-storage drying of maize and techniques for producing better quality maize meal to compete with the imported product.

Plantain

The plantain value chain actors focused on production versus processing. While there is an opportunity for processing, as well as export, these were not considered the vital next investments by value chain actors. Improving irrigation was the priority idea for action. Other ideas for action addressed using better seed varieties, obtaining technical support, and creating a cooperative bank. Workshop participants, however, perceived that none of these priorities could be transformed into an actionable idea to be developed immediately and completed within four months.



The broken dam wall at Latendrie, which irrigated 60 square miles of land until the 1980s

Long-term projects

There were several long-term projects identified in the stakeholder interviews and workshops that the project team followed up for better understanding. In this case, long-term means projects that require between six and 12 months to be completed.

The principal long-term project, which was identified through stakeholder interviews and consistently in all of the workshops, was repair of the dam at Latendrie and cleaning of the irrigation system stemming from it into Quartier Morin and Limonade. The dam was built by the Government of Haiti in the 1950s, but it broke in the 1980s and was never repaired. Estimates by local contractors place the cost of repair between \$200,000-500,000. An assessment made by USAID consultants placed the cost at \$2-3 million. While some additional assessment of the cost of repairing the dam is necessary, the value of the dam to the rural economy appears paramount from the stakeholder interviews and workshops. While the dam wall is broken, the project team saw no evidence of serious damage to the extensive irrigation system. The major investment required for the irrigation system is removal of plant debris. According to local farmers, the skills and willingness to operate the dam, primarily the operation of levers to allow water into the irrigation system, still exist. Dredging of rocks and gravel from the riverbed remains an important economic activity, which means that these building materials could be sourced from the local area.

The second long-term project identified was the piloting of on-farm storage facilities. Creating accessible, affordable, hermetically sealed storage solutions for small farmers is a key recommendation from both the literature review and the workshops. The absence of storage facilities means that farmers are compelled to sell their entire crop quickly, which often means selling the crop at low prices due to oversupply in the market. The rest of the value chain is also forced into the same situation, since they also generally lack storage facilities. If producers can store some of their crop, they can delay sale until the winter months, when their crop will command a better price. This stored crop can also be used for self-consumption during the winter months and as seed for the following year. This lack of storage also contributes to food insecurity because the local supply of staple goods dries up in the winter months, and consumers are compelled to buy imported staple goods at higher prices.

A straightforward but expensive opportunity for investment is the financing of an Optinut machine for MFK. MFK is currently constructing a purpose-built processing facility to produce Plumpy'nut. Based on current production volumes, the single Optinut machine presents a bottleneck, as its capacity is half that of the processing machines preceding it. The addition of a second Optinut machine would enable MFK to double its processing capacity and, therefore, double its sales volume and capacity to purchase local peanuts. Based on MFK's history of investment in local productive capacity and technical skills, the project team determined that this investment would have a direct impact on producers by doubling the market for good quality peanuts. The investment should be coupled with the commitment to buy the additional peanuts from producers within the region, which is in line with MFK's mission. MFK has consistently demonstrated its commitment to regional farmers by paying farmers fair prices, paying them quickly, and even collecting the peanuts from the farms. This level of consistent social investment is rare asset to be reinforced in the region.

Finally, the sea salt value chain represents a significant opportunity for the commune of Caracol, which is one of Haiti's largest potential sources of sea salt. Current production methods are outdated and inefficient, resulting in sea salt that looks dirty, is not iodized, and consequently commands a low price in the market. Salt coming from the Dominican Republic, produced using modern methods, is cleaner and iodized. There are national initiatives to upgrade sea salt production, boost productivity, and integrate iodization. In order to avail of investment in this sector, the local sea salt value chain needs to be better organized and educated on the potential livelihoods opportunities in an upgraded sea salt value chain.

The salt flats at Caracol, which could contribute to sustainable livelihoods in the region



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Kitchen merchants at Codevi have organized themselves into one association

Case study: Codevi

The Codevi industrial park was founded in 2003 as a division of the Dominican corporation, Grupo M. The facility consists of two million square feet dedicated to textile manufacturing, producing 6.8 million pants, 34.8 million shirts, and 2.4 million pieces of women's lingerie per annum. As one of Haiti's first free trade zones, all of these goods are exported to the North American market duty-free under multiple free trade agreements. Codevi directly employs 6,500 workers, 96 percent of whom are Haitian.

This case study considers lessons learned from Codevi in terms of agricultural development to inform future engagement with the new industrial park at Caracol, which is inside the OTI zone. While textile manufacturing is the heart of the economic policy underscoring both industrial parks, the provision of meals to tens of thousands of workers creates a significant and unusual opportunity for regional food producers, madame sarah, and kitchen merchants.

Kitchen merchants

The provision of meals for workers provides a massive opportunity for agricultural development in the Cap Haitien Development Corridor. Based on stakeholder interviews, there are at least 110 people engaged in preparing and serving meals to these 6,500 workers every workday, and they

are organized into one Association of Codevi Kitchen Merchants. In turn, these kitchen merchants purchase large quantities of agricultural products from the local market in Ouanaminthe to service the meal demand at Codevi. The provision of worker meals therefore generates livelihoods for this group of merchants as well as the traders from whom they buy meal provisions.

Barriers

The absence of a worker cafeteria at Codevi had the unintended consequence of giving rise to a small village of makeshift kitchens immediately outside the entrance to the industrial park. There are over one dozen such kitchens, which are basic permanent structures that range from walled concrete to open timber frame. Kitchen merchants mentioned a number of challenges that they currently face as they prepare and serve meals to Codevi factory workers. These challenges are also useful to understand in terms of the future plans for on-site facilities.

The primary challenges for Grupo M are:

- Poor hygiene due to the conditions of the kitchen facilities, which leads to workers becoming ill and in turn reduces worker productivity and Codevi's bottom line
- Blemishes to public image caused by the proximity of the makeshift kitchens right outside the entrance to the industrial park, which also causes congestion for visitors to the industrial park during lunch hours

The primary challenges for the kitchen merchants are:

- Lack of storage for equipment (pots, plates, flatware), which requires kitchen merchants to travel back and forth with their equipment every day
- Erratic payment by workers, who are paid weekly by Codevi and so in turn only pay the kitchen merchants weekly (sometimes not at all), creating a constant working capital challenge for kitchen merchants
- Poor facilities to accommodate workers to sit down and eat their meals

These barriers will hopefully be addressed in an upcoming initiative in partnership with the Multilateral Investment Fund (Fomin) and World Central Kitchen (WCK), an NGO dedicated to ending world hunger. This initiative aims to address many of the problems arising from the current situation.

Upcoming initiative

The objective of the upcoming initiative, which is scheduled to start in June 2012 and run for 11 months, is to place the kitchen facilities in a dedicated section of Codevi where hygiene can be maintained to a high standard while also enabling the kitchen merchants to source more products from the local economy.

The initiative is being co-financed by Fomin and a few partners, with WCK providing technical assistance to the kitchen merchants on hygiene, food preparation and energy efficient cooking methods. WCK is also undertaking market research on worker food preferences and opportunities for sourcing these foods locally. The partners are also aware of the storage problem, and the new kitchen facilities are anticipated to contain individual storage units. The partners are currently looking into the best solution for ensuring workers pay for meals.

Recommendations for Caracol industrial park

The lessons learned from Codevi should be considered as the Caracol industrial park develops, specifically the role that worker meal provision plays in the regional economy. With more than 60,000 workers slated to work at Caracol in the long-term, the direct and indirect economic impacts of meal provision are profound. Consideration should also be given to the early engagement and participation of farmer cooperatives, women's cooperatives, and livestock producers in this rare value added opportunity.

Specific recommendations include:

- Develop a joint strategic plan with the developers and managers of the Caracol industrial park to connect worker meal provision with regional producers and kitchen merchants, particularly women producer organizations focusing on vegetables.
- Consult with Codevi kitchen merchants to understand their needs to ensure cafeteria or kitchen facilities at Caracol accommodate these needs and maximize livelihood opportunities for similar merchants in the surrounding communes.



Kitchen facilities transform into other forms of commerce outside lunch hours

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Value chain actors rely heavily on social networks in the absence of services

Services and enabling context

A variety of factors, ranging from tariff policy to technical centers, affect the development of agricultural value chains and the effectiveness of any intervention to improve them. They are collectively referred to as the enabling context. While the individual factors of the enabling context are usually beyond the control of any single value chain actor, they inform the scope of potential effectiveness of interventions in the value chain and point to the priority areas for advocacy. Ultimately, a thriving agricultural sector depends on an enabling context that supports all value chain actors.

