

**Performance Evaluation for the
Production and Business Services
Activity of the Productive
Development Project, El Salvador**

May 29, 2013

Randall Blair
Larissa Campuzano



MATHEMATICA
Policy Research

Contract Number:
MCC-10-0114-CON-20/TO03

Mathematica Reference Number:
06918.800

Submitted to:
Millennium Challenge Corporation
875 Fifteenth Street NW
Washington, DC 20005-2221
Project Officer: Rebecca Goldsmith

Submitted by:
Mathematica Policy Research
1100 1st Street, NE
12th Floor
Washington, DC 20002-4221
Telephone: (202) 484-9220
Facsimile: (202) 863-1763
Project Director: Larissa Campuzano

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ACKNOWLEDGMENTS

We greatly appreciate the hard work of many people whose efforts contributed to this report. We especially thank our monitoring and evaluation colleagues at MCC and FOMILENIO: Rebecca Goldsmith, Lola Hermosillo, Claudia Argueta, Xenia Panameño, and Moisés Díaz. Their input and support at all stages of the project has been invaluable. Isabel Rodríguez, from FOMILENIO, also deserves special recognition for her excellent assistance with data collection and field interviews. In addition, William Mejía, from Chemonics, devoted countless hours to organizing administrative data and planning site visits.

Our colleagues at Mathematica have provided guidance and suggestion throughout the project, particularly Lorenzo Moreno. We also thank Jackie McGee for her diligence and patience in formatting this report; and last but definitely not least, Olga Bolotina does a wonderful job tracking and managing the project staffing and resources.

This report represents an analysis of qualitative and quantitative information from a variety of stakeholders and data sources. To the extent possible, we have attempted to compile this information into the most accurate and balanced summary of the Production and Business Support Activity, including both positive and negative findings regarding implementation and results. This version of the report reflects modifications made following formal consultations with representatives from Chemonics, FOMILENIO, and MCC in 2012 and 2013. We appreciate these organizations' willingness to review the document and provide constructive feedback.

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EXECUTIVE SUMMARY

In this performance analysis report, we present key findings regarding the implementation and results of the Production and Business Services (PBS) Activity of the Productive Development Project (PDP) in El Salvador, funded by the Millennium Challenge Corporation (MCC). This report’s findings are focused on the three value chains in the PBS activity that involved the largest number of participants: horticulture, dairy, and handicrafts. These findings serve as a complement to Mathematica’s impact evaluation of one year of PBS assistance to producers in these three chains.¹ Whereas the impact evaluation pertains largely to PBS assistance from 2010 to 2011, this performance analysis offers a global summary and analysis of the entire PBS Activity from 2008 to 2012.

Funded at \$57 million, the objective of the PBS Activity was to help poor farmers in El Salvador’s Northern Zone successfully transition to higher-profit activities, create new jobs, and generate increased income. PBS assistance spanned several sectors, including horticulture, fruit, dairy, handicrafts, tourism, forestry, and coffee value chains. Assistance included in-kind donations (such as agricultural inputs), technical assistance and training, and technical and financial support for new and existing producer-owned enterprises. The PBS Activity was implemented in three distinct phases: a pilot phase from 2008 to 2009, Phase I from 2009 to 2010, and Phase II from 2010 to 2012. In conjunction with SNC-Lavalin, a Canadian engineering firm, the Multisectoral Development Bank (known as BMI for its initials in Spanish) implemented the PBS pilot. Under the supervision of El Salvador’s Millennium Challenge Account (FOMILENIO), Chemonics International implemented Phases I and II of the PBS Activity through contracts with technical service providers including CARE, Swisscontact, TechnoServe, and Zamorano (see Table 1 for key characteristics of the PBS Activity).

Table 1. Key Characteristics of the PBS Activity

Objective	Help producers successfully transition to higher-profit activities, generate new investment, expand markets and sales, and create new jobs
Target Population	Poor farmers, organizations and micro-, small, and medium enterprises that benefit poor inhabitants of the Northern Zone
Total Funding	\$57 million
Implementing Parties	BMI and SNC-Lavalin (pilot phase); FOMILENIO and Chemonics (Phases I and II)
Time Frame	2008 to 2012
Services/Assistance	<ul style="list-style-type: none"> • Individualized and group-based technical assistance and training • In-kind donations (such as agricultural inputs) • Financial/business planning services • Demonstration plots and group training sessions • Technical and financial support for enterprises created and supported by FOMILENIO (Phase II only) • Investments in innovative productive projects

Source: PDP Operations Manual, December 2010.

¹ Blair, R., Campuzano, L., Moreno, L., Morgan, S. Impact Evaluation Findings after One Year of the Productive and Business Services Activity of the Productive Development Project, El Salvador. August 22, 2012.

A) Methodology

To guide our analysis, we used a research framework composed of the following five research questions: (1) How was the PBS Activity designed and why was it designed this way? (2) How was the activity implemented? (3) Did the activity produce its desired results, and what is the extent of the relevant evidence? (4) What was learned about supporting enterprise development and how sustainable are MCC's efforts in this area? and (5) What are the lessons for MCC and other stakeholders from the design and implementation of this activity?

This analysis relies on a mixed-methods approach, in which Mathematica staff collected and analyzed qualitative and quantitative data from a variety of sources, including administrative records, programmatic reports, and stakeholder interviews. In July 2012, Mathematica staff conducted interviews with MCC, FOMILENIO, Chemonics, and technical service provider staff, as well as members of FOMILENIO's board of directors, an official from the Ministry of Agriculture, representatives from Súper Selectos (a major grocery store chain in El Salvador), PBS participants, and representatives from FOMILENIO-supported enterprises. To formulate primary findings and conclusions, Mathematica staff triangulated qualitative information provided by all interviewed stakeholders and analyzed this information in conjunction with administrative reports and records.

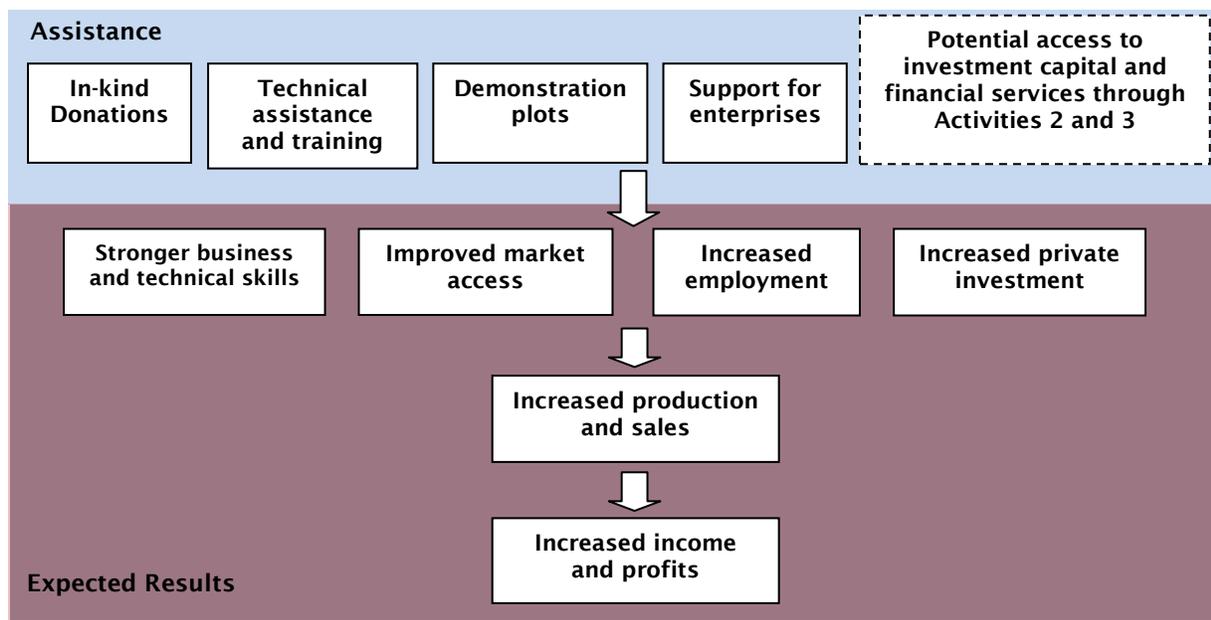
B) Design Summary

Figure 1 provides a visual representation of how the PBS Activity was designed to achieve its key objective of economic development. First, PBS service providers would offer technical assistance and in-kind donations to farmers and artisans. In addition, small-scale producers in the horticulture and dairy chains would receive training through the use of demonstration plots, which would allow for observation and hands-on exposure to new crops, production technologies, and irrigation techniques. According to the compact, a portion of PBS participants would also have access to investment planning services (through PBS) and investment capital through Activity 2 of the PDP (Investment Support), as well as small loans through Activity 3 of the PDP (Financial Services). This capital would help producers transition to high-value crops and finance new production technologies such as greenhouses and irrigation systems.

As a result of training and assistance, farmers would develop stronger business skills and technical expertise. With these new skills as well as donated inputs and increased investments, farmers could generate increased and more diversified production. In addition, enterprises supported by FOMILENIO would provide participating farmers with cheaper inputs, pay farmers a higher price for their production, and sell farmers' aggregated production to large buyers at a substantial profit. Higher sale prices and increased sales would lead to increased income and profits for individual producers and enterprises. As defined in the compact, PBS participants were expected to increase their annual income by 15 percent, on average, as a result of assistance.

BMI designed the basic structure of the PDP during the compact development stage, particularly the intersection between PBS and the Investment Support and Financial Services activities. According to interviewed FOMILENIO staff, the PDP's original focus on investment planning, investment capital, and financial services reflected BMI's financial approach to development. As conceived by BMI, the full package of PDP assistance—particularly the combination of training and credit—would enable small producers to build their enterprises, establish a credit history, and access formal credit markets following assistance.

Figure 1. PBS Logic Model



Source: PDP Operations Manual, December 2010.

Note: A broken line is used for the box portraying access to Activities 2 and 3 because PBS participants must complete an application process to qualify for capital and assistance through these activities.

C) Implementation Summary

As specified in the compact, the PBS Activity's total funding of \$57 million was originally allocated to finance technical assistance to poor farmers, in-kind donations and business development services, as well as pre-investment studies to develop and implement viable business plans related to the activity's target value chains. Over the course of implementation, however, PBS funding was allocated to a wider array of investments, including in-kind donations, technical assistance and training, demonstration plots, technical and financial support for enterprises created and supported by FOMILENIO, and funding for innovative productive projects. Below we summarize the three major phases of PBS assistance.

Pilot Phase (2008-2009). From July 2008 to September 2009, BMI and SNC-Lavalin oversaw the pilot phase of the PBS. During this phase, \$5 million was disbursed to 13 productive projects selected through a competitive process. Although this diverse set of short-term projects was not originally envisioned, FOMILENIO staff implemented the PBS pilot in 2008 to establish a much-needed presence in the Northern Zone. PBS pilot projects included technical assistance for dairy farmers, technical and material assistance for artisans, and training for small farmers related to fruit and vegetable production. Pilot projects provided 155 groups and 3,625 people with technical and material assistance, largely centered upon strengthening productive capacity.

Phase I (2009-2010). Under FOMILENIO's supervision, Chemonics began coordinating and managing the various components of the PBS Activity under the PDP's general implementation phase. This coordination involved various subcontracts with service providers related to assistance in horticulture, dairy, handicrafts, tourism, and forestry value chains. As in the pilot phase, PBS assistance in 2009 and early 2010 focused on increasing and diversifying farmers' and artisans' production. As such, PBS assistance during this time period—later referred to as Phase I—was oriented toward decreasing input costs, promoting new technologies, and enhancing productive

practices. This production-focused approach represented a departure from the project's original market-based design, which detailed the importance of providing assistance to address all major constraints in relevant value chains—including production constraints, business development constraints, and market access constraints. Despite the original market orientation of the project, at least in official documents, Phase I assistance was primarily focused on alleviating production constraints. One Chemonics representative stated that this relatively narrow focus on production during Phase I was due to the initial unavailability of technical staff with expertise in agricultural market access and business development.

For each value chain, Chemonics contracted one service provider to cover all assistance to participants in the Northern Zone. The service provider for the handicrafts value chain, Aid to Artisans (ATA), worked exclusively with groups of producers, whereas the other service providers (CLUSA for horticulture and TechnoServe for dairy) worked with individual producers as well as organized groups. Phase I PBS assistance focused on milk production in the dairy chain, vegetable production in the horticulture chain, and wood- and clay-based handicraft production in the handicraft chain. In the dairy and horticulture chains, service providers distributed a substantial amount of donated items in Phase I, under the premise that technical assistance and free inputs would facilitate farmers' adoption of new practices and technologies, and thus increase and improve production.

Phase II (2010-2012). Starting in September 2010, Chemonics and FOMILENIO reorganized the PBS Activity and Phase II of implementation began. Phase II assistance was formulated in response to lessons learned during Phase I—namely, that increased and more diversified production was not sufficient to guarantee higher sales and income among participating producers. As such, PBS assistance in this phase featured more explicit marketing and business development components, including the establishment of two new producer-owned enterprises—El Salvador Produce in the horticulture chain and Lácteos Zona Norte in the dairy chain. Assisted by FOMILENIO and Chemonics, the enterprises negotiated contracts with Súper Selectos, the Ministry of Education, and other large buyers, and also bought and aggregated production through the use of collection centers. Under the PBS Activity, these newly created enterprises received large in-kind donations of land, office installations, vehicles, and machinery.² In addition, two existing handicraft enterprises, MOJE and ACOPROARTE, received technical assistance and donations under the PBS activity, and one existing dairy cooperative, Lácteos de Morazán, was reorganized and assisted under PBS.

Phase II farmer and artisan training programs were implemented concurrently with enterprise support services discussed above. In the handicrafts chain, all training was provided on-site at MOJE and ACOPROARTE locales. In the dairy and horticulture chains, training was provided in the context of field schools, or groups of between 20 and 25 producers who lived in the same community. Organized by geographic regions in Phase II, service providers in the dairy and horticulture chains trained producers in production and irrigation techniques, distributed improved seeds and other appropriate technologies, and organized producer groups into member-

² Although the exact dollar amount spent on enterprise assistance is not known, it is at least \$3.9 million: \$3.4 million spent by Chemonics, in addition to \$500,000 spent by USAID on in-kind donations to El Salvador Produce (from El Salvador Indicator Tracking Table, final version).

organizations of newly established enterprises. Due to changes in some service providers and contract renewals during late 2010, field school activities did not begin until early 2011.

Table 2 summarizes assistance provided in the dairy, horticulture, and handicrafts value chains during all three phases of PBS assistance. Notable differences in the phases include the large number of contractors involved in Phase II versus Phase I, as well as the shift from individual- and group-based training in Phase I to a field school approach in Phase II in the dairy and horticulture chains.

Table 2. Summary of PBS, Phase I and Phase II PBS Assistance, by Value Chain

	Horticulture/Fruit	Dairy	Handicrafts
Pilot Implementation			
Key Actors	Contractors: PROMIPAC, IICA	Contractors: CARE, CORDES, CAMAGRO, TechnoServe	Contractors: Aid to Artisans (ATA)
Description	Dates: 2008-2009 Assistance to producers: Technical assistance with fruit/vegetable production.	Dates: 2008-2009 Assistance to producers: Training in herd management and milk production.	Dates: 2008-2009 Assistance to producers: Training in design and production techniques.
Phase I Implementation			
Key Actors	Contractors: CLUSA	Contractors: TechnoServe	Contractors: Aid to Artisans (ATA)
Description	Dates: April - September 2010 Assistance to producers: Technical assistance with new technologies and high-value fruits/vegetables. Donations included irrigation systems, machinery, small greenhouses, and plants.	Dates: May - August 2010 Assistance to producers: Training in herd maintenance, irrigation techniques, vaccines, de-worming, fertilizers, and fumigation. Donations included hay shredders, seeds, and genetic material.	Dates: September 2009 - August 2010 Assistance to producers: Training in design, marketing, quality control and accounting. Few donations distributed.
Phase II Implementation			
Key Actors	Contractors: IICA, CARE, CATIE and Zamorano (with 2 regions). Each contractor ran 1 of 5 collection centers (Zamorano ran 2 centers). Enterprise: El Salvador Produce	Contractors: TechnoServe, Zamorano, Proleche, and CARE Enterprises: Lácteos Morazán and Lácteos Zona Norte	Contractors: Swisscontact and Berdal Enterprises: MOJE and ACOPROARTE
Description	Dates: Early 2011 - mid-2012 Assistance to producers: Field schools with theoretical and practical instruction in irrigation and good agricultural practices (GAP). Donations included seeds, saplings, and other inputs. Assistance to enterprise: Training on inventory control, budgeting, and organizational development. Donated collection centers, vehicles, office infrastructure, and machinery.	Dates: Early 2011 - mid-2012 Assistance to producers: Field schools with theoretical and practical instruction in growing/storing cattle feed, irrigation, and herd maintenance. Donations included seeds and medication. Assistance to enterprises: Training on inventory control, budgeting, and organizational development. Donated collection centers, vehicles, office infrastructure, and machinery.	Dates: Early 2011 - mid-2012 Assistance to producers: Training focused on design, business skills, and marketing/sales. Donations included raw materials for production. Assistance to enterprises: Training on inventory control, budgeting and costing procedures, leadership, and organizational development.

Source: Chemonics program manuals and in-person interviews conducted by Mathematica staff in October 2010.

Note: CLUSA = Cooperative League of the United States of America; IICA = Inter-American Institute for Cooperation on Agriculture; CATIE = Centro Agronómico Tropical de Investigación y Enseñaza.

From 2008 to 2012, the PBS activity exceeded FOMILENIO’s participant target of 13,500 individuals by over 1,800 producers. As illustrated in Figure 2, Chemonics exceeded its participant targets in each of the horticulture, dairy, and handicraft value chains by between 16 and 34 percent. (See Figure 3 for the gender distribution of participants in each chain.)

Figure 2. Target and Actual Number of PBS Participants, by Value Chain

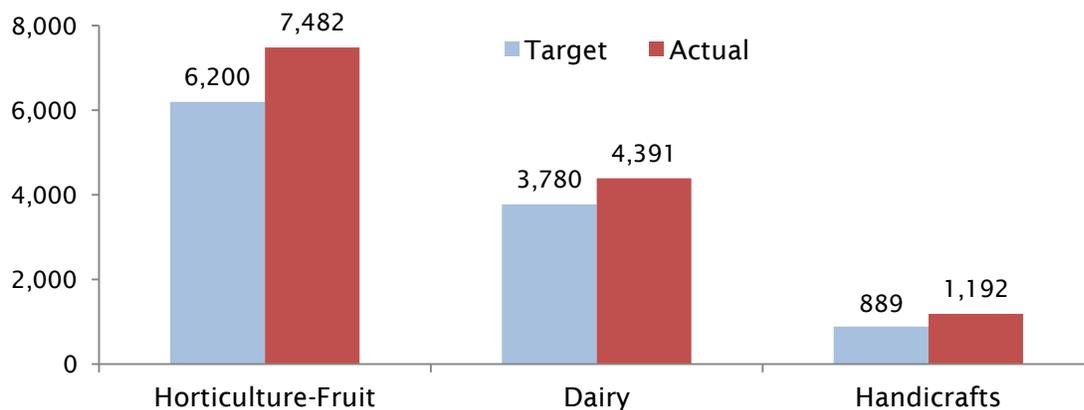
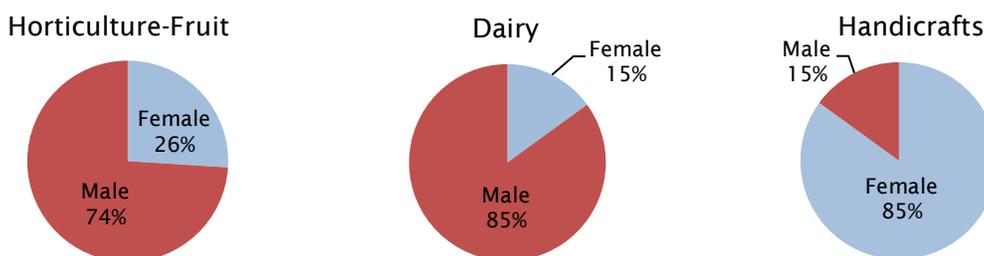


Figure 3. Gender Distribution of PBS Participants, by Value Chain



Source: Chemonics administrative data, September 2012.

Notes: Includes individuals served in Phase I, and Phase II. Excludes pilot participants. Targets in Figure 2 refer to Chemonics service delivery goals for each value chain.

Implementation Facilitators. One key facilitator of implementation of the PBS Activity was the large degree of flexibility on the part of FOMILENIO and Chemonics staff to modify the PBS assistance model in late 2010, when stakeholders determined that the activity’s primary focus on production was not sufficient to achieve desired outcomes of increased sales and revenues. Also noteworthy, PBS participants actively participated in the design of Phase II assistance and played a substantive role in overseeing service providers throughout Phase II through the use of supervisory committees. These developments introduced a level of accountability to the PBS Activity in Phase II that was not present in Phase I. Also, successful efforts on the part of FOMILENIO and Chemonics staff to forge business partnerships with the Ministry of Education and several large retailers played a pivotal role in securing demand for producer-owned enterprises’ production during Phase II.

Implementation Challenges. Despite these successes, PBS implementation was constrained by several factors. First, large service delivery targets—particularly in Phase I but also in Phase II—led to diluted service delivery, as one senior technical staff person was often assigned to serve more than 200 program participants. Also, the transition from Phase I to Phase II produced a prolonged cessation of field activities from August 2010 to February 2011 in the dairy and horticulture chains. This gap in services contributed to sub-optimal outcomes for several farmers who planted vegetables during the 2010 rainy season, but received no follow-up assistance with these crops. In addition, PBS implementers were unable to achieve the difficult goal of generating targeted behavior change through the use of strategic donations, without fostering dependence on free inputs. Several stakeholders mentioned that excessive donations in the horticulture and dairy chains during Phase I created an unhealthy dependence on free inputs, but too few donations in Phase II discouraged the adoption of key technologies featured in training. Finally, Phase II’s short implementation timeframe from early 2011 to mid-2012 was insufficient to allow newly created enterprises to consolidate market linkages, access appropriate financing, and master key administrative, technical and commercial functions. (See Table 3 for a summary of implementation facilitators and challenges.)

Table 3. Implementation Facilitators and Challenges across Value Chains

Facilitators
<ul style="list-style-type: none"> • Stakeholder flexibility in improving the assistance model • Direct participant involvement in designing and implementing Phase II • Partnerships between assisted enterprises and large buyers
Challenges
<ul style="list-style-type: none"> • Large service delivery targets • Prolonged transition from Phase I to Phase II • Non-strategic use of donations • Short timeframe of business establishment and strengthening

Source: Mathematica qualitative data collection, July 2012.

D) Results

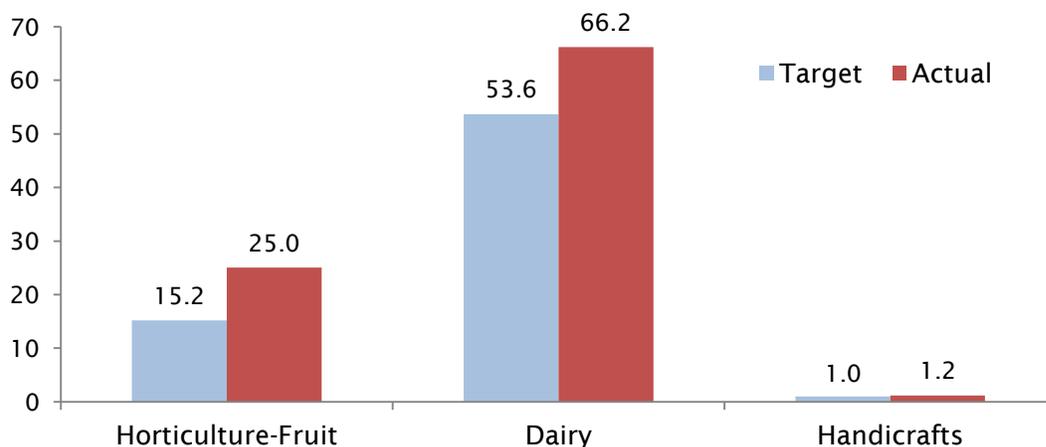
Results for Producers. During the implementation period, Chemonics surpassed the PDP’s primary performance target of 11,000 new permanent equivalent jobs by nearly 2,000 jobs across all value chains.³ In addition, Chemonics reported over \$27 million in counterpart investments from PBS participants, far surpassing its original target of slightly over \$10 million. According to administrative data, implementers also surpassed Chemonics’s production and sales goals in the horticulture, dairy, and handicrafts chains (Figure 4). In interviews, stakeholders highlighted strong production and sales in the horticulture chain related to greenhouse tomato production, large milk production increases in the dairy chain related to investments in low-cost fodder production and storage, and increased sales in the handicrafts chain linked to newly forged relationships with domestic and international buyers.

³ This is according to the Chemonics administrative records and methodology for determining full-time equivalent jobs.

Although administrative data indicate that PBS assistance surpassed performance targets for jobs, production, and sales, the true impact of the full package of PBS assistance is unclear. Chemonics performance indicators reflect all jobs, production, and sales associated with PBS assistance during the implementation period, as opposed to the changes in these outcomes over the course of the implementation period. As such, they offer no information regarding the counterfactual—or what would have happened to PBS participants in the absence of the activity—and thus cannot be used to calculate the impact (or effect) of PBS assistance.

From 2009 to 2011, Mathematica conducted a rigorous evaluation to determine the impact of one year of PBS assistance in the horticulture, dairy, and handicraft chains. The evaluation results indicate that among a sample of PBS participants, the impact of one year of PBS assistance on producers' income was positive in the dairy chain, but negligible in the horticulture and handicraft chains. The evaluation also found that PBS assistance increased job creation in the handicrafts chain, but found no conclusive evidence regarding the activity's effect on private investment.⁴ However, because these impact findings are not generalizable to the full population of PBS participants over the entire PBS implementation period, it is impossible to make a definitive conclusion regarding the impact of the full PBS assistance package from 2008 to 2012.