Barriers

The barriers to the enabling context identified through the stakeholder interviews and workshops echo those barriers identified in the literature review. The lack of access to credit, technical support, transportation security, quality control, and institutional infrastructure affect all value chain actors.

Access to credit: Access to credit was the one barrier cited by all value chain actors. While each value chain actor needs credit for different reasons, the absence of any formal mechanism for accessing affordable credit severely limits infrastructure and input investment. Value chain actors

have solved this problem through informal systems, such as mutual aid societies, loans from family and friends, loans from Fonkoze, and in the last resort loans from loan sharks at high interest rates. There is, however, a ceiling on the amount of money that can be accessed through informal mechanisms, and the interest rates charged by loan sharks are unsustainable.

Technical support: Lack of technical support was an important barrier for producers and processors. While there are several NGOs that provide technical support, no government services were identified through stakeholder interviews or the workshops. This lack of support fell into two categories: (1) extension services or technical knowledge related to farming and (2) business knowledge, such as marketing and business planning.

Transport security: Transport is an important part of the value chain, though securing participation from transport businesses was difficult since these businesses were by their nature hard to interview, unable to participate in workshops, and in many cases based in the Dominican Republic. The trucks and taxis used by madame sarah to distribute goods are not only prone to breakdown but, more importantly, mix clientele in a way that creates physical security risks for madame sarah. Improving transport security, particularly exposure to physical violence, is a service that should be considered.

Quality control: The absence of any quality control regulation is particularly important to the maize, manioc, peanut, and plantain value chains. The literature review points to the inferior quality of Haitian produce, even in comparison to second-class produce from the Dominican Republic, as a barrier to value chain development. Across these value chains, consumers chose imported produce, which is generally competitive with domestic produce due to local productivity as well as external tariff policy, because it looks better than domestic produce. Imported maize meal looks cleaner and cooks faster, while domestic peanut butter is high in deadly *aflatoxins* (a toxin found in untreated grain and legumes that have been exposed to pre-harvest drought or high humidity during storage that causes human liver cancer after prolonged consumption). Inconsistent quality within an individual cassaverie blocks cassave sellers from commanding any premium, as consumers cannot be certain of quality. The lack of regulation appears to be one deterrent to investment in improving quality or developing export markets.

Institutional infrastructure: Finally, a lack of infrastructure, in terms of institutions and regulations, to support wider market access and export market access was identified across the value chains. Value chain actors remember a time when Haiti exported more of its produce, particularly plantain. While the port of Cap Haitien is well positioned for growth, the North Coast Development Company (NCDC) based in Terrier Rouge is the only agricultural enterprise that was found to be actively engaged in identifying and negotiating with export markets.

Assets

The principal services and context enablers named by stakeholders in interviews and workshops were:

- Provision of services by NGOs
- Untapped consumer segments
- Social networks
- Cooperatives
- Land
- Dam at Latendrie

These assets are reviewed below.

NGO services: Through the workshops, MFK and Agrisud were identified as important providers of technical support to producers and microprocessors. Agrisud is a French NGO that works on multiple staple products, including maize, manioc, and plantain. In addition to hands-on technical support and small-scale infrastructure investment in the communes of Bas Limbé and Limonade, Agrisud provides twice-weekly market prices via the radio. MFK provides significant technical support to peanut producers and also acts as an uncommonly accessible and equitable large processor in the region, collecting peanuts directly from the farms and quickly paying producers fair and pre-agreed prices.

Untapped consumer segments: Value chain actors consistently recognized that there are a variety of consumer segments that are untapped, such as schools, hospitals, and export markets. The identification of these assets demonstrates that producers and processors are aware of these opportunities but require assistance, ranging from marketing to capital investment, to tap into these consumer segments.

Social networks: Producers considered social networks important for obtaining financial resources and labor, while madame sarah considered social networks important to making sales. Interestingly, the Bureau Agricole Communale (BAC), which is the government-sponsored agricultural support extension service for each commune, was not identified in the workshops, though the BACs did participate in the workshops.

Cooperatives: Indicative of the strong social capital in the region, there were a healthy number of farmer cooperatives, mixed and women-only, present throughout the region. Most cooperatives focused on production, and a handful of cooperatives managed small-scale processing activities.

Land: The role of land was more often identified as an asset than a barrier. Producers consistently identified idle land, owned by the state, private landlords, or unknown ownership, which could easily be converted into productive land if land tenure agreements could be arranged. KDL, a farmers cooperative in Grand Pré, is an illustrative example of this, having shown the project team a 30-acre tract of land with a storage and processing depot, silos, and abattoir standing idle.

Dam at Latendrie: One of the most striking assets in the region was the now-broken dam at Latendrie and the vast network of intact irrigation canals stemming from the dam into Limonade and Quartier Morin. This dam was built by the state in the 1950s and broke in the 1980s. According to local producers, the dam and irrigation system contributed to a thriving farming community by growing more water-intensive crops, generating better yields, extending the growing season, and in turn strengthening producer incomes. These local producers stated that they have held more than one dozen meetings with government officials to no avail.

The overall feedback regarding the political context was that it was supportive but ineffective. A junior official from the BAC attended and actively participated in all of the market mapping workshops. The BACs cooperate with Agrisud in the sharing of market price information via radio. With the exception of the recently named Minister of Agriculture, who happens to come from the region and was considered very proactive, value chain actors believed that local officials have no influence on decision-making in Port-au-Prince.

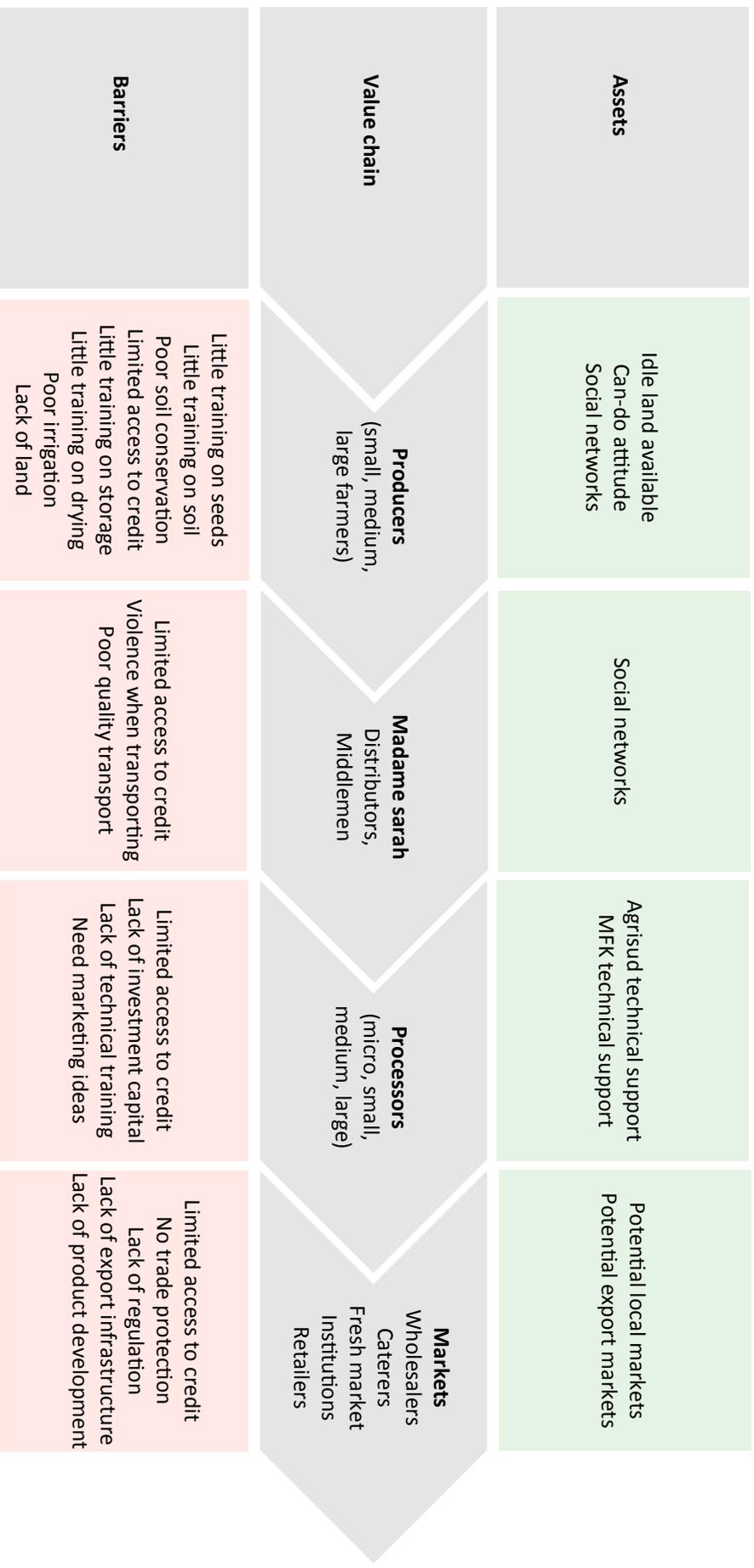


Figure 8: Map of services and enabling context assets and barriers

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Women frequently engage in “first-cut” processing, such as shelling peas for the local market