Figure 4. Target and Actual Sales of PBS Participants, by Value Chain (in Millions of US\$)



Source: Chemonics administrative data, September 2012.

Note: Sales from Phase I and Phase II are included. Targets were developed by Chemonics.

In Table 4, we highlight some key results of PBS assistance to producers for each of the three value chains in the evaluation. These results are based on an analysis of programmatic reports and qualitative interviews with farmers and representatives from Chemonics, FOMILENIO, and MCC. As illustrated below, a common theme across the horticulture and dairy value chains is that relatively high-resource and large-scale participants tended to profit more from PBS assistance than poor, small-scale producers. These large-scale participants tended to specialize in agricultural production and possess more land and financial resources to devote to new technologies featured in training. Another common theme in the dairy and handicraft value chains is that contracts with large buyers, facilitated largely through PBS assistance, had a positive effect on several participants' sales and

⁴ Blair, R., Campuzano, L., Moreno, L., Morgan, S. Impact Evaluation Findings after One Year of the Productive and Business Services Activity of the Productive Development Project, El Salvador. August 22, 2012.

income. Also notable is some level of variation in contractor performance, with particularly strong performance from Zamorano, TechnoServe, and Swisscontact.

Table 4. Key Results of the PBS Activity, by Value Chain

Horticulture
<ul style="list-style-type: none"> • <i>According to implementers, participants generally experienced increases in production, sales, and income.</i> According to Chemonics staff, most PBS participants in the horticulture value chain benefited from assistance. However, a small portion of producers experienced very large increases in sales and income. These highly successful individuals tended to have a strong entrepreneurial vision, financial resources, and access to irrigation water. • <i>Some small-scale participants reported deficient technical assistance and suboptimal outcomes.</i> According to interviewed farmers, technical field staff often lacked specific knowledge related to fruit and vegetable production. In addition, several small-scale producers lost their crops or produced poor quality crops in late 2010 and early 2011, partly as a result of the 6-month lapse in assistance between Phase I and Phase II. • <i>Zamorano was particularly successful in improving production and sales.</i> According to FOMILENIO, Zamorano was particularly adept at producing strong results in Chalatenango through use of greenhouses and micro-tunnels for tomato production.
Dairy
<ul style="list-style-type: none"> • <i>Participants spent less on cattle feed and experienced higher production and sales in the dry season.</i> In response to PBS assistance, participants produced more low-cost cattle feed for the dry season and store this feed more effectively in silos. In general, these simple practices produced markedly higher production and sales in the dry season. • <i>Among all service providers, TechnoServe and CARE generated particularly strong results.</i> Chemonics staff stated that TechnoServe and CARE were particularly adept at improving participants' milk production through sound technical assistance. • <i>Relatively high-resource participants received more assistance and exhibited better results.</i> High-resource participants tended to receive the largest donations, including machinery and irrigation systems. In addition, these high-resource participants benefited most from the large contract between the Ministry of Education and Lácteos Zona Norte.
Handicrafts
<ul style="list-style-type: none"> • <i>Supported enterprises and artisans reported high satisfaction with assistance and positive results.</i> Overall, stakeholders were highly satisfied with Swisscontact's collaboration with MOJE and ACOPROARTE. During interviews, enterprise staff noted that Swisscontact's assistance played a vital role in securing large contracts with national and international buyers; these contracts boosted sales and income among several members. • <i>Workshop owners increased levels of paid labor.</i> Stakeholders noted that workshop owners in Chalatenango and Cabañas contracted a substantial amount of paid labor in Phase II to meet growing demand from national and international buyers. • <i>Workshop owners benefited substantially from new contracts established under PBS assistance.</i> Owners reported that 2012 sales were much higher than their sales prior to FOMILENIO assistance, largely as a result of new contracts secured with the help of Swisscontact.

Results for Enterprises. PBS assistance to enterprises appeared to generate positive results in the handicrafts chain and mixed results in the dairy and horticulture chains. High operating costs and low profit margins for El Salvador Produce, Lácteos Morazán, and Lácteos Zona Norte generated consistently negative net income for these three enterprises throughout 2011 and 2012. Given narrow profit margins, future increases in the volume of production bought and sold would be unlikely to surmount these operating costs. In particular, El Salvador Produce faced strong competition from buyers in the informal sector, as well as a lack of ownership and collaboration among member-producers and board members. In contrast, the two enterprises in the handicrafts chain, MOJE and ACOPROARTE, experienced consistently positive net income during the same time period, largely due to healthy profit margins, modest operating costs, and consistent demand.

Comparison of Phase I and Phase II. Given the heterogeneity of actors involved, it is difficult to discern whether Phase II implementation was generally superior to Phase I. Nearly all interviewed implementers agreed that the Phase II assistance model's three-pronged focus on production, business development, and sales was superior to Phase I's production-centered approach. In the handicrafts chain in particular, assisted artisans and enterprises generally favored Phase II assistance due to its more focused assistance related to product design and sales, as well as its comprehensive assistance to enterprises. However, several small-scale vegetable farmers and dairy producers expressed higher satisfaction with Phase I, particularly due to the large volume of donations they received in 2009 and 2010. Many of these producers viewed Phase II assistance at field schools as "too theoretical" compared to the more personalized technical assistance delivered in Phase I. Overall, large-scale fruit, vegetable, and milk producers appeared to benefit greatly during both phases, receiving substantial donations and infrastructure investments in both phases and benefiting from access to newly established enterprises in Phase II.

Performance Assessment. In this report, we define implementer performance as a function of the quality and timeliness of assistance, as well as the likely contribution of this assistance to producers' production and sales. Across all three value chains, the overall quality of PBS assistance from 2009 to 2012 is best described as adequate. This adequate rating reflects uneven performance across the three value chains, with particularly strong implementer performance in the handicrafts chain, adequate performance in the dairy chain, and weak to adequate performance in the horticulture chain. Particularly in Phase II, technical and material assistance to the handicrafts chain was excellent, in that assistance with production techniques was seamlessly integrated with marketing and sales components, and all stakeholders worked collaboratively and flexibly to solve problems in a timely manner. In contrast, implementer performance in the horticulture chain was weak to adequate over both implementation phases, given intermittent and inconsistent technical assistance, as well as poor coordination between technical service providers and producer-owned enterprises. Assistance in the dairy chain fell between these two extremes: Despite large participant-to-staff ratios, long periods of inactivity in the field, and delays in the distribution of donations, participants reported high satisfaction with assistance and tangible improvements in production and sales during Phase I and Phase II.

E) Conclusions and Lessons Learned

Design versus Implementation. In program evaluations, it is often useful to assess the merit of a program's design and its implementation separately, so as to distinguish between cases in which a weak design hampered implementation and cases in which a strong design was not implemented to its full potential. In the case of the PBS activity, a somewhat viable program design was implemented adequately overall, with some exceptions. Regarding the design of the PBS Activity, the original scope of the assistance model did not feature sufficient services to alleviate producers'

constraints to market access and business development. As mentioned above, this was remedied to some extent in Phase II with the introduction of the enterprise support component. However, this component had some key design flaws. In particular, FOMILENIO's approach to establishing El Salvador Produce (as well as reorganizing Lácteos Morazán) appeared to rely on a set of weak assumptions, namely that these enterprises' business models were financially viable in highly competitive agricultural markets, and that successful producer-owned enterprises could be formed or reorganized through a top-down approach. In addition to these deficiencies in program design, there were also key implementation challenges that compromised the program's ability to generate desired results. As mentioned above, these included diluted service delivery in both phases, a long period of inactivity in the field, and a compressed implementation timeline in Phase II.

Despite these deficiencies in its design and implementation, the PBS Activity likely generated key results envisioned in its revised logic model. According to the activity's basic program logic, technical assistance and donations—coupled with assistance to newly created enterprises—would help producers improve their production and sell it in bulk for a larger profit. This logic was validated to some extent in all three of the value chains in the study, in that a substantial number of artisans, milk producers, and fruit and vegetable producers appeared to increase their sales and income as a result of the activity's combination of technical assistance, donations, and enterprise assistance. It should be noted, however, that relatively large-scale and established producers tended to benefit most from PBS assistance, and relatively poor and small-scale producers tended to benefit less. In the dairy chain in particular, large-scale producers received the most donations and technical assistance, and experienced the largest profits through milk sales to Lácteos Zona Norte.

Given that PBS assistance generated the desired outcomes, at least for a subset of the target population, it can be argued that the activity's basic program logic was sound. However, the market power envisioned in the design of Phase II assistance, in which even small producers could secure a higher profit by aggregating their production, was largely not realized. This was due to a variety of factors, including the large upfront investments required in the dairy and horticulture sectors, extra costs associated with aggregating production from small farmers, natural returns to scale for agribusinesses, and increasingly competitive agricultural markets. To some extent, program implementers may have excluded relatively smaller and poorer producers from the largest program benefits, including large infrastructure investments and personalized technical assistance. However, these decisions were likely calculated ones, as assistance to established producers was most likely to generate the largest impact on sales and income.

Long-term Sustainability. The long-term sustainability of gains made under PBS assistance is directly linked to the financial sustainability of enterprises assisted in Phase II. The future of Lácteos Zona Norte is particularly relevant, as the enterprise's contract with the Ministry of Education during 2011 and 2012 was lucrative for several members, but the organization's financial viability was unclear at the end of the compact period. As of 2012, the likelihood of medium- and long-term sustainability was high for handicraft enterprises and low to moderate for horticulture and dairy enterprises. Notably, the two handicrafts enterprises had a high potential for sustained operations in the medium- and long-term, Lácteos Zona Norte had moderate potential, and the other two supported enterprises—El Salvador Produce and Lácteos Morazán—had low to moderate potential. In particular, low profit margins and a lack of external financing posed the largest threat to sustained operations for the three enterprises in the horticulture and dairy chains.

Lessons Learned. Based on interviews with a variety of stakeholders in the dairy, horticulture, and handicraft chains, we identified the following three key lessons learned regarding PBS assistance from 2008 to 2012:

1. *Program redesign during implementation has substantial costs.* Stakeholders generally praised the demand-centered PBS assistance model introduced in 2010, which focused on establishing producer-owned enterprises capable of negotiating with large buyers. However, the lapse in services during the transition from Phase I to Phase II and the condensed timeline of Phase II implementation were major disadvantages of redesigning the program midway through implementation. Many stakeholders reasoned that if the Phase II assistance model had been implemented at the outset in 2008, the activity would have achieved more substantial and sustainable gains by 2012. In light of this finding, stakeholders should work to introduce only validated assistance models at the outset of program implementation, and limit the scale of mid-course corrections to these models. In the case of PBS assistance, for example, perhaps the enterprise support component could have been introduced in Phase II without the large-scale reorganization of service providers that left many participants without assistance for six months.
2. *Supporting viable businesses is easier than creating them.* Particularly in the case of El Salvador Produce, Phase II PBS assistance was not sufficient to place the newly established enterprise on a path to financial self-sustainability. In particular, competitive market conditions, weak incentives facing stakeholders, and a lack of ownership and capacity among enterprise members contributed to this negative outcome. In contrast, assistance to existing producer-owned enterprises in the handicraft chain was generally successful. Because these handicraft enterprises had been operating for several years prior to FOMILENIO assistance, they had already established some degree of entrepreneurial vision and ownership among members, and they had already proven the viability of their business model. In this sense, technical and material assistance provided under PBS largely served to enhance and strengthen these enterprises, which already possessed the core conditions for success. Given that these conditions are very difficult to create with a top-down approach to enterprise creation, future interventions to support productive enterprises could minimize risks (and feasibly improve chances for success) by supporting existing businesses that already exhibit the key characteristics of leadership, an entrepreneurial spirit, and a validated business model.
3. *Too few donations stifles behavior change; too many donations fosters dependence.* According to most interviewed stakeholders, overly generous donations in Phase I in the horticulture and dairy chains appeared to create an unhealthy expectation of handouts, whereas a lack of donations to handicrafts producers (in Phase I) and field schools (in Phase II) often inhibited the adoption of key practices and technologies. In hindsight, PBS implementers never achieved a strategic balance between these two extremes. Applying this finding to future agricultural interventions, stakeholders should identify strategic opportunities in which donated inputs could play an integral role in complementing technical assistance, resolving bottlenecks, encouraging counterpart contributions, and facilitating technology transfer without fostering dependence on future assistance. In particular, future assistance programs should avoid a sudden transition from generous input donations to a revolving fund approach, as it may be difficult to alter participants' expectations of free inputs once they have been provided.

It should be noted that all key stakeholders involved in the PBS Activity—including FOMILENIO, Chemonics, and MCC—were aware of these lessons throughout implementation. Chemonics and FOMILENIO staff made several efforts to improve El Salvador Produce’s performance throughout implementation, and modified donations in Phase II in response to lessons learned in Phase I. In addition, stakeholders understood that the Phase II redesign would have negative consequences for service delivery. However, MCC, FOMILENIO, and Chemonics chose to pursue the new assistance model because its anticipated benefits—successful collectively owned businesses in three value chains—were perceived to outweigh these costs. In hindsight, the primary error in this approach was perhaps an incomplete understanding of the risks inherent in establishing these producer-owned enterprises. Based on several questionable assumptions, the activity devoted a large amount of resources to at least one business—and as many as three businesses—that may not survive in the medium- to long-term.

I. BACKGROUND AND METHODOLOGY

In this report, we present a performance analysis of the Production and Business Services Activity of the Productive Development Project, with a focus on the activity's horticulture, dairy, and handicraft value chains. This report is organized as follows: In this chapter, we provide some background on the PBS Activity and the rationale and methodology for this analysis. In chapters II, III, and IV, we summarize implementation, facilitators and challenges related to implementation, results, and implementer performance for the horticulture, dairy, and handicrafts value chains, respectively. In Chapter V, we provide a summary of findings regarding PBS assistance to enterprises, including sustainability assessments for the five producer-owned enterprises supported by FOMILENIO. In Chapter VI we present general implementation challenges and facilitators across value chains, a synthesis of implementer performance and results across value chains, as well as lessons learned from this analysis of PBS implementation.

A. PBS Design

Funded by the Millennium Challenge Corporation (MCC) and implemented by El Salvador's Millennium Challenge Account (known as FOMILENIO in Spanish) from 2008 to 2012, the main objective of the Productive Development Project (PDP) was to assist in the development of profitable and sustainable business ventures for poor individuals in El Salvador's Northern Zone. Over approximately four years, the PDP was designed to use nearly \$72 million in allocated funds to provide over 13,500 participants with technical and material assistance and to create more than 11,000 full-time equivalent jobs. The PDP comprised three activities: Production and Business Services (PBS), Investment Support, and Financial Services. The PBS Activity was originally designed to offer training and technical assistance, in-kind donations, and financial/business planning services to small farmers and business owners. The Investment Support Activity offered investment capital (in the form of long-term loans of over \$50,000) for viable business proposals. Lastly, the Financial Services Activity supported two loan guarantee programs targeting micro-, small, and medium enterprises, as well as a small technical assistance program to financial institutions.

The conceptual basis for the PDP came from the Multisectoral Development Bank (BMI for its initials in Spanish), which collaborated with MCC staff to design the compact with El Salvador in 2005. According to an MCC source, BMI staff originally proposed an \$80 million reforestation fund, which was largely rejected by MCC representatives. Soon after, BMI proposed a project to strengthen key economic sectors in the Northern Zone, including the dairy, horticulture, and handicraft sectors. BMI staff had already completed rough studies and economic rates of return for these sectors, and these analyses provided a sufficient rationale for the PDP during the due diligence phase of compact development.

The largest of the PDP's three activities was the Production and Business Services (PBS) Activity, which provided technical and material assistance to farmers and small-scale producers to support the Northern Zone's horticulture, fruit, dairy, handicrafts, tourism, forestry, and coffee sectors. As stated in the 2006 MCC-El Salvador compact in which it was established, the goal of the PBS Activity was to "help poor farmers, organizations and micro-, small, and medium enterprises that benefit poor inhabitants of the Northern Zone successfully transition to higher-profit activities, generating new investment, expanding markets and sales, and creating new jobs in ways that stimulate sustainable economic growth and poverty reduction."

According to interviewed FOMILENIO staff, the PBS Activity was originally designed to serve relatively small and poor producers in the Northern Zone, under the premise that the combination of donations, technical assistance, and financial/business planning could help these producers improve their production and sales, and eventually access investment financing and working capital through public and private financial institutions. According to interviewees, this original focus on investment reflected BMI's financial approach to development. In the design phase, most stakeholders also assumed that the Financial Support Activity (Activity 2 of the PDP) would provide producers assisted under PBS with access to finance, but only those producers who were credit-worthy.

Led by BMI and SNC-Lavalin, a Canadian engineering firm, PBS assistance began with a pilot phase in 2008. Led by Chemonics International (Chemonics), general implementation began in September 2009 and ended in July 2012. As specified in the compact, the PBS Activity's total funding of \$57 million was originally allocated to finance technical assistance to poor farmers, in-kind donations and business development services, as well as pre-investment studies to develop and implement viable business plans related to the activity's target value chains. Following modifications to program activities in early 2010, PBS funding was allocated to a wider array of investments, including in-kind donations, technical assistance and training, demonstration plots, technical and financial support for enterprises created and supported by FOMILENIO, and investments in innovative productive projects. Table I.1 summarizes the key characteristics of the PBS Activity, including its objective, funding, and primary forms of assistance.

Table I.1. Key Characteristics of the PBS Activity

Objective	Help producers successfully transition to higher-profit activities, generate new investment, expand markets and sales, and create new jobs
Target Population	Poor farmers, organizations and micro-, small, and medium enterprises that benefit poor inhabitants of the Northern Zone
Total Funding	\$56.9 million
Implementing Parties	FOMILENIO and Chemonics (all value chains); TechnoServe, Zamorano, Proleche, and CARE (dairy); CLUSA, IICA, CARE, CATIE, and Zamorano (horticulture); Aid to Artisans, Swisscontact, and Berdal (handicrafts)
Time Frame	2008 to 2012
Services/Assistance	<ul style="list-style-type: none"> • Technical assistance and training • In-kind donations (such as agricultural inputs) • Financial/business planning services • Demonstration plots and group training sessions • Technical and financial support for enterprises created and supported by FOMILENIO • Investments in innovative productive projects related and unrelated to agricultural sectors

Source: PDP Operations Manual, December 2010.

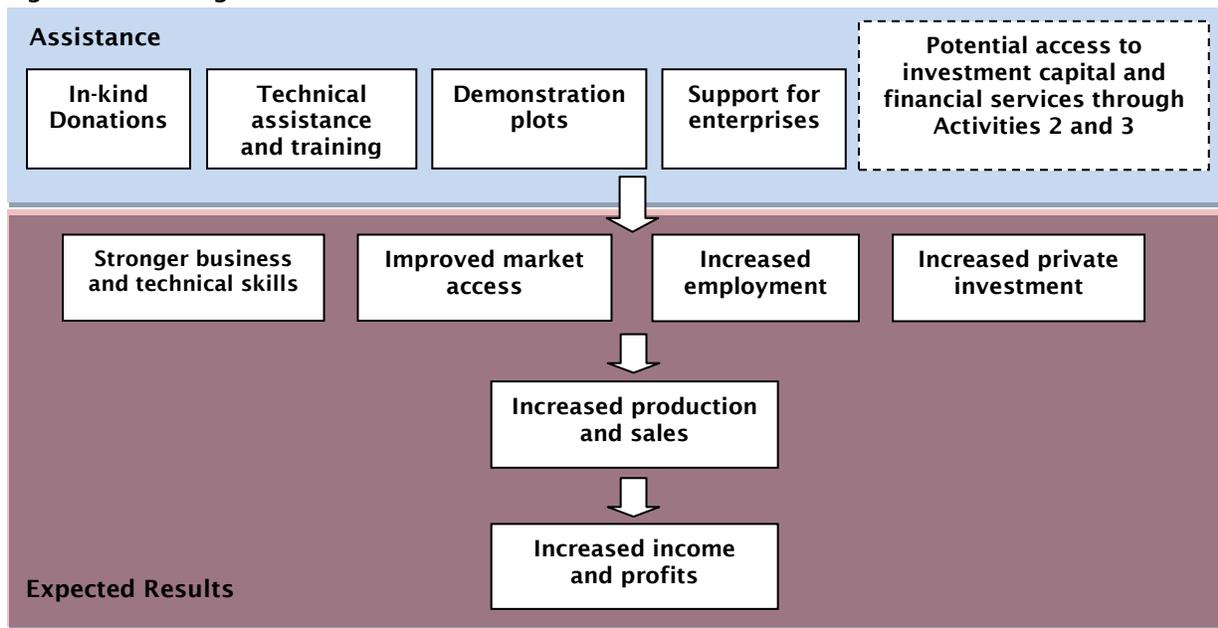
Note: CLUSA = Cooperative League of the United States of America; IICA = Inter-American Institute for Cooperation on Agriculture; CATIE = Centro Agronómico Tropical de Investigación y Enseñaza.

Figure I.1 provides a visual representation of how the PBS Activity was designed to achieve its key objective of economic development. First, PBS service providers offer technical assistance and in-kind donations to farmers and artisans. In addition, small-scale producers receive training through use of demonstration plots (in the case of the horticulture and dairy chains), which allow for

observation and hands-on exposure to new crops, production technologies, and irrigation techniques. According to the compact, a portion of PBS participants would also have access to investment planning services (through PBS) and investment capital through Activity 2 of the PDP (Investment Support), as well as small loans through Activity 3 of the PDP (Financial Services). This capital would help producers transition to high-value crops and finance new production technologies such as greenhouses and irrigation systems.

As a result of training and assistance, farmers would develop stronger business skills and technical expertise. With these new skills as well as donated inputs and increased investments, farmers could generate increased and more diversified production. In addition, enterprises supported by FOMILENIO would provide participating farmers with cheaper inputs, pay farmers a higher price for their production, and sell farmers' aggregated production to large buyers at a substantial profit. Higher sale prices and increased sales would lead to increased income and profits for individual producers and enterprises. As defined in the compact, PBS participants were expected to increase their annual income by 15 percent, on average, as a result of assistance.

Figure I.1. PBS Logic Model



Source: PDP Operations Manual, December 2010.

Note: A broken line is used for the box portraying access to Activities 2 and 3 because PBS participants must complete an application process to qualify for capital and assistance through these activities.

B. Summary of PBS Implementation

1) Implementation from 2007 to 2009: Preparations and Pilot

In September 2007, the preparation phase of the PBS Activity began. Managed by BMI and SNC-Lavalin, this phase served to establish basic PBS operations and conduct diagnostic studies of investment opportunities in the Northern Zone. From July 2008 to September 2009, BMI and SNC-Lavalin oversaw the pilot phase of the PBS. During this phase, \$5 million was disbursed to 13 productive projects. Projects included technical assistance for dairy farmers, technical and material assistance for artisans, and training for small farmers related to fruit and vegetable production. Pilot projects benefited 155 groups and 3,625 people with technical and material assistance, largely centered upon strengthening productive capacity.⁵ No impact evaluation of the pilot phase of the PBS Activity was completed.⁶

One MCC representative observed that the pilot phase of the PBS largely reflected stakeholders' desire to establish a presence in the Northern Zone in a timely manner. Given political pressure to start providing services, MCC and FOMILENIO staff designed the competitive grant proposal. The MCC representative said, "The idea was to see what [assistance programs] the market could come up with. There were good people out there, and we had funding available. The competitive grants were designed to match the best people with money." Given that pilot projects represented a diverse set of investments, no standard assistance model was implemented in the pilot phase. Although Lavalin conceptualized the PBS Activity in this phase as a demand-centered assistance model—in which all assistance would be directed toward meeting market demand—pilot projects largely followed a supply-based approach, in which technical staff helped farmers increase and enhance their production.



Artisans supported by PBS sell their merchandise at a handicrafts fair (photo courtesy of Chemonics, 2011).

2) Implementation from 2009 to 2010: Phase I

In September 2009, FOMILENIO assumed direct supervision of the PBS Activity from BMI. Interviewed stakeholders stated that FOMILENIO and MCC staff made the decision that FOMILENIO would directly supervise the activity due to concerns about BMI's capacity to manage a large-scale development project and BMI's internal bureaucracy and lengthy decision-making processes, which did not bode well for real-time implementation.

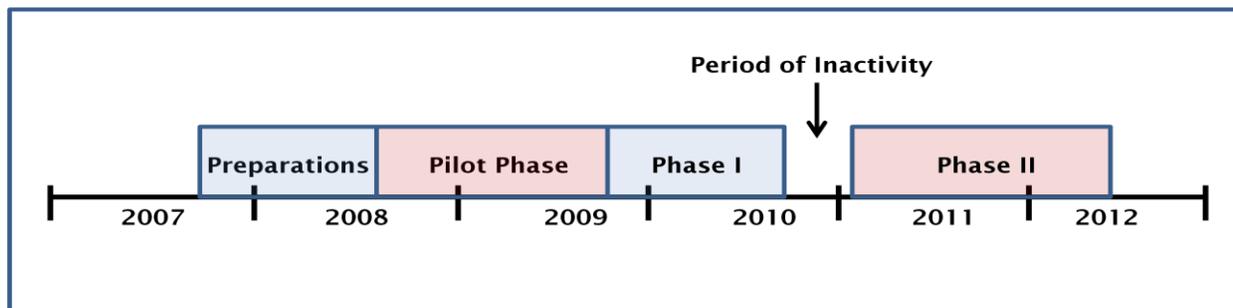
Under FOMILENIO's supervision, Chemonics, a development consulting firm, began coordinating and managing the various components of the PBS Activity under the PDP's general implementation phase. This coordination involved various subcontracts with service providers

⁵ These figures are based on monitoring data submitted by pilot phase implementers.

⁶ However, a process analysis of the pilot was conducted by FOMILENIO.

related to assistance in horticulture, dairy, handicrafts, tourism, and forestry value chains. For each value chain, Chemonics contracted one service provider to cover all assistance to participants in the Northern Zone. The service provider for the handicrafts value chain, Aid to Artisans (ATA), worked exclusively with groups of producers, whereas the other service providers (CLUSA for horticulture and TechnoServe for dairy) worked with individual producers as well as organized groups. (See timeline of PBS implementation in Figure I.2.)