Gender equity

The role of gender equity is now a pillar of most international development institutions, from government agencies such as the UK DFID and AusAID to international NGOs such as Oxfam and CARE. International development institutions take a gendered approach to development because investment in women’s initiatives and economic leadership are considered to yield greater and more lasting social and economic benefits for society. Women’s economic leadership is equally important in the agricultural sector. For this reason, the rapid action market appraisal methodology integrates gender equity into all stages of the process, specifically targeting female participants in stakeholder interviews and the producer and market mapping workshops. Identifying and working with women’s assets and barriers were specifically considered during the workshops.

Women in the regional value chain

In the Cap Haitien Development Corridor, and in Haiti in general, women play a strong role at three levels: producer, microprocessor and distributor/middleman. The near ubiquity of women middlemen, the madame sarah, seems unique to Haiti and is considered unusual within most developing country contexts.

Women producers: Men and women equally engage in agriculture, though women are more likely to cultivate vegetables because they can be grown quickly and in better harmony with household responsibilities. Women can grow vegetables easily alongside other crops, undertake first-cut processing (e.g. trimming of herbs and maize, removing nuts from shells) at home, and sell the product in the local market to generate cash. The cultivation and sale of fresh and first-cut processed vegetables is an important source of household revenue, and it is handled directly by women, which warrants additional analysis in the future.

Women microprocessors: Women frequently act as microprocessors, essentially cottage industries, processing produce for small-scale sale in the local market. Examples arising from market mapping workshops included the production of fried plantain, animal feed, packed peanuts, peanut butter, and citrus-based preserves.

Madame sarah (distributors/middlemen): The madame sarah is an important and unique feature of agricultural value chains in Haiti. Madame sarah operate at local and national levels in a complex network built on trust. There are two overall levels of operation, though these levels can be traversed depending on the working capital available to the madame sarah. The first level operates at the regional level, purchasing produce direct from producers and selling it at the local and regional markets. First level madame sarah frequently sell to second level madame sarah, who generally amass produce from all over Haiti for resale in Port-au-Prince. These second level madame sarah act as wholesalers, selling larger quantities of product to semi-wholesalers and retailers in Port-au-Prince.

Barriers

The barriers faced by women in the Cap Haitien Development Corridor are similar to those barriers faced by women elsewhere in the world. Women lack control over household finances and other resources to support rural enterprise, and they struggle to balance other household and work duties with agriculture. These barriers affect women at producer and processor levels.

For producers, these barriers, along with diminished physical strength to individually work land effectively, have led to the formation of many women's cooperatives in the region that enable women to earn individual incomes using collective labor.

The single greatest barrier for women in the value chain is violence, most often experienced by madame sarah. Madame sarah rent spaces on trucks and taxis to transport produce from farms to local markets and from local markets to regional and national markets. They often travel alone and stay one or multiple nights in the markets where they sell produce. Throughout these travels, madame sarah experience physical aggression and violence from male travelers who board these trucks and taxis as passengers with the underlying intention of robbing or attacking the madame sarah.

Women felt that this problem of violence could be reduced if taxi and truck owners agreed to carry passengers or goods only versus both. The madame sarah felt that they did have the collective economic bargaining power to convince truck and taxi owners to follow such a policy; however, the madame sarah network is not organized into any cooperative or representative body that enables them to address such a challenge collectively.

Another barrier raised across the value chain was the dominance of men in management roles. While women participate heavily in catering and local market retail, men are considered to manage these catering associations and markets. Conversely, even though women comprised 20-30 percent of each workshop, women did not come forward with ideas for action, which may have been due to confidence levels, the setting, or background issues.

Finally, while women feel they are better able to access microloans than their male counterparts, they face discrimination when seeking larger loans, which prevents them from growing catering and processing enterprises in particular.

Assets

Women comprised a strong proportion of workshop participants and were vocal throughout the workshops. Such a turnout reflects on some basic cultural norms that make women's economic leadership easier to support in Haiti, in contrast to cultures in which women are unable even to participate in such discussions. When asked to consider the assets available to women, workshop participants consistently identified that women are good at production, processing, and distribution (middlemen). The men participating in the workshops clearly accepted the right of the women present to air their opinions, even if these opinions led to spirited debate. Such debates exposed the men present to some of the issues faced by women, and the fact that the debate was welcomed is felt to be an important cultural starting point.

In terms of production, the thematic feature of women's assets was their strong social networks that enable them to grow and sell produce. Specifically, women's assets were identified as: ability to secure microloans, influence in decision-making, ability to work well in associations and cooperatives, and strong social networks to assist with planting and harvesting.

In terms of processing, most women act as microprocessors, and their assets were identified as their capacity to add value through first-cut and minor processing of raw products and to sell this processed product locally through social networks. In short, microprocessors are engaged in the full spectrum of processing and sales, but at a very small, localized level.

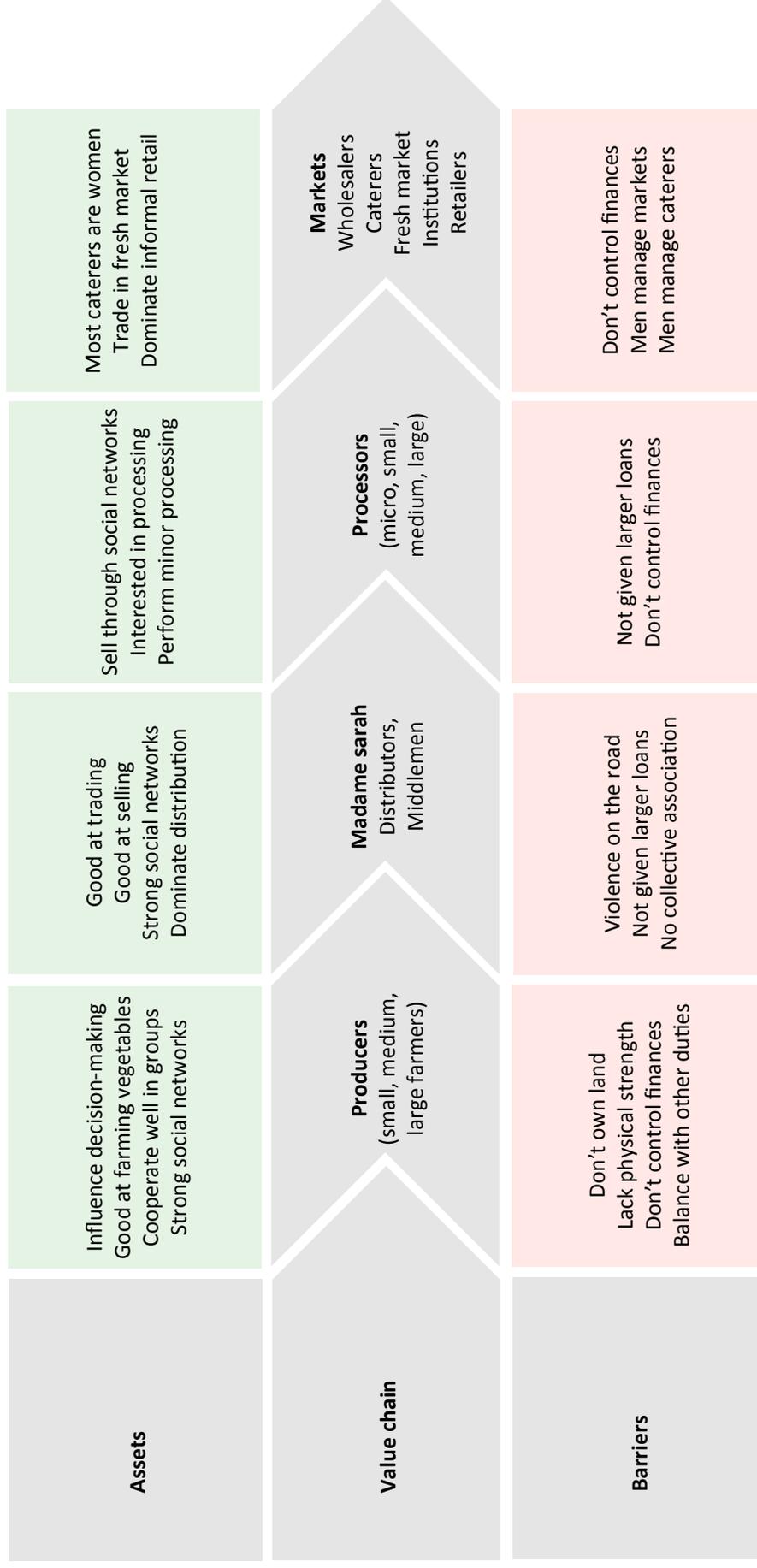
The role of the madame sarah was reflected in the perceived assets of women in terms of distribution and middleman roles. Women are wholly in control of decision-making in terms of distribution and sales. Similar to the assets of women in production and processing, social networks feature strongly, with the entire network of madame sarah relying on social networks and trust to function.