Figure I.2. Timeline of PBS Implementation, 2007-2012



During this general implementation phase (as well as during the pilot phase), the PBS Activity focused on increasing and diversifying farmers' and artisans' production. As such, PBS assistance during this time period—later referred to as Phase I—was oriented toward decreasing input costs, promoting new technologies, and enhancing productive practices. This production-focused approach represented a departure from the project's original market focus, as illustrated by Lavalin's initial study of value chains in the Northern Zone and Chemonics work plans from 2008 and 2009.⁷ These documents detailed the importance of tailoring assistance to all major constraints in relevant value chains, including production constraints, business development constraints, and market access constraints. Despite the original market orientation of the project, at least in official documents, Phase I assistance was primarily focused on alleviating production constraints. One Chemonics representative stated that this relatively narrow focus on production during Phase I was due to the initial unavailability of technical staff with expertise in agricultural market access and business development.

As the new coordinator for PBS, Chemonics was tasked with providing ongoing services to pilot project participants, as well as identifying and serving producers who were not included in the pilot. To participate in the PBS Activity, individuals had to meet specific selection criteria. In the horticulture chain, for example, participants had to have experience or interest in producing and selling fruits or vegetables. Experience or interest in selling handicrafts was also required for participation in the handicraft chain, and only active milk producers were allowed to participate in dairy assistance. In all value chains, participants had to commit to making counterpart contributions and implementing practices featured in training. (See Appendix A for a full list of Phase I eligibility criteria.)

Also notable during Phase I implementation is that although pre-investment studies and business plans were cited in the compact as critical components of PBS assistance, Chemonics staff conducted very few pre-investment studies and business plans as part of general PBS

⁷ Review of Sector Studies, Lavalin 2008. 2008-2012 Work Plan: PDP, Chemonics 2008 and Life of Project Work Plan: PDP, Chemonics 2009.

implementation. Interviewed FOMILENIO representatives stated that the lack of financial/business planning services provided under PBS likely reflected the lack of clear requirements in Chemonics's contract regarding the administration and completion of these services.

Phase I was also characterized by the limited intersection between PBS and the Investment Support Activity of the PDP. One service provider helped four PBS-assisted groups design business plans, but they did not ultimately qualify for a FOMILENIO-supported loan. However, by July 2011 at least 15 PBS participants were approved for loans (primarily related to tomato and dairy production) and four PBS participants received substantive assistance from PBS service providers in developing business plans for the activity. However, this was not the level of interaction originally envisioned between the two activities. During qualitative interviews in 2011, stakeholders generally cited the minimum loan amount of \$50,000 under the Investment Support Activity as a primary reason for the lack of integration between PBS assistance (which generally served small, poor producers) and the Investment Support Activity (which generally served small- and medium-scale business owners).

3) Implementation from 2010 to 2012: Phase II

Starting in September 2010, Chemonics and FOMILENIO reorganized the PBS Activity and a new phase of PBS implementation began.⁸ During this phase, called Phase II, the focus of PBS Activity expanded to include production, access to markets, and business capacity. Organized by geographic regions, service providers in the dairy and horticulture chains began training producer groups in production techniques, irrigation, and new relevant technologies. Training was provided in field schools, or groups of between 20 and 25 producers who lived in the same community or in neighboring communities. However, field school activities did not begin until early 2011. Due to changes in some service providers and contract renewals during late 2010, few participants in any value chains received services from September 2010 to mid-January 2011 (see Figure I.2).

Modifications to the PBS Activity under Phase II also included the establishment of two new enterprises—El Salvador Produce in the horticulture chain and Lácteos Zona Norte in the dairy chain. Individual producers and member-organizations legally constituted these new enterprises; many of these member-organizations were comprised of groups of between 20 and 25 individuals who organized into field schools under Phase II. Representatives of member-organizations and high-producing individuals comprised each enterprise's board of directors. Each enterprise also contracted a team of administrative staff, including a managing director, to run daily operations.

In addition, two existing handicraft enterprises, MOJE and ACOPROARTE, received assistance under the PBS activity, and one existing dairy cooperative, Lácteos de Morazán, was reorganized and assisted under PBS. Chemonics staff provided all assisted enterprises with technical assistance related to marketing and sales. In addition, Chemonics provided staff from all five supported organizations with training on inventory control, budgeting and costing procedures, leadership, and organizational development. El Salvador Produce and Lácteos Zona Norte also received large in-kind donations of land, office installations, vehicles, and machinery. Chemonics

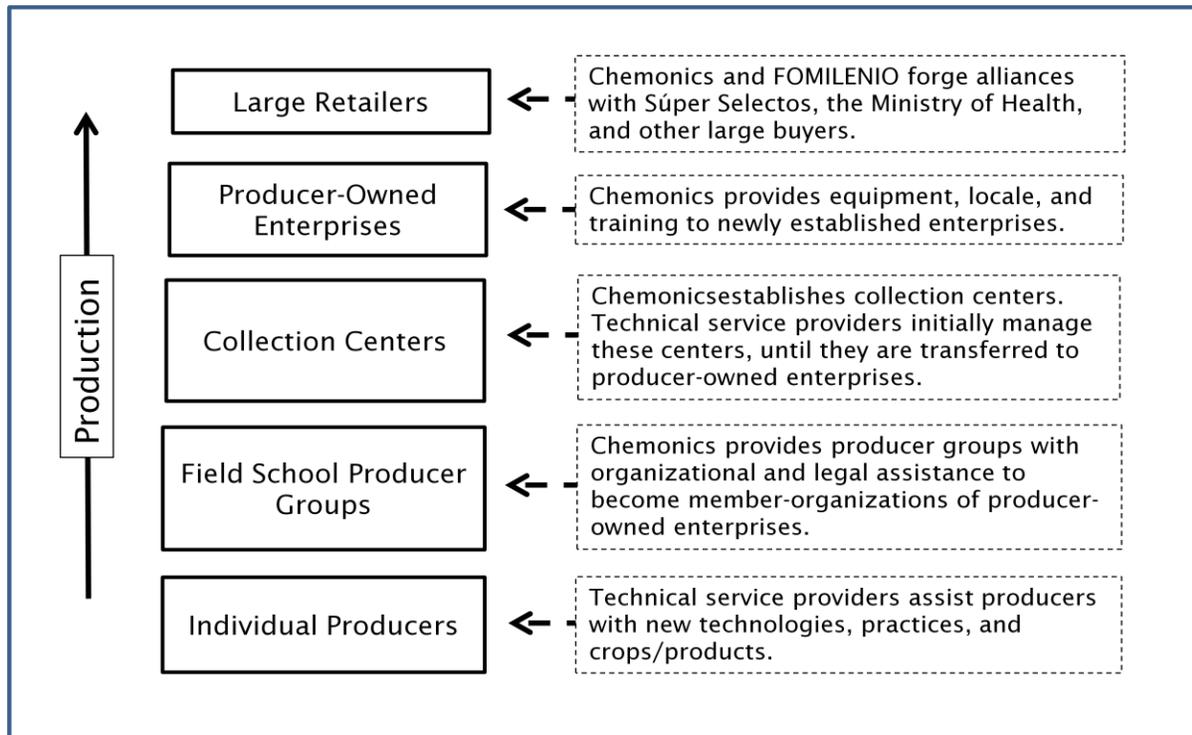
⁸ All stakeholders, including FOMILENIO, MCC, and Chemonics agreed that some mid-term reorganization was necessary. Chemonics largely led the Phase II redesign process, with input and assistance from FOMILENIO and MCC.

and FOMILENIO also introduced a joint venture with the Ministry of Agriculture to develop a text message system capable of transmitting market prices in real-time.

One interviewed MCC representative stated that the main rationale for the Phase II reorganization was to stimulate a transformation of the agriculture and dairy value chains by establishing new agro-businesses. Said the representative, “[MCC and FOMILENIO] would assume the risk of establishing [these organizations], and a critical mass of producers would get together the quality and quantity of produce that Walmart and Súper Selectos needed.” MCC and FOMILENIO understood that large investments in establishing and strengthening businesses posed significant risks, as there was no assurance that these businesses would reach financial sustainability by the end of the implementation period. However, stakeholders reasoned that such large investments were necessary, given that aggregating high-value fruits and vegetables was one of the only avenues through which PBS participants could generate added value for their production.

Figure I.3 provides a visual illustration of PBS assistance provided to businesses as well as individuals in the horticulture and dairy chains during Phase II. In early 2011, new producer-owned enterprises began operations. Assisted by FOMILENIO and Chemonics, the enterprises negotiated contracts with Súper Selectos, the Ministry of Education, and other large buyers. To fill these large orders, enterprises would buy and aggregate production from individuals and member-organizations through use of collection centers. Technical service providers would provide participants with all relevant training and donations, as well as manage collection centers in the first few months of Phase II implementation.

Figure I.3. Phase II PBS Assistance in the Horticulture and Dairy Chains, by Recipient



With the exception of TechnoServe in the dairy value chain, service providers in Phase II were different from those that provided technical assistance in Phase I. Swisscontact was the primary provider for the handicraft value chain;⁹ IICA, CARE, CATIE and Zamorano were the providers for the horticulture value chain; and TechnoServe, Zamorano, Proleche, and CARE were the providers for the dairy chain. Each of these providers offered assistance to small producers in their assigned area and facilitated commercial linkages between actors in the region. Also under Phase II, technical assistance for the horticulture chain was delivered in tandem with assistance for the fruit value chain. Assistance under Phase II continued until the expiration of field-staff's contracts in July 2012.

In Phase II, all training in the horticulture and dairy chains was conducted through Business Development Demonstration Centers (called CDEDs for their initials in Spanish), which had demonstration plots that were used for “field school” training sessions. Between 20 and 25 farmers participated in these sessions, which featured instruction in crop management, market access, and business development. These centers were equipped with the necessary resources to facilitate farmers’ understanding and adoption of new production technologies and practices.



Dairy farmers in Sensuntepeque, Cabañas, participate in a PBS training session on cattle feed (photo courtesy of Chemonics, 2011).

In addition, eligibility criteria for assistance under PBS changed from Phase I to Phase II for the horticulture, dairy, and handicrafts chains.

Notably, Phase II participants in the dairy chain were required to own at least 10 cows and work primarily in cattle farming, whereas these requirements were not explicit in Phase I. Similarly, Phase II participants in the handicrafts chain were required to have experience in handicraft production, whereas an interest in handicraft production was sufficient in Phase I.¹⁰ (See Appendix A for a full list of Phase II eligibility criteria.)

Table I.2 summarizes assistance provided in the dairy, horticulture, and handicrafts value chains during Phase I and Phase II of the PBS. As shown, the major differences between the two phases of PBS implementation are the larger number of contractors in Phase II, as well as the higher intensity of assistance in the second phase compared to the first. Notably, training and assistance in the horticulture chain under Phase I occurred every six weeks to two months, whereas training and assistance under Phase II was designed to occur on a weekly basis for all three of the value chains.

The PBS Activity had several funding components in Phase II: \$21 million was allocated for general implementation (which included \$3 million to finance collection centers); \$13 million was

⁹ Another service provider, Berdal, also provided technical services in the handicrafts chain. As of early 2012, however, Berdal was no longer associated with the PBS Activity.

¹⁰ Eligibility criteria applied to technical assistance. Another set of criteria were used, particularly in Phase II, to determine whether participants qualified for donations. Need and documented participation in training were key criteria for donations.

allocated for in-kind investments; \$8 million was allocated for the Fund to Support Productive Development (known as FADEP due to its initials in Spanish), which included financing to strengthen the capacity of El Salvador Produce and other supported enterprises; and \$4 million was allocated to the Fondo de Iniciativas Productivas (FIP), which financed ongoing productive projects similar to pilot projects. Examples of projects funded by the FIP included a project to strengthen fruit production systems in Cuscatlán and Cabañas (funded at \$341,000); a project to link dairy farmers in La Unión (funded at \$344,000); and a project linking chipilín and loroco producers to markets in the United States (funded at \$670,000).

Table I.2. Comparison of Phase I and Phase II PBS Assistance, by Value Chain

	Horticulture/Fruit	Dairy	Handicrafts
Phase I Implementation			
Key Actors	Contractors: CLUSA	Contractors: TechnoServe	Contractors: Aid to Artisans (ATA)
Description	<p>Start-date: April/May 2010</p> <p>End-date: End of August/beginning of September 2010</p> <p>Frequency: The service provider planned to conduct monthly visits. However, visits were every six weeks to two months for some participant groups.</p> <p>Technical staff: Groups were served by teams made up of one trained technician and two “community promoters.”</p> <p>Assistance: Technical assistance with new technologies and high-value crops. Donations included irrigation systems, machinery, greenhouses, and plants.</p>	<p>Start-date: May 2010</p> <p>End-date: End of August 2010</p> <p>Frequency: Between every 15 days and once per month</p> <p>Technical staff: Groups were served by technical staff and assistants.</p> <p>Assistance: Training in herd maintenance, irrigation techniques, vaccines, deworming, fertilizers, and fumigation. Donations included hay shredders, seeds, and genetic material.</p>	<p>Start-date: September 2009 for most groups</p> <p>End-date: End of August 2010</p> <p>Frequency: Weekly. ATA staff also responded to pressing issues as necessary.</p> <p>Technical staff: Groups were served by teams of specialists, including a design specialist and a marketing specialist.</p> <p>Assistance: Training in design, marketing, quality control and accounting. Few donations distributed. ATA also introduced design molds in order to reduce costs and standardize quality.</p>
Phase II Implementation			
Key Actors	<p>Contractors: IICA, CARE, CATIE and Zamorano (with 2 regions). Each contractor ran 1 of 5 collection centers (with Zamorano running two centers).</p> <p>Businesses: El Salvador Produce</p>	<p>Contractors: TechnoServe, Zamorano, Proleche, and CARE</p> <p>Businesses: Lácteos Morazán and Lácteos Zona Norte</p>	<p>Contractors: Swisscontact and Berdal</p> <p>Enterprises: MOJE and ACOPROARTE</p>
Description	<p>Start-date: Assistance was scheduled for September 20, 2010, but actual start-date was in early 2011. Collection centers were operational by January 2011.</p> <p>End-date: mid-2012</p> <p>Frequency: Field schools convened at least once a week.</p> <p>Technical staff: 2-3 assistants accompanied each technician. Assistants had to hold a relevant post-secondary degree.</p> <p>Assistance: Field schools with theoretical and practical instruction in irrigation techniques and good agricultural practices (GAP). Donations included seeds, saplings, and other inputs.</p>	<p>Start-date: Assistance was scheduled for early November 2010, but the actual start-date was in early 2011.</p> <p>End-date: mid-2012</p> <p>Frequency: On a weekly basis</p> <p>Technical staff: Teams of 3 technical staff were assigned to serve 200 producers. One senior staff member supervised 2 junior staff.</p> <p>Assistance: Field schools with theoretical and practical instruction in growing/storing cattle feed, irrigation techniques, and herd maintenance. Donations included seeds and medication.</p>	<p>Start-date: Meetings with Swisscontact officially started on October 1, 2010. Berdal began assistance on September 15, 2010.</p> <p>End-date: mid-2012</p> <p>Frequency: On a weekly basis</p> <p>Technical staff: Swisscontact staff runs most training sessions.</p> <p>Assistance: Training focused on design, business skills, and marketing/sales. Donations included raw materials for production.</p>

Source: Chemonics program manuals and in-person interviews conducted by Mathematica staff in October 2010.

Note: CLUSA = Cooperative League of the United States of America; IICA = Inter-American Institute for Cooperation on Agriculture; CATIE = Centro Agronómico Tropical de Investigación y Enseñanza.

Table I.3 provides a summary of PBS service targets and outcome targets, as well as final results of the PBS Activity by September 2012 (according to Chemonics’s administrative records). Before each implementation phase, FOMILENIO and Chemonics developed service and outcome targets for each service delivery region through an analysis of baseline characteristics, agricultural conditions, and geographic factors. As illustrated, the activity exceeded total PDP service and outcome targets during the implementation period. Notably, Chemonics exceeded FOMILENIO’s training target of 13,500 individuals by over 1,800 producers, and surpassed the overall PDP target of 11,000 permanent equivalent jobs by nearly 2,000 jobs.¹¹ In addition, Chemonics reported over \$27 million in counterpart investments from PBS participants.¹²

Table I.3. PBS Service and Outcome Targets and Results

	Target	Final Results (September 2012)
Services		
Individuals Served with Technical Assistance and Training	13,500	15,319
Enterprises Assisted	292	602
Outcomes		
Permanent Equivalent Jobs	11,000	12,929
Hectares Under Cultivation with PDP Assistance	15,000	22,207
Farmers Who Applied Improved Techniques	7,000	11,520
Counterpart Investments	\$10.1 million	\$27.1 million

Source: Chemonics, September 2012.

Notes: Targets and achievements are aggregated across all value chains in the project. Results do not include pilot project participants. Including these participants, 17,467 individuals were trained.

Targets are from FOMILENIO’s M&E plan, with the exception of counterpart investments related to Activity 1 (Chemonics projection).

¹¹ The project also surpassed the goal of 9,000 jobs for the PDP stated in the original compact.

¹² This counterpart investment far exceeded Chemonics’s \$10.1 million projection, but cannot readily be compared to FOMILENIO’s overall PDP target of \$65.5 million invested in value chains. This PDP target applied to all three activities of the PDP, including PBS, Investment Support, and Financial Services.

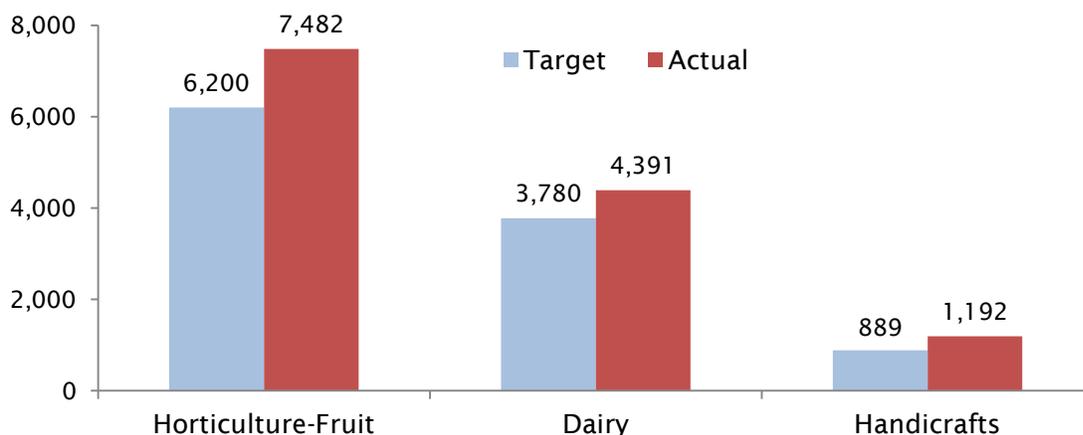
A Discussion of Chemonics Administrative Data

Throughout this report, we share Chemonics’s administrative data regarding jobs, hectares under cultivation, counterpart investments, and sales associated with PBS assistance. Although Chemonics tracked and reported these indicators under their contract, FOMILENIO, MCC, and Mathematica tracked and reported a slightly different set of PDP indicators for monitoring and evaluation purposes. These indicators include (increases in) net income, jobs created, and private investment. Due to different data sources and indicator definitions, these indicators cannot be readily compared.

Also notable is that Chemonics data reflect all jobs, production, and sales associated with PBS assistance during the implementation period, as opposed to the changes in these outcomes over the course of the implementation period. As such, they offer no information regarding the counterfactual—or what would have happened to PBS participants in the absence of the activity. For this reason as well as other discrepancies between the data, it is not possible to compare Chemonics figures regarding jobs and sales with Mathematica’s impact estimates for similar measures: Chemonics’s figures illustrate all employment, investments, and sales reported by PBS participants during the entire implementation period, whereas Mathematica’s impact figures are an estimate of the change in participants’ employment, investments, and net income as a result of one year of PBS assistance.

As illustrated in Figure I.4, Chemonics exceeded its participant targets in each of the horticulture, dairy, and handicraft value chains by between 16 and 34 percent. (See Figure 1.5 for gender distributions in each chain.) As shown in Figure I.6, nearly half of all PBS participants received assistance related to horticulture/fruit production, and approximately 85 percent of all PBS participants received assistance under the horticulture, dairy, and handicraft value chains.

Figure I.4. Target and Actual Number of PBS Participants, by Value Chain



Source: Chemonics administrative data, September 2012.

Note: Includes Phase I and Phase II participants. Excludes pilot participants. Targets refer to Chemonics service delivery goals for each chain.

Figure I.5. Gender Distribution of PBS Participants, by Value Chain

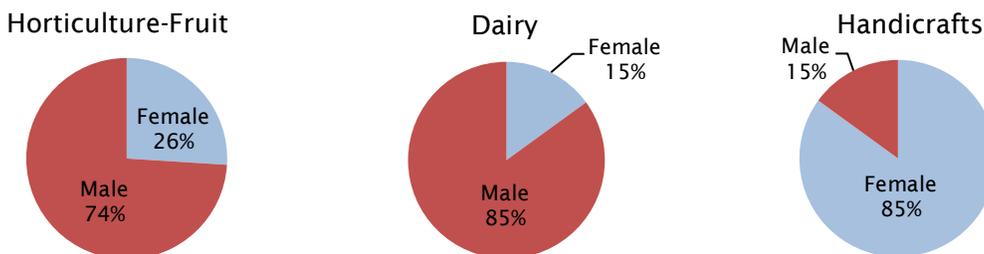
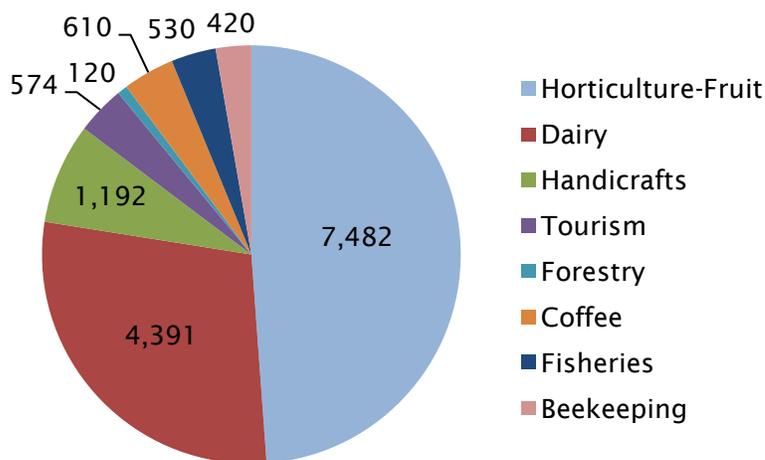


Figure I.6. Number of PBS Participants, by Value Chain



Source: Chemonics administrative data, September 2012.

Note: Includes Phase I and Phase II participants. Excludes pilot participants.

Throughout Phase I and Phase II implementation, tropical storms and economic trends affected PBS implementation. In 2009 and 2010, tropical storms Agatha, Ida, and Mathew caused losses to Salvadoran agricultural production estimated at \$96.3 million, of which \$68.9 million were losses related to the production of basic grains (CENTA 2010). Regional departments most affected by the storms were Cuscatlán, La Libertad, La Paz, San Salvador, San Vicente, and Usulután, and crops most affected were corn, fruits and vegetables, rice, and sugarcane.

In October 2011, tropical depression 12E caused substantial losses to Salvadoran agricultural and dairy production, including the production of numerous PBS participants. Based on an internal assessment, Chemonics found that 775 of the 3,072 hectares under production with assistance from PBS had experienced damages. Total losses related to PBS assistance were estimated at \$800,000 in investments and more than \$1.8 million in potential sales (FOMILENIO 2011). To mitigate the effects of the storm, FOMILENIO financed a recovery effort in late 2011 and early 2012. The effort

consisted of providing inputs and technical assistance to producers who experienced the largest damages.¹³

From late 2008 to 2010, the global financial crisis also had a detrimental effect on the Salvadoran economy. Specifically, the crisis caused contractions in the Salvadoran credit market, reduced demand for Salvadoran exports, and generated a decline in remittances from the U.S. Chemonics and FOMILENIO stakeholders reported that reduced consumer demand at the local, national, and international level had a negative effect on the production and sales of PBS participants, particularly in 2009 and 2010. However, the full effect of the crisis on producer outcomes is impossible to quantify.¹⁴

C. Costs of the PBS Activity

As of September 2012, total investments in Phases I and II of the PBS Activity were nearly \$47 million (Table I.4). These costs include all technical and material assistance to small producers, as well as equipment and infrastructure investments and administrative costs related to participant-supported enterprises. Among the PBS Activity's value chains, the average cost per participant ranged from around \$1,750 in the forestry value chain to over \$3,250 in the dairy value chain. The average cost per participant in the horticulture/fruit chain was around \$3,100, nearly as high as the average cost in the dairy chain, while the average cost per participant in the handicraft chain was lower at around \$2,250.

Table I.4. Costs of the PBS Activity, by Value Chain (in U.S. Dollars)

Value Chain	Technical Assistance and Training	Donations	Equipment and Infrastructure	Administrative Costs	Total Investment	Participants	Cost per Participant
Horticulture	15,801,157	6,753,685	94,062	587,516	23,236,420	7,482	3,106
Dairy	10,312,966	3,569,591	89,721	428,458	14,400,736	4,391	3,280
Handicrafts	2,442,777	141,364	20,975	87,129	2,692,245	1,192	2,259
Tourism	1,486,887	105,047	3,286	64,485	1,659,705	574	2,891
Fisheries	1,103,018	237,251	5,927	33,902	1,380,098	530	2,604
Apiculture	893,698	271,139	9,485	28,729	1,203,051	420	2,864
Coffee	1,544,687	466,233	6,989	86,512	2,104,421	610	3,450
Forestry	168,941	41,999	0	0	210,940	120	1,758
All Chains	33,754,130	11,586,309	230,446	1,316,730	46,887,615	15,319	3,061

Source: Chemonics monitoring data, 2012. Current as of September 2012.

Notes: Includes Phase I and Phase II participants. Excludes pilot participants.