Other assets included the dominance of women in the informal catering sector (though these informal catering associations were often managed by men) and the capacity to trade in the informal retail sector and local markets. In terms of consumption, women have a strong influence on food spending decisions.

Ideas for action

Despite women's strength of voice during the workshops, no women came forward with ideas for action at the end of each workshop. Even the woman who ran her own small-scale processing company called PDG ALKO, producing peanut butter and preserves, did not put forward an idea. In one workshop, some of the men present challenged the female participants in this regard, asking why they had not come forward with ideas when given the chance if they really wanted a leadership role. When interviewed one-to-one, women's cooperatives identified specific ideas to add sustainable value to their businesses, such as the addition of appropriate equipment to reduce the time burden of growing vegetables. Time seems to be a key consideration for women, possibly because of the need to fulfill household responsibilities as well as agricultural ones. Future interventions in the Cap Haitien Development Corridor should target resources at developing the production and processing skills, economic literacy, and leadership capacity of women producers and women's cooperatives.

Figure 9: Map of gender equity assets and barriers



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The region suffers from lack of infrastructure but an abundance of underutilized assets

Crosscutting assets and barriers

Value chain actors from both the stakeholder interviews and the workshops consistently identified certain assets and barriers that apply to all agricultural value chains and should be considered for any intervention in value chain development. These crosscutting assets and barriers are reviewed below and serve as the basis for recommendations for further activity and investment in agricultural value chains in the Cap Haitien Development Corridor.

The principal crosscutting barriers are:

- Irrigation
- Storage and drying facilities
- Processing and packaging capacity
- Access to financial services
- Technical support
- Violence against madame sarah
- Gender inequity
- Export infrastructure

Each of these barriers is reviewed below.

Irrigation

Value chain actors raised irrigation in every workshop. This consistency is due not only to the collective memory of an irrigation system that functioned until the 1980s but also to the dryness of the eastern half of the Cap Haitien Development Corridor that necessitates irrigation to be more productive.

The dam at Latendrie was built by the government of Haiti in the 1950s and broke in the 1980s. The dam spans Grand Rivière du Nord just south of the border with Quartier Morin, while the canal system extends across 60 square miles of the river valley covering Quartier Morin and Limonade. According to farmers and madame Sarah in the area, the irrigated region supported higher yields of staple crops as well as more water-intensive crops that earned a higher margin for producers. The local farmers managed the operation of the sluice gates feeding the canal system. Based on site visits, the canal systems are extensive, largely intact, and simply need basic repairs and clearance of plant debris to function.

Since the dam wall broke, local farmers state that the reduced productivity of the land has caused farmers to move to the local towns in search of alternative livelihoods. The local farmers interviewed claim that they still have the skills to operate the sluice gates were the dam repaired and would be able to sell the increased level of produce.

Storage and drying facilities

Storage and drying facilities provide multiple functions, and there appears to be a dearth of functional facilities in the Cap Haitien Development Corridor at every level: micro (farm), mezzo (small depot), and macro (regional silo) levels. Value chain actors identified the need for such facilities in order to: increase production levels; hoard stock at times of glut until prices increase; store stock for processing and for sale to wholesalers; retard crop loss caused by mold, mildew, rodents, and insects; store stock for the winter months when food is scarce; and hold stock as seeds for the following season. Food security, which has profound social and economic impacts, was consistently noted as a reason for improved storage facilities, with food stocks running out in the winter months due primarily to the inability to store crops. These shortages, according to workshop participants, often lead to food protests, which can turn violent. Finally, poor pre-storage drying and storage of insufficiently dried crops can contribute to high aflatoxin levels, which can have critical health impacts.

Processing and packaging capacity

The lack of processing options in the region arose frequently in the workshops. The role and impacts of the one medium-sized processor in the region, MFK, illustrates the value that a responsible medium-sized processor can have on the livelihoods of small farmers. Producers engaged in peanut production consistently pointed to the provision of technical services and fair purchasing practices of MFK as providing a high return for low risk. Producers in the other value chains could not point to any such relationships or services for their products, signifying a major gap in value chain development. In addition to the lack of medium-size processors, producers consistently articulated the desire to develop or augment their own small-scale processing operations, such as the cassaverie managed by Intervet in Limonade or the maize milling facility managed by CALI in Limonade.

Access to financial services

Poor access to financial services is a common barrier to development. Producers, particularly small farmers, are often trapped in a cycle of poverty because they have no savings or working capital, which limits their choices. Without savings, they cannot invest in agricultural productivity, and without working capital, they are forced to accept the first cash offer received, which often affords minimal profit. Most value chain actors accessed finance in the form of small loans from friends and family because formal loans carry high interest rates. A typical bank loan carries an interest rate of 20 percent, while borrowing from a loan shark can run as high as 40 percent.

Most producers also identified the need for crop insurance, as they invest almost all of their liquid capital into producing the coming season's crop. Agricultural is notoriously fickle, and crop losses of up to 100 percent are predictable and inevitable. One veterinarian explained that households often let their livestock die during the winter as they lack sufficient food to feed both the family and the livestock.

Producers and madame sarah felt that the best solution to these challenges would be the creation or reinforcement of cooperative banks that would specialize in loaning working capital to farmers and middlemen at affordable interest rates. This might entail building on existing cooperative banks in the region or extending the microfinance services of Fonkoze to the region.

The rapid action market appraisal highlighted the significant number of rural entrepreneurs in the region who could realize small but impactful rural enterprises, such as processing and storage businesses, if they connected with impact investors or donors seeking high-impact portfolio investments.

Technical support

The need for technical support or extension services is common but worth reiterating given the prioritization it was given by value chain actors throughout the workshops and stakeholder interviews. The most common services pointed to were: improvements to seed quality and varieties, planting techniques, organic fertilizer, soil management, drying methods, and disease control. Another service cited frequently was the need to better market products and to find crop prices.

There are several service providers in the USAID OTI zone, of which Agrisud, MFK, and Veterimed are the most notable. Agrisud is a French NGO that works on multiple staple products, including maize, manioc, and plantain. In addition to hands-on technical support and small-scale infrastructure investment in the communes of Bas Limbé and Limonade, Agrisud provides twice-weekly market prices via the radio. MFK provides significant technical support to peanut producers and also acts as an uncommonly accessible and equitable large processor in the region, collecting peanuts directly from the farms and quickly paying producers fair and pre-agreed prices. Veterimed is a Haitian NGO dedicated to veterinary services, most noted for its role in the Lèt Agogo dairies. There are two dairies in the USAID OTI zone, in Limonade and Terrier Rouge, and Veterimed provides veterinary and capacity building services to these Lèt Agogo members, many of whom are also involved in agriculture. NCDC has a research farm in Terrier Rouge and was willing to become involved in providing technical and research support.