¹³ Because this storm occurred after this analysis's study period, its overall effect on horticulture and non-horticulture production is not reflected in impact findings. Furthermore, the effect of significant tropical storms and other natural disasters on farmer productivity and net income is generally similar across treatment and control groups, and thus rarely compromises key estimates of rigorous impact analyses.

¹⁴ Similar to weather conditions, the effect of the financial crisis is assumed to be generally similar across treatment and control groups in the PBS evaluation, and thus not a threat to the evaluation's validity.

As of September 2012, the PBS Activity was projected to generate approximately \$54.2 million in total disbursements (from April 8, 2008 to September 30, 2012). This amount differs from the \$47 million spent in Phases I and II (Table I.4) because it includes costs associated with the PBS pilot phase in addition to Phases I and II. This \$54.2 million included \$39.8 million related to production support services (largely training and technical assistance costs), \$11.8 million related to in-kind goods, and \$2.6 million for pre-investment studies (FOMILENIO, 2012). Although the exact dollar amount spent on enterprise assistance is not known, it is at least \$3.9 million: \$3.4 million spent by Chemonics, in addition to \$500,000 spent by USAID on in-kind donations to El Salvador Produce. The PBS Activity's final cost of approximately \$54.2 million is around \$2.7 million less than the \$56.9 million originally budgeted for the activity in the MCC-El Salvador compact.

D. Evaluation Rationale and Methodology

MCC contracted Mathematica in 2007 to design and conduct evaluations of the first two PDP activities—PBS (Activity 1) and Investment Support (Activity 2). Given MCC's goal of evaluating interventions with the most rigorous methods available, Mathematica examined the operational features of both activities and determined that a rigorous evaluation of the PBS Activity was feasible. Developed and refined by Mathematica, MCC, FOMILENIO, and other stakeholders, the impact evaluation of the PBS Activity used random assignment, which allowed stakeholders to assess the impact of PBS on producers' income and employment in a rigorous manner.

This performance analysis, also commissioned by MCC, provides documentation of implementation facilitators and challenges in the horticulture, dairy, and handicrafts value chains; a synopsis of implementer performance related to PBS implementation; and some general findings regarding program results and sustainability. This analysis takes the place of the final impact evaluation that was originally planned for the handicraft, dairy, and horticulture chains, which was designed to compare the impact of two years of PBS assistance to the impact of one year of assistance. Stakeholders believed this performance analysis would be more valuable than the final impact evaluation, particularly because the control group's access to services in 2011 precluded the possibility of measuring the impact of more than one year of assistance. This performance analysis provides context for impact findings, but also offers a global summary and analysis of the entire PBS Activity.

To guide our analysis, we used a research framework composed of the following three broad research questions (and their corresponding sub-questions):

1. **How was the PBS Activity designed and why was it designed this way?** What were the key objectives, activities, and outcomes? What was the target population? What key players and considerations were involved in the activity's design?
2. **How was the activity implemented and did implementation meet expectations?** What were the primary implementation phases of the activity? What were the primary components of assistance to small producers and producer-owned enterprises, and how did these components change over the course of implementation? Did the activity meet its targets for the number of producers served? How did FOMILENIO and Chemonics perform as the project's supervisor and implementer, respectively?
3. **Did the activity produce its desired results?** Did the activity lead to increased employment, investment and income among participants? To the extent that there is not enough evidence to draw conclusions about the desired results, why is this?

4. **What was learned about supporting enterprise development and how sustainable are MCC's efforts in this area?** What types of enterprises had positive results, and why? Are enterprises likely to continue operations in the future?
5. **What are the lessons for MCC and other stakeholders from the design and implementation of this activity?** What were key facilitators and challenges to implementation? What key lessons could be applied to future agricultural assistance programs in different settings?

This analysis relies on a mixed-methods approach, in which Mathematica staff collected and analyzed qualitative and quantitative data from a variety of sources, including administrative data, programmatic reports, and interview data. In July 2012, Mathematica staff conducted interviews with FOMILENIO, Chemonics, and technical service provider staff, as well as members of FOMILENIO's board of directors, an official from the Ministry of Agriculture, representatives from Súper Selectos (a major grocery store chain in El Salvador), PBS participants, and representatives from FOMILENIO-supported enterprises. Interviews with stakeholders generally focused on the design and implementation of the PBS Activity, as well as its results. In addition, interviews with representatives from FOMILENIO-supported enterprises focused on the character of assistance as well as each enterprise's operations, employment, and sales.

Once data collection was complete, we reviewed taped interviews and constructed summaries of each interview. Next, Mathematica staff triangulated information provided by all interviewed stakeholders to identify key themes and facts that would most accurately convey the program's design, implementation, and results. In cases in which discrepancies arose between interviewees regarding program implementation or results, we considered each party's incentives and attempted to construct a fair assessment of the facts or perceptions in dispute. Next, Mathematica staff used PBS logic models from Chemonics and FOMILENIO reports to analyze relationships between programmatic activities, participants' behavior change, and the activity's desired results. In addition, key findings from interviews were compared to programmatic reports and administrative data provided by Chemonics.

In addition, we assessed implementers' performance in light of key implementation themes, stakeholder-reported results, and changes to the project design midway through implementation. In this report, we define implementer performance as a function of the quality and timeliness of assistance, as well as the likely contribution of this assistance to producers' production and sales. Because FOMILENIO and Chemonics were largely responsible for modifications to the activity design in Phase II—namely the introduction of field schools and the formation of producer-owned enterprises—we also consider the quality of the activity's revised design in our assessment of implementer performance.

In this report, we present and analyze Chemonics administrative data regarding PBS participants, costs, and a variety of key outcomes, including employment and sales. Although these data—particularly data related to number of program participants and land area devoted to specific crops—were verified to some extent, Mathematica does not fully endorse the validity of these measures.¹⁵ Despite this reservation, an analysis of Chemonics data, in combination with other

¹⁵ Mathematica does not endorse the validity of these measures because Mathematica staff was not directly involved in their formulation or in data collection and quality assurance procedures associated with the measures.

quantitative and qualitative data sources, provides insight into PBS implementation and implementer performance.

(continued)

Furthermore, there is no way to scientifically test the assumptions implicit in these measures. For example, we cannot use survey data from the PBS impact evaluation to verify that one hectare of tomato production is associated with one full-time job because PBS follow-up surveys collected aggregated employment information for all fruits and vegetables, as opposed to employment data associated with each individual crop.

II. HORTICULTURE FINDINGS

In this chapter, we discuss key implementation findings for the horticulture value chain, gleaned from interviews with FOMILENIO, Chemonics, and technical service provider staff, as well as program participants. First, we summarize Phase I and Phase II implementation. Next, we present implementation facilitators and challenges, followed by the results of assistance and an assessment of implementer performance.

A. Implementation Summary

Phase I assistance was largely personalized. Implemented by CLUSA, Phase I assistance in the horticulture chain was largely characterized by direct technical assistance to small- and medium-scale farmers, complemented by substantial material donations. Field-staff visited each farmer's plot every few weeks to provide relevant information, offer ongoing assistance, and distribute donated inputs such as seeds and fertilizer. Technical assistance usually centered upon production; however, field staff occasionally helped participants sell their production to a variety of buyers.

In interviews, stakeholders mentioned two key themes related to Phase I implementation in the horticulture chains. First, there were often too few technical field-staff to serve the large number of PBS participants. As a result, some participants received visits only once per month or every six weeks. Second, assistance was highly individualized compared to Phase II assistance, and field-staff often allocated a large portion of time and resources to helping well-established farmers improve their production. For this reason, stakeholders believed that assistance provided in Phase I was more likely to benefit medium-scale farmers, as opposed to subsistence-level farmers.

Phase II implementation centered upon field schools. In the second phase, Chemonics and FOMILENIO altered the assistance model in response to lessons learned in Phase I and input from participants. Chemonics introduced a field school model, in which around 20 to 25 producers received theoretical instruction on a biweekly basis, as well as hands-on experience with new technologies and crops on demonstration plots. Stakeholders mentioned that field school pedagogical units were largely uniform across service providers, but could be tailored somewhat to participants' interest in particular crops and technologies. Under the field school model, field-staff was able to instruct more participants per week by providing assistance in one location at a scheduled time. According to stakeholders, the field school approach also allowed for more interaction and knowledge transfer among farmers.

The farmers who participated most actively in the activity's first phase were generally invited to participate in Phase II. In Phase II, participants were required to have the necessary resources to invest in horticulture production. In addition, producers were required to have a modest amount of land and produce at least one fruit or vegetable prior to assistance. Participants were also required to have access to irrigation water for certain crops.¹⁶ Despite these more stringent requirements, stakeholders mentioned that field schools often contained a mix of small and well-established farmers. Given the regular opportunities for small farmers to learn from well-established farmers

¹⁶ Stakeholders in Chemonics, FOMILENIO, and technical service providers made this decision jointly. To some extent, this decision reflected lessons learned from Phase I implementation, in that farmers without access to irrigation water generally experienced limited increases in production on an annual basis.

during the sessions, stakeholders mentioned that small producers were more likely to benefit from the field school model than established farmers.

By the end of PBS implementation, technical subcontractors had created 245 field schools throughout the Northern Zone related to fruit and horticulture production, with a reported assistance of over 7,400 farmers (Chemonics, 2012). Technical staff estimated that successful field schools had about 70 percent assistance by the end of the training modules. Participants who dropped out of field schools were often those who expected donations, did not have the resources to implement the concepts discussed in sessions, or did not perceive the benefits of the new group training approach compared to individualized assistance in Phase I.

In demonstration plots and participants' land, implementers helped farmers equip nearly 600 hectares of farmland with irrigation systems and plant over 3 million fruit saplings. In addition, technical subcontractors distributed high-quality fruit and vegetable seeds worth over \$140,000 during project implementation. Field-staff also equipped 12 demonstration plots with environment-friendly technologies according to the good agricultural practice (GAP) model (Chemonics, 2012).

The formation of El Salvador Produce was a key component of Phase II assistance. Based on feedback from participants in Phase I, FOMILENIO and Chemonics established a plan to form a producer-owned enterprise in the horticulture chain. This enterprise would buy horticulture production from PBS participants, aggregate this production, and sell it to large national buyers. In this capacity, the enterprise would directly address the key constraint of market access for PBS participants. In addition, the enterprise would provide participant farmers with inputs at lower prices, as well as serve as the primary location at which in-kind donations were stored and distributed.

Established in April 2010, El Salvador Produce is legally comprised of 41 producer groups and several individuals, with a total membership of approximately 2,000 farmers. The enterprise's board of directors is comprised of leaders from several participating member-groups, as well as individual producers. As of 2011, El Salvador Produce had five collection centers in the Northern Zone, located in Cabanas, Morazán, Metapán, and two regions in Chalatenango. These collection centers served as locales for buying and aggregating farmers' production, and in some cases weighing, washing, preparing, and packing fresh produce before it was sold in formal and informal markets. By 2011, the enterprise also had a central office and storage facility in Chalatenango and a small fleet of vehicles. Additional investments in cold storage were completed in mid-2012.

When it was first established in late 2010 and early 2011, El Salvador Produce bought production from farmers in all regions served by PBS, including Chalatenango, Morazán, Cabañas, and other departments. Over time, however, it consolidated its operations around Chalatenango in an effort to save costs and establish efficient distribution routes. This helped the enterprise improve its financial viability, but excluded a large portion of PBS participants outside of Chalatenango from business transactions with the enterprise.

B. Implementation Facilitators

Quick-pay fund in Morazán. In Morazán, one technical service provider, CARE, was able to access donation funds outside of FOMILENIO to implement a "quick-pay" scheme for PBS participants who sold produce to El Salvador Produce. Under this scheme, CARE provided El Salvador Produce with short-term cash to pay farmers immediately for their production, and El Salvador Produce repaid CARE once large buyers—particularly Walmart and Súper Selectos—

provided payment for large orders several days later. This payment system precluded payment delays to farmers—ranging from 8 to 15 days—that were typical of El Salvador Produce transactions in other regions outside of CARE’s service delivery area. In interviews, stakeholders agreed that this quick-pay fund played a vital role in providing farmers with immediate payment, which is a large factor in farmers’ decision to sell their production. Some stakeholders reasoned that if El Salvador Produce were able to access such a fund to pay farmers in all regions for their production in real-time, they would likely have a larger network of farmers and a more sustained supply of high-quality produce.

Enhanced information exchange and organization through field schools. In interviews, stakeholders mentioned that the field school structure provided a forum for farmers to share their experiences working with a variety of crops and technologies. The field school structure also served as the basis for the organization and legalization of farmer groups, many of which joined El Salvador Produce. This organization also helped FOMILENIO and Chemonics to assess farmers’ losses and coordinate relief efforts following tropical depression 12E in late 2011.

C. Implementation Challenges

Lack of personalized technical assistance by experienced field staff. Under Phase II assistance, experienced field-staff’s time was generally devoted to organizing and administering field schools, and junior field-staff was in charge of visiting participants to facilitate technology transfer. Often, these junior staff-members did not have enough experience to help participants with their specific problems. Stakeholders mentioned that allocating a block of time for experienced field-staff to visit participants’ land and offer individualized assistance would have been optimal. In fact, one FOMILENIO representative mentioned that field schools were originally designed to be one half-day of instruction and one half-day of personalized technical assistance. In practice, however, field schools were often one full day of instruction at demonstration plots, which left very little time for technical assistance.