Violence against madame sarah

Violence against madame sarah was raised in every workshop and is clearly a widespread problem for all madame sarah, no matter which commune or product. The problem of violence against women was considered to be endemic to the region, in which crime does occur and is

growing, and specific to madame sarah due to the features of their transportation system. Madame sarah typically rent a place on a truck to carry them and their goods to the regional market. These trucks take on other passengers, and madame sarah reported that most violence was perpetrated by male passengers whose only reason for boarding the truck was to rob and/or rape them. While the generalized issue of crime cannot be resolved immediately, the situation in which the madame sarah finds herself can be ameliorated in a number of ways. The madame sarah report that they hold significant power with the trucks as they represent a significant revenue stream for them, and this economic power could be used if the madame sarah act collectively.

Gender inequity

Although workshop participants commented on the strong role that women play within the agricultural sector, there was a high level of debate when discussing women's assets and barriers. While there appear to be a healthy number of women's cooperatives in the region, these cooperatives tend to focus on fresh vegetable production, and none of the women's cooperatives that participated in the workshops conducted small-scale processing. Women do engage in microprocessing, typically within the home, though women processors in the workshops acted individually rather than in any collective. Within the retail and catering markets, women identified that they comprise the majority of workers but that men manage these markets.

Export infrastructure

Stakeholders in every link of the value chain bemoaned the fact that there were so few export markets for local produce. Most believed that there were opportunities to be had through exporting. Most conspicuous by its absence was the organised export link of the value chain. The only institutional organizations found to be actively engaged in export were MFK and Établissements Novella/Grand Marnier. While there is great potential for export market development, coordinated market research and organizational collaboration will be required to avail of this opportunity. Investment in several of the other crosscutting barriers – irrigation, storage, technical, support – will also be required to successfully access the export market.

Crosscutting assets

While there were several common barriers identified during the study, there were also a number of assets uncovered that, if taken advantage of, could effectively support the development of sustainable agriculture in the region. The assets most commonly mentioned or considered significant are explored below:

- Idle land
- Underutilized physical assets
- Producer organizations
- Institutional purchasing
- Social networks

Idle land

Land is a scarce resource in Haiti, especially given the lack of level terrain and small landholdings. Producers expressed frustration that so much land stood empty when it could be sold or rented for farming or processing. Productive capacity in the Cap Haitien Development Corridor could be quickly raised by facilitating rental of idle land. The subject of idle land came up constantly in the

workshops and, although not identified as one of the top barriers to progress, was certainly identified as a significant potential asset by value chain actors. Most idle land is owned by the state or absent private landowners.

Underutilized physical assets

The damaged dam at Latendrie and the vast network of irrigation canals running from this dam remain an important asset even though significant investment will be required to restore the dam infrastructure. The irrigation canals appeared to be in reasonable condition, though they were usually filled with plant debris and cracked in some places. There were other underutilized physical assets, such as: the government owned site near Grand Pré, with an abattoir, storage silos, large storage and processing building and 30 acres of farmland; the sea salt flats in Caracol, which are capable of producing significant volumes of sea salt given appropriate infrastructure investment and technical training; and a handful of maize processing facilities and cassaveries that could be producing at far greater volumes given infrastructure investment and management training.

Producer organizations

Indicative of the strong social capital in the region, there were a healthy number of farmer cooperatives, mixed and women-only, found throughout the region. Most cooperatives focused on production, and a handful of cooperatives managed small-scale processing activities. The Haitian NGO, Veterimed, which operates three dairies under the Lèt Agogo brand in the Cap Haitien Development Corridor, is one of the most established Haitian NGOs in the region and appeared to have built significant producer capacity across value chains, not just livestock.

Institutional purchasing

Institutional purchasing, such as schools and hospitals, exists in the Cap Haitien Development Corridor; however, institutions are currently linked to regional producers as well as they could be. There is also no infrastructure supporting the liaison between regional producers and institutions. Within the OTI zone, there are multiple small institutions, such as schools and hospitals and several large institutions, such as the University of Haiti and the Caracol industrial park, that offer opportunities for regional producers. Within the Cap Haitien Development Corridor, the Codevi industrial park in Ouanaminthe and Royal Caribbean port in Labadee offer significant and consistent institutional markets.

Social networks

Value chain actors, particularly producers and women, identified the strength of their social networks as a key asset in every stage of the value chain. For producers, exchanging seeds and other inputs is commonplace. The use of kombit was cited in every workshop. Social networks are the binding force for the local, regional, and national networks of madame sarah, while microprocessors considered social networks to be the source of sales. These social networks that operate at every level are a critical part of future value chain development that should be reinforced rather than replaced.

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Investment in infrastructure and soft skills can promote sustainable livelihoods in the region

Recommendations

The recommendations collectively seek to remove the barriers that keep small farmers trapped in a cycle of poverty. Currently, the need for cash compels small farmers to harvest early, which reduces yields by up to 30 percent, and then bridge this reduced income later with loans from loan sharks, which are repaid at interest rates of up to 40 percent. Solutions to this cycle of poverty are to: increase crop yields, extend post-harvesting life, improve fresh and processed product quality, and incorporate value added activities.

The recommendations follow the crosscutting assets and barriers and take into consideration the multiple programs that will be deployed in the Cap Haitian Development Corridor in 2012/2013, for which some early guidance on clear opportunities for value chain development can be useful. The recommendations omit interventions requiring national government engagement, such as tariff policy, and instead focus on interventions that can be accomplished autonomously within the region. Finally, the recommendations focus on solutions that can be co-designed by the value chain actors, particularly producers, so that the resulting solutions are more likely to be sustained in the long-term.

Figure 10: Recommendations

Barrier	Recommendation
Irrigation	<ol style="list-style-type: none"> 1. Assess costs and impacts of rebuilding the dam at Latendrie as well as debris clearance of irrigation system, which should involve local farmers 2. Assess cost effectiveness of installing wells with consideration to sharing the cost with farmers through a purpose-built credit facility
Storage and drying facilities	<ol style="list-style-type: none"> 3. Develop a support program and credit facility that would enable farmers and producer organizations to develop and market or manage their own hermetically sealed storage facilities 4. Provide incentives for entrepreneurs to develop low cost and effective storage tanks 5. Promote literacy program on value of and techniques for effective crop drying and crop storage 6. Run a competition for the creation of low-cost, culturally-sensitive storage solutions 7. Identify opportunities to augment current activity undertaken by MFK and NCDC, private organizations already providing relevant training and support services
Processing and packaging capacity	<ol style="list-style-type: none"> 8. Create a mixed finance package (grants and loans) for MFK to support investment in increasing their production capacity, which could be tied to assurances of on-going capacity investment in local farmers 9. Create a package combining a dedicated credit facility with technical support to enable producer organizations to develop processing and packaging facilities 10. Perform business analysis of saleable value added products involving maize, manioc, peanut, and plantain, which should include product analysis, marketing analysis, and financial return on investment 11. Provide technical support to organisations seeking to develop processing facilities
Access to financial services	<ol style="list-style-type: none"> 12. Engage Fonkoze in expanding and augmenting their services in the Cap Haitian Development Corridor 13. Engage with existing cooperative banks and credit unions to act as vehicles for financial literacy and credit facilities aimed at supporting producer organizations to invest in storage, drying, processing, and packaging 14. Develop specific bridge loan facility that enables producers to avoid picking crops early, which reduces yields by 30 percent, in order to secure cash 15. Hold an annual event bringing together social investors, donors, and philanthropists with those producer organizations and small enterprises that are more organized and investment ready

Figure 10: Recommendations (continued)

Barrier	Recommendation
Violence against madame sarah	<ul style="list-style-type: none"> 16. Organize workshop specifically with madame sarah to explore assets and barriers, anticipating the desire to explore violence against madame sarah experienced while traveling and in foreign locales as well as the need for madame sarah to organize themselves to engage in collective action 17. Support self-identifying madame sarah representatives to develop a proposal to reduce violence against madame sarah, such as dedicated transport, and to engage with regional transporters to implement these ideas 18. Explore the creation of a dedicated credit facility for madame sarah to finance collective dedicated transport
Gender inequity	<ul style="list-style-type: none"> 19. Conduct a rapid action market appraisal for the fresh vegetable sector specifically for women’s producer groups, as the fresh vegetable sector is deemed to have a disproportionately high level of women’s participation and social benefit 20. Provide dedicated technical support to women’s producer groups to improve confidence, productive capacity and to begin exploring value added activities 21. Provide dedicated technical support to women microprocessors, e.g. peanut butter and preserves, to strengthen and grow enterprise activities
Export infrastructure	<ul style="list-style-type: none"> 22. Conduct an event specifically engaging export-related organizations in the Cap Haitien Development Corridor to determine opportunities for responsible development

Figure 10: Recommendations (continued)

Asset	Recommendation
Idle land	<ul style="list-style-type: none"> 23. Conduct an assessment of idle land suitable for agricultural use and identify the landowner 24. For land owned by the commune, engage with the communal government to develop potential leasing agreements and publicize the availability of the land to producer organizations or small processors in the commune while supporting interested producer organizations to negotiate lease agreements with the communal government 25. Contact all private landlords to determine their willingness to lease the land at a reasonable rate and support producer organizations to negotiate lease agreements with the private landlord
Underutilized physical assets	<ul style="list-style-type: none"> 26. Conduct an assessment of idle and underutilized physical assets, such as storage facilities and wells, and identify the owner 27. Hold open workshops with local value chain actors to develop ideas for putting the physical assets into use and support self-identified individuals or organizations to develop business plans for the use of the assets
Producer organizations	<ul style="list-style-type: none"> 28. Provide technical support to self-identifying producer organizations to develop their technical, administrative, processing, and marketing capacities 29. Provide technical support to producer organizations and federations interested in developing shared drying, storage, processing, or marketing capacities 30. Provide credit facility and technical support to producer organizations interested in buying and sharing equipment 31. Organize quarterly field visits for producer organizations, especially women producer organizations, to farms or cooperatives implementing better methods of production, storage, processing, equipment or irrigation
Institutional purchasing	<ul style="list-style-type: none"> 32. Conduct market assessment of prices paid by institutions for maize, manioc, peanuts, and plantain by regional institutions, such as schools and WFP 33. Develop a joint strategic plan with self-identifying producer organizations and institutions to connect institutional purchasing with fresh and processed food from regional producer organizations and small/medium processors 34. Develop a joint strategic plan with managers of the Caracol industrial park to connect worker meal provision with regional producers and kitchen merchants, particularly women producer organizations focusing on vegetables 35. Conduct a study into the possibilities and impact of small producer cooperatives supplying food to the Royal Caribbean port facility at Labadee

Methodology
Literature review
Local implementation infrastructure
Stakeholder interviews
Livelihoods
Market mapping workshops
Ideas for action
Case study: Codevi
Services and enabling context
Gender equity
Crosscutting assets and barriers
Recommendations
Annex: Annotated bibliography



A can-do attitude and passion for farming are two assets captured in the workshops

Annex: Annotated bibliography

All documents are available from USAID OTI.

National analysis

Environmental vulnerability in Haiti. USAID, 2007.

This multidisciplinary study finds that the root causes of environmental disaster in Haiti are acute poverty, rapid population growth, and unplanned urbanization. Looking primarily at watershed intervention and biofuel development, the recommendations emphasize the need to integrate economic development and off-farm employment in secondary cities to ensure long-term reforestation of hillsides and preservation of watersheds.

Haiti market analysis. USAID, 2010.

Analysis of the potential impact of US government food aid and approaches to mitigate negative impacts on domestic agricultural production and private sector development.

Identification of potential niches in Haitian rural supply chains: Volume 1: Global framework for agriculture. IDB and MARNDR, 2005. [French title: *Identification de creneaux potentiels dans les filières rurales haïtiennes: Tome 1: Cadre global de l'agriculture*]

National assessment of the rural ecosystem, private sector evolution, institutional and macroeconomic frameworks, and market trends.

Identification of potential niches in Haitian rural supply chains: Volume 2: Rural supply chains. IDB and MARNDR, 2005. [French title: *Identification de creneaux potentiels dans les filières rurales haïtiennes: Tome 2: Les filières rurales*]

National analysis of agricultural development opportunities with financial value chain analysis of 40 commodities.

North region analysis

Agricultural value chains in the north region – Part I: General situation of agricultural value chains in the north region. USAID, 2011. [French title: *Les filières agricoles de la région nord – Partie I: Situation générale des filières agricoles de la région nord*]

Assessment of the geographic characteristics, institutional framework, and evolution of agriculture in the North and Northeast departments.

Agricultural value chains in the north region – Part II: Prioritized sectors. USAID, 2011. [French title: *Les filières agricoles de la région nord – Partie II: Les filières priorisées*]

Value chain analysis of 25 commodities grouped into nine sectors: coffee, cocoa, bovine husbandry, cereals (rice, maize, sorghum), plantain, citrus (orange, chadeque, lemon) and pineapple, vegetables (onions, peppers, cabbage, carrot, tomato, beets), tubers (yam, manioc, sweet potato, malanga), cashew, and ginger. Recommendations include: decentralize and strengthen public bodies in the region, create a research farm, create an incentive framework, address corruption and strengthen the police force, and strengthen cooperation with neighboring countries.

Livelihoods in Northern Haiti. Catholic Relief Services, 2011.

Participatory analysis across the Northwest, North, and Northeast departments. Recommendations relevant to the Cap Haitien Development Corridor include: improve community hygiene and potable water conditions, improve access to affordable health services and medical care, enhance capacity of people who fish, enhance vulnerable families' capacity to diversify their livelihood activities, and improve capacity to protect children from exploitation and children's rights to a quality education.

Territorial development in Haiti and study of opportunities in four areas of the North and Northeast. Oxfam GB, 2007. [French title: *Développement territoriale en Haïti et étude d'opportunités dans quatre zones du Nord et du Nord-Est*]

Extensive study of four zones in the North and Northeast departments, considering both institutional frameworks and specific value chains. The report concludes that poor communications systems, absence of processing and packaging infrastructure, disorganized marketing and sales channels, low level of technology and equipment, and deficient financial and technical support all constrain success of rural agriculture.

Coffee and cocoa

Assessment of Haitian coffee value chain. Catholic Relief Services, 2011.

Participatory assessment of the coffee value chain nationally. Recommendations include: prioritize work with most economically profitable geographic areas, partner with schools to train qualified personnel, develop and improve infrastructure for washed coffee, introduce process standardization and cupping laboratories for local producers, consider fair-trade and organic certification to open markets, and develop local leadership and business acumen.

Identification of potential niches in Haitian rural supply chains: Cocoa sector. IDB and MARNDR, 2005. [French title: *Identification de creneaux potentiels dans les filières rurales haïtiennes: Filières cacao*]

National assessment of the cocoa value chain. Recommendations include: expand land area under cocoa production, develop and enforce quality standards, reduce the costs of using Haitian ports, create government backed producer-level guarantee fund, and expand research and development to improve productivity.

Identification of potential niches in Haitian rural supply chains: Coffee sector. IDB and MARNDR, 2005. [French title: *Identification de creneaux potentiels dans les filières rurales haïtiennes: Filière café*]

National assessment of the coffee value chain. Recommendations include: coordination with plantain cultivation, structure the value chain to maximize value for producers, access to lines of credit, develop community banks, develop coffee drying centers in dry regions near coffee producing areas, develop small-scale coffee roasting businesses, and increase pest control.

Restoring the competitiveness of the coffee sector in Haiti. IDB, 2006.

Assessment of the coffee value chain with a focus on public policy and institutional interventions. Recommendations include: strengthen institutional links in the supply chain to set priorities for investments, support a national laboratory for certification, support national disease control programs and technological innovation, establish quality management guides and standards for producers, and financial instruments to enable producers to cultivate higher value added coffees.

Strategic framework for the development of the Haitian coffee sector. IDB and MARNDR, 2011. [French title: *Cadre stratégique de développement de la filière café d'Haïti*]

Strategic plan for coffee sector growth over the next 20 years. The five strategic areas are: production and research, risk management, marketing, governance and professionalization, and finance.

Women's participation in Rekokarno. Oxfam GB, 2008. [French title: *Participation des femmes dans Rekokarno*]

Assessment of women's participation in the coffee network of the North and Northeast departments, Recocarno/Rekokarno. Recommendations include: support more women to participate in national activities and fairs to gain visibility, offer daughters of producers training in cooperative management and find scholarships to enable them to stay in school, establish a credit system for coffee production, help women take forward new initiatives in the processing and sale of coffee in domestic and international markets.

Cereals and produce

Assessment of Haitian mango value chain. Catholic Relief Services, 2011.

Mango value chain assessment focusing on southern Haiti with application to other regions. Recommendations include: establish new mango fields, evaluate technology packages, train producers and middlemen in best harvest and post-harvest techniques, improve local transportation services, and seek new markets.

Haiti rice value chain assessment: Rapid diagnosis and implications for program design. Oxfam America, 2011.

Assessment of rice value chain, focusing on the Artibonite but with application to other regions. Recommendations span producer to national policy levels and cover: farmer organization, value chain coordination, data collection, access to water, inputs, land use, post-harvest processing, and applied technology research.

Identification of potential niches in Haitian rural supply chains: Cereal, legume, and plantain sectors. IDB and MARNDR, 2005. [French title: *Identification de creneaux potentiels dans les filières rurales haïtiennes: Filières céréales, légumineuses, banane*]

National assessment of the cereal, legume, and plantain value chains, specifically: rice, maize, sorghum, beans, pigeon peas, peanuts, and plantains. Recommendations include: [rice] protect local rice, intensify rice production, educate value chain actors, and reduce rice consumption in favor of other products; [maize] diversify types and end uses of maize, finance maize semolina, protect the maize sector, create an insurance fund, improve storage conditions, and organize producers into associations; [sorghum] support research on sorghum production and processing, improve storage conditions, and encourage ethanol production; [beans] establish or support seed production systems in each department, and improve bean storage; [peanuts] support the production of peanut butter, introduce new peanut varieties; [plantain] support intensification of plantain production through technical changes to crop cycle and rotation, support academic agronomic centers, increase organic plantain production, and improve and standardize presentation and marketing of plantains.

Identification of potential niches in Haitian rural supply chains: Fruit, tubers, vegetables, ornamental plants and cut flower sectors. IDB and MARNDR, 2005. [French title: *Identification de creneaux potentiels dans les filières rurales haïtiennes: Filières fruits, tubercules, légumes, plantes ornementales et fleurs coupées*]

National review of value chains for fruits, vegetables, herbs, tubers, ornamental plants, and cut flowers. Recommendations include: [fruits for domestic market] experiment with early and late varieties, increase pest control, establish grazing regulations, subsidize transport, analyze new wholesale markets; [fruits for export] focus on mango to respond to US market, develop production in areas with staggered harvest schedule, diversify varieties exported, improve collection and transport techniques, promote pest control research, create tax and financial incentives, formalize exchanges with the Dominican Republic; [vegetables for domestic market] support water management, create legal frameworks for associations, and support applied research; [vegetables for export] produce under contract with owners of 3-10 hectares, develop frameworks for training, create financing mechanisms; [processed fruits and vegetables] finance equipment for small production units and provide technical support on processing methods; [tubers] diffuse propagation techniques, experiment with pest control methods, develop production in less infested areas, test varieties desired by international market; [cut flowers] provide technical training, finance inputs, and support mountain water collection.

Other sectors

The Haitian sea salt industry: An analysis and strategic growth plan. TechnoServe, 2011.

Assessment of the opportunities and challenges of increasing commercial sea salt production in multiple regions of Haiti. Recommendations include: support producers to develop professional enterprises, facilitate access to finance to modernize production methods and maintain basins, protect existing basins from damage by flooding or rain, improve capacity to produce and commercialize iodized salt, and develop a strategy for future exports.

Identification of potential niches in Haitian rural supply chains: Essential oil sector. IDB and MARNDR, 2005. [French title: *Identification de creneaux potentiels dans les filières rurales haïtiennes: Filières des huiles essentielles*]

National assessment of the essential oil value chain, with a focus on vetiver. Recommendations include: improve productivity through raw material collection and distilling techniques, improve and standardize quality through production and processing techniques, coordinate and bundle sales, improve market information for essential oil producers, finance diversification into other essential oil products, and government subsidy to the sector.

Identification of potential niches in Haitian rural supply chains: Livestock sector. IDB and MARNDR, 2005. [French title: *Identification de creneaux potentiels dans les filières rurales haïtiennes: Filière élevage*]

National review of value chains for cows, goats, rabbits, pigs, poultry, and bees. Recommendations include: improve the available and quality of forage, improve conditions for livestock watering, improve access to land, support genetic improvement, improve animal health, and strengthen producer organizations.

Identification of potential niches in Haitian rural supply chains: Sugar cane sector. IDB and MARNDR, 2005. [French title: *Identification de creneaux potentiels dans les filières rurales haïtiennes: Les filières canne à sucre*]

National review of sugar cane value chain, covering *kleren* (unrefined rum), syrup, and *rapadou* (jaggery). Recommendations include: train distilleries to use bagasse as the sole source of fuel, technological and process improvements to distilleries, creation of a technical support center, foster producer associations and networks to improve their market position and knowledge sharing, promote new products like medicinal alcohol and bottled syrup.

Renewable energy prospects in Haiti's Nord-Est department. Oxfam GB, 2008.

Exploration of alternative energy sources to meet domestic and agricultural needs, identifying alternative fuel sources for cooking fuel as having the greatest immediate impact on deforestation. Recommendations include: use of biofuel crops such as sweet sorghum and jatropha, biogas digesters, modified kerosene stoves as well as developing markets for the other products created by biofuel crops.

Finance and inputs

Identification of potential niches in Haitian rural supply chains: Characteristics of the rural labor market. IDB and MARNDR, 2005. [French title: *Identification de creneaux potentiels dans les filières rurales haïtiennes: Caractéristiques du marché du travail en milieu rural*]

National review of rural labor markets. Recommendations include: improve monitoring and knowledge base of rural labor, develop a social security plan for rural producers, provide access to finance for family farms, identify alternative employment activities, provide basic education and vocational training, develop a system to strengthen the organization of rural producers, and improve legal frameworks regarding land tenure and labor practices.

Identification of potential niches in Haitian rural supply chains: Constraints related to land. IDB and MARNDR, 2005. [French title: *Identification de creneaux potentiels dans les filières rurales haïtiennes: Les contraintes liées au foncier*]

National review of land-related issues in rural agriculture. Recommendations include: provide legal assistance to producers, develop capacity to monitor land data, ensure that producers are part of land surveys prior to construction, and re-launch the School of Surveying at the University of Haiti.

Identification of potential niches in Haitian rural supply chains: Evaluation of plant health and strengthening the phytosanitary system. IDB and MARNDR, 2005. [French title: *Identification de creneaux potentiels dans les filières rurales haïtiennes: Evaluation de la situation sanitaire et renforcement du système de contrôle phytosanitaire*]

National review of phytosanitary (plant health) regulation, protection, and resources. Recommendations include: introduce laws on plant protection and pesticides, undertake pest risk assessments, establish quarantine lists, set up pest and animal surveillance systems, train government staff to identify pests, and improve information communication systems.

Identification of potential niches in Haitian rural supply chains: Macroeconomic characteristics of food production in Haiti and analysis of its impact on the competitiveness of Haitian agriculture. IDB and MARNDR, 2005. [French title: *Identification de creneaux potentiels dans les filières rurales haïtiennes: Caractéristiques du cadre macroéconomique de la production alimentaire en Haïti et analyse de son impact sur la compétitivité de l'agriculture haïtienne*]

Review of evolution and current state of the Haitian macroeconomic framework and its effects on the competitiveness of the agricultural sector.

Identification of potential niches in Haitian rural supply chains: Rural finance. IDB and MARNDR, 2005. [French title: *Identification de creneaux potentiels dans les filières rurales haïtiennes: Finances rurales*]

National review of constraints to and opportunities to access rural finance. Recommendations include: strengthen the legal framework of the financial system, expand the variety and availability of financing, facilitate rural savings, reduce the cost of financing, support development of insurance products, and strengthen producer organizations.

Seed system security assessment, Haiti. USAID, 2010.

Overall, the report recommends significant investment in small farmer-driver variety, seed, and agricultural marketing systems. Recommendations include: develop and identify varieties that are adapted to local conditions, develop sustainable decentralized seed production models, improve physical access to seed outlets, improve fertilizer use, improve access to information on production innovation, grow rural agroenterprises, and improve women's role in agriculture.

Study of Haitian agricultural sectors. Association Nationale des Caisses Populaires Haïtiennes, 2008. [French title: *Etude des filières agricoles haïtiennes*]

National analysis of systems of credit to support agricultural development. Five types of credit identified: credit for short cycle crops such as vegetables, credit for average cycle crops such as coffee and cocoa, credit for equipment, credit specifically for mango production, and credit to producer organizations for tractors.

Maps

Cap Haitien development corridor. USAID, 2011.
 Production and trade flow maps: Haiti beans. USAID.
 Production and trade flow maps: Haiti maize. USAID.
 Production and trade flow maps: Haiti rice. USAID.
 Production and trade flow maps: Haiti tubers. USAID.

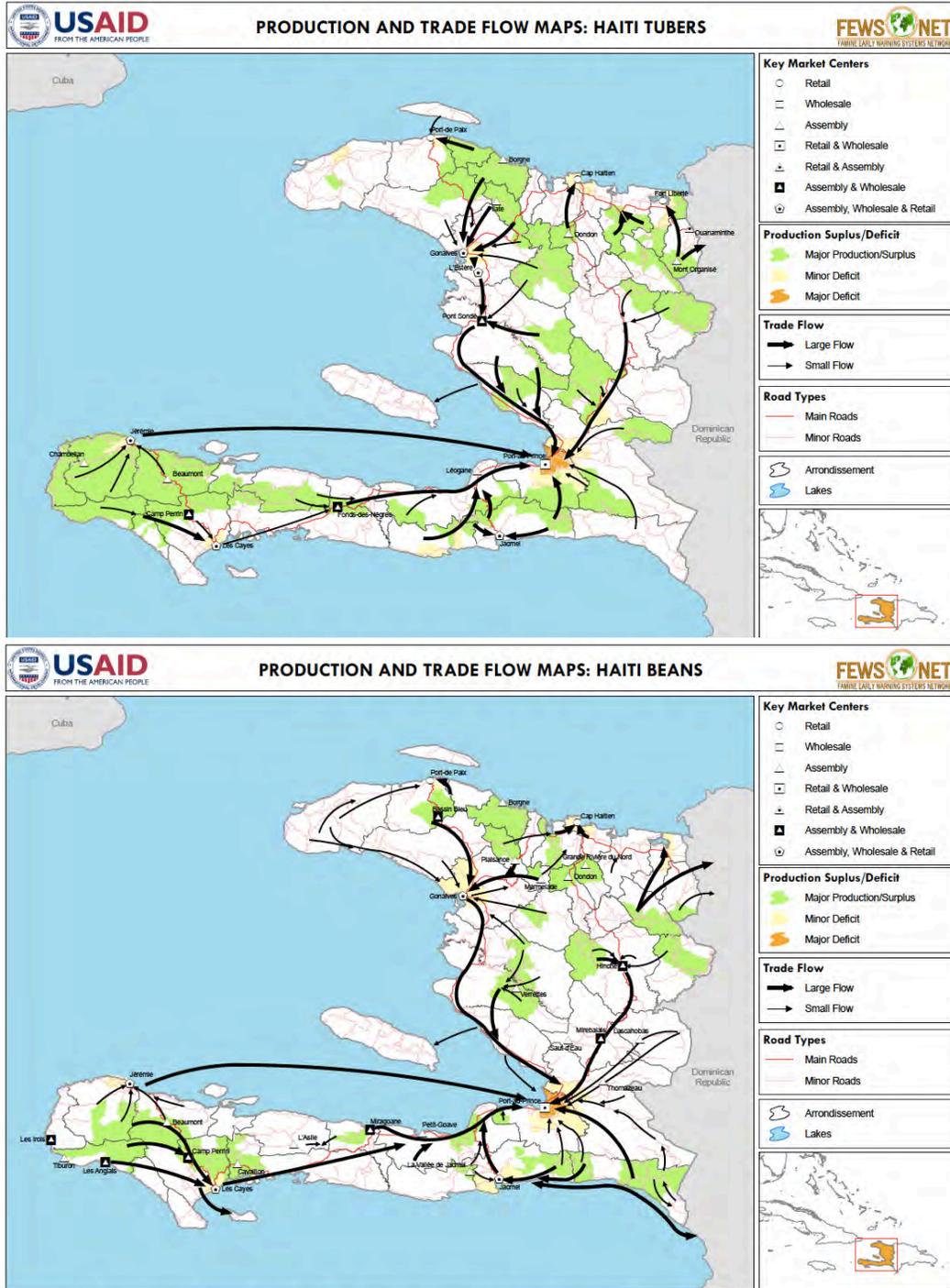
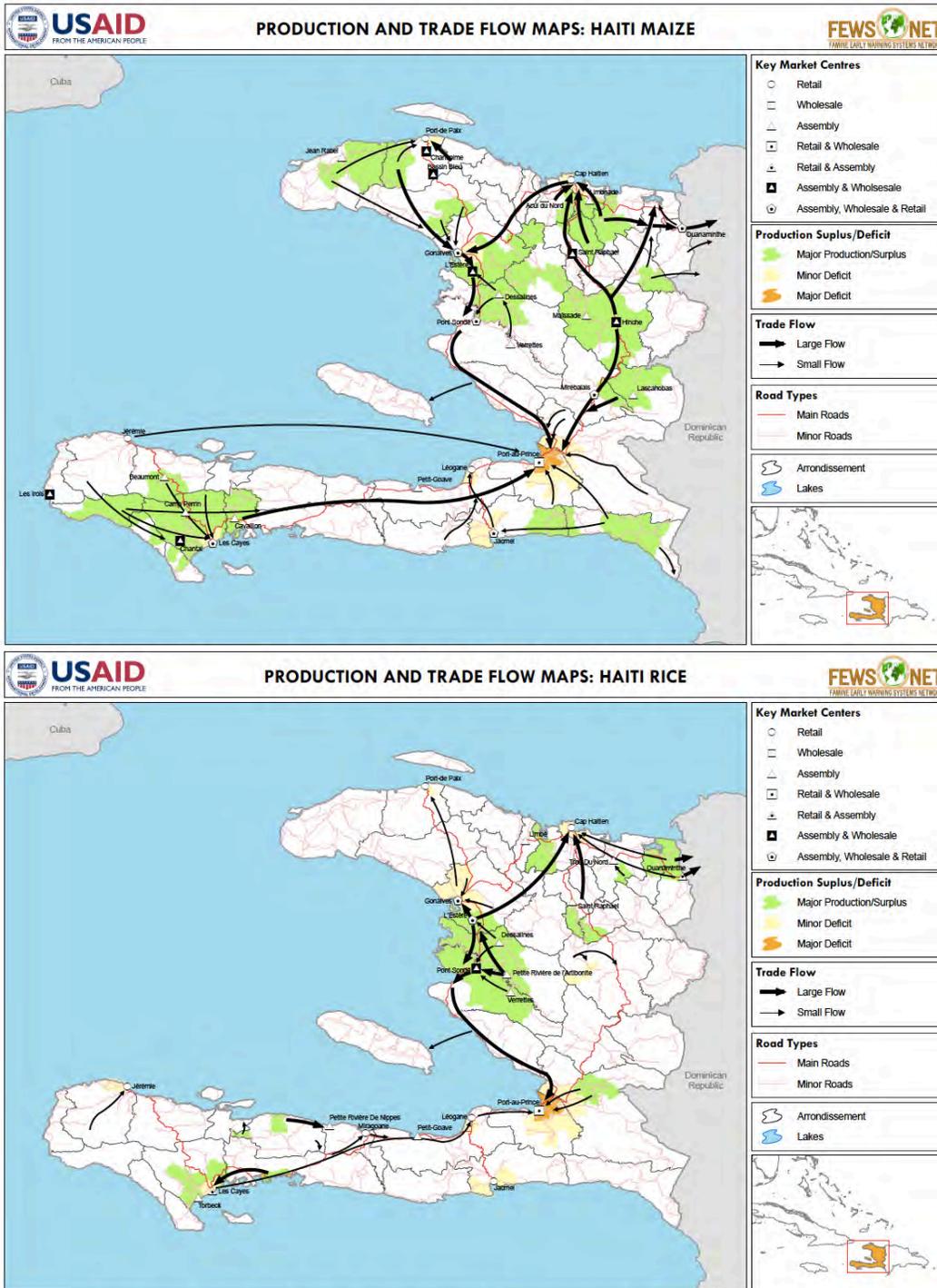


Figure 10: Fewsnets maps of commodity trade flows

Figure 10: Fewsnets maps of commodity trade flows (continued)





Agricultural development and investment opportunities in the Cap Haitien Development Corridor, Haiti
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