Reported inconsistencies and deficiencies in technical assistance. El Salvador Produce staff members and interviewed PBS participants also remarked that technical field staff often lacked specific knowledge related to fruit and vegetable production and gave poor technical advice, which farmers often followed. One farmer stated that field-staff advised him to plant each banana sapling in an area of four square meters, and that this large area led to an inefficient use of irrigation water. Another farmer stated that he was the only member of his group who participated in the last five field school sessions because fellow farmers had lost interest in assistance they viewed as untrustworthy.

“We did a test and asked three different technical field-staff members the same question [about vegetable production] and got three different answers.”

—El Salvador Produce representative

Delays in distribution of inputs and installation of technologies. FOMILENIO staff, technical field-staff, and participants mentioned that many donations—such as irrigation systems and seeds—were provided too late in the agricultural year to be used properly. One contractor mentioned experiencing delays of between 4 and 5 months for some donations. As a result of these delays, many participating producers could not plant fruits and vegetables at the appropriate time in the annual agricultural cycle.

Mix of subsistence-level and high-resource producers in field schools. Field-staff noted that field schools provided instruction to producers with a wide range of resources and interests in

crops and technologies. One key distinction was producers who used greenhouse or micro-tunnel technologies versus subsistence-level producers who planted only during the rainy season (with a limited amount of land). To cater to all participating farmers, field-staff often taught units on several crops and technologies, and held sessions at more than one demonstration plot in each community. This diluted the content of training, as only a limited amount of time could be devoted to each crop and technology.

In interviews, several technical service providers and FOMILENIO staff expressed concern with assistance provided to subsistence-level farmers, as this population did not have the resources to adopt new practices, contract paid labor, and achieve higher sales and income. Instead of providing assistance directly to this low-resource population, these interviewees suggested that future agricultural assistance programs should target key entrepreneurs who had the resources and vision necessary to make large-scale investments, and these entrepreneurs could in turn employ subsistence-level farmers through wage labor.

“We waste time if we provide the same training to all farmers. For your subsistence farmers, just give them the tools they need to produce and eat. For your advanced farmers, you should work on sales or building their business skills.”

–Technical subcontractor in the horticulture chain

Lack of financial resources for field schools. Interviewed technical staff mentioned that field schools didn’t have enough resources to implement new technologies and cultivate a variety of crops. When they were established, field schools had a small budget to buy seeds and inputs for production on demonstration plots. At one point during Phase II, FOMILENIO considered providing field schools with an additional fund to invest in inputs and technologies; however, this additional fund was never established. Field schools’ lack of resources during Phase II stood in contrast to the high number of in-kind donations provided to farmers in Phase I.

Weak coordination between El Salvador Produce and technical service providers. FOMILENIO staff and other stakeholders noted a general lack of coordination between technical service providers and El Salvador Produce during Phase II. Mid-way through Phase II implementation, a regular system of communication between technical field staff and El Salvador Produce was established, in which field staff provided El Salvador Produce staff with lists of fruits and vegetables that were available for sale on a weekly basis. However, there appeared to be no deliberate effort on the part of El Salvador Produce, technical service providers, and Chemonics staff to jointly determine the quality and quantity of crops desired by national buyers and to coordinate activities to meet production and sales goals. El Salvador Produce started operations with 50 target crops, and did not finalize a list of approximately 20 profitable crops until mid-2012. If these 20 crops had been defined at the outset of Phase II, service providers could have provided more targeted technical assistance to produce the amount and quality desired for these target crops.

Highly competitive market conditions. Many interviewed stakeholders mentioned strong competition from Guatemalan providers as a challenge to the PBS Activity, as large buyers such as Súper Selectos had pre-established relationships with these providers. Given their experience, these Guatemalan providers could fully comply with three key criteria—quality, quantity, and timeliness—more consistently than the newly established El Salvador Produce. In addition, El Salvador Produce faced competition from other wholesalers in the informal sector, who do not generally report income and pay relevant taxes. One planned advantage of El Salvador Produce relative to other fruit and vegetable wholesalers was its quick-payment scheme, in which producers would be compensated at the moment of the sale. However, this payment scheme was implemented in only a

limited capacity by one of several PBS subcontractors. As a result, the only advantage of El Salvador Produce relative to wholesalers and middle-men in the region was the technical assistance offered by PBS subcontractors and the availability of a revolving fund for purchasing inputs.

Weak incentives facing affiliated farmers and technical staff. According to an MCC source, less than 10 percent of farmers affiliated with El Salvador Produce supplied their production to the enterprise. Generally, these farmers opted for better prices or quicker payment through middle-men or other buyers. With a smaller supply of high-quality production than originally expected, El Salvador Produce failed to meet delivery targets with Súper Selectos on several occasions. In addition, technical service providers did not face strong incentives to help farmers or El Salvador Produce staff meet these service delivery targets on time. Initially, FOMILENIO staff attempted to structure technical staff's contracts so that payment was received if program participants and El Salvador Produce were able to meet targets required by existing sales contracts. However, stakeholders eventually opted against this approach. The fact that technical field-staff were contracted by Chemonics, and thus did not report to El Salvador Produce, further inhibited collaboration and a shared vision between the enterprise and service providers.

“You can only incentivize so much; you can't actually make [PBS participants] sell to El Salvador Produce.”

—MCC representative

Lack of ownership and collaboration among stakeholders. According to one interviewed stakeholder, El Salvador Produce board members, affiliated farmers, and contracted technical staff had a general lack of personal investment in the enterprise. In one extreme case, a technical service provider reportedly told a program participant to avoid selling his production to El Salvador Produce, given its unfavorable payment conditions. Although several board members were personally invested in the business, the fact that board members and affiliated farmers were not required to make substantial personal financial investments in the business likely contributed to their lack of collaboration and ownership in the enterprise. With no tangible stake in the business's success or failure, even board members chose to sell their production outside of the enterprise, and often to the same buyer with which El Salvador Produce had a contract.

D. Results

Participants were generally satisfied with assistance. According to Chemonics staff, participants were generally satisfied with Phase II assistance, particularly those who benefited from more than one FOMILENIO project. For example, some farmers that received assistance under PBS could more easily transport their production to market with new roads built under the compact. In the horticulture chain, one Chemonics representative reasoned that satisfaction under Phase II appeared to be higher than under Phase I, which had stronger limitations in terms of human resources and staff-to-participant ratios. However, at least two interviewed farmers reflected that Phase I was superior to Phase II due to its stronger emphasis on donations. An analysis by an outside evaluator also found that PBS participants in the horticulture chain generally viewed Phase I assistance as useful, despite the infrequency of technical assistance visits (ADEPRO, 2011).

Some small-scale Phase I participants experienced suboptimal outcomes. Site visits by Mathematica staff in late 2010 revealed that some small-scale farmers in the treatment group of the PBS impact evaluation received seeds, plants, and technical assistance with soil management during the 2010 rainy season, but did not receive any assistance for several months at the end of Phase I and before the start of Phase II. Partly as a result of this gap in services, many of these producers

lost their crops or produced poor quality crops in late 2010 and early 2011. Chemonics staff acknowledged that the prolonged transition from Phase I to Phase II assistance played a role in these negative agricultural outcomes.

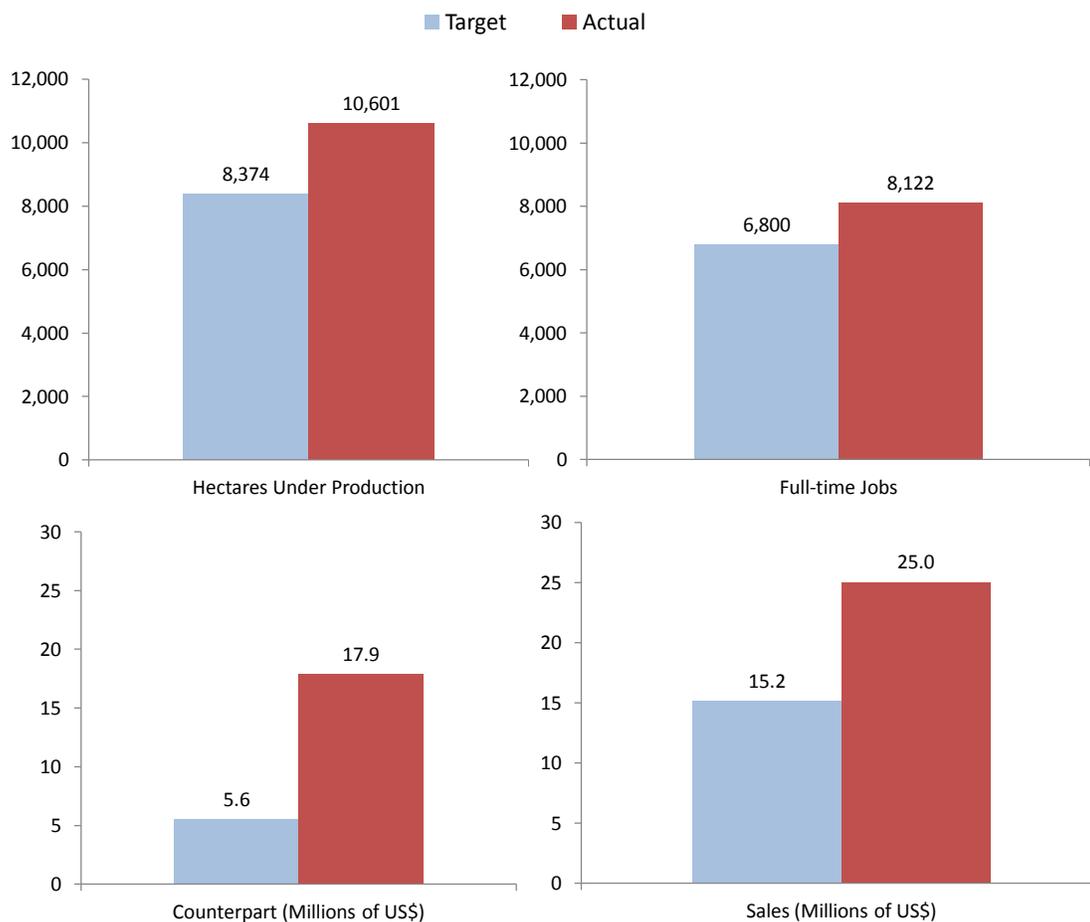
According to Chemonics monitoring data, implementers surpassed performance goals for employment. Prior to program implementation, Chemonics and FOMILENIO set an employment target of 6,800 full-time jobs related to fruit and vegetable production supported by PBS assistance. According to Chemonics administrative data, the activity surpassed this employment goal by over 1,300 full-time jobs (Figure II.1). Chemonics staff mentioned that in part, stakeholders surpassed this employment target because fruit and vegetable production are generally very labor-intensive. For example, under Chemonics's formula for calculating employment as a function of crop type and land area, one hectare of tomato production generates one full-time job.

According to implementers, participants generally experienced increases in production, sales, and income. FOMILENIO staff reported large increases in production, vegetable sales, and productive income among participating farmers. According to Chemonics staff, these benefits were experienced by most of the 7,000 participants in the horticulture value chain; however, a small portion of producers experienced very large increases in sales and income. Chemonics staff mentioned that the new technologies learned in field schools were a major factor in generating increased sales, as well as the role played by El Salvador Produce in providing farmers with improved market access and better prices. In some regions, higher prices offered by El Salvador Produce obliged intermediaries to offer better prices for vegetable production. According to Chemonics administrative data (Figure II.1), the activity exceeded performance targets for hectares under production, counterpart contributions, and sales.¹⁷

Zamorano was particularly successful in improving production and sales. According to FOMILENIO, one contractor, Zamorano, was particularly adept at producing strong results in Chalatenango through use of greenhouses and micro-tunnels for tomato production. In other regions, farmers experienced success in production of papaya, pineapple and plantains to the extent that some producers were capable of exporting their production following assistance. Stakeholders mentioned that other contractors also performed well, including CARE and IICA. However, Zamorano was consistently mentioned as a high-performing service provider.

¹⁷ It should be noted that these performance targets represent aggregate totals in hectares under production, counterpart contributions, and sales throughout the entire implementation period, as opposed to changes in these measures during the implementation period.

Figure II.1. Target and Actual Performance on PBS Outcomes, Horticulture Chain



Source: Chemonics administrative data, September 2012.

Notes: Sample size is 7,482. Pilot participants are excluded. All results are cumulative from 2009 to 2012, and are not defined as impact or change in outcomes over the course of PBS implementation. Targets are from Chemonics.

Full-time jobs are defined as jobs—either held by participants or by individuals they employ—that require 250 days of labor per year. Jobs are calculated as a function of crop type and planting date, as well as hectares under production.

Counterpart is defined as participants’ investments in inputs and labor, as well as in-kind contributions from Chemonics and technical service providers.

Sales are calculated as a function of crop type and planting date, hectares under production, level of technology adoption (that is, greenhouse production versus open-air production), and market price at the estimated time of crop maturity.

Successful participants had common characteristics. According to technical field-staff, producers who greatly benefited from assistance tended to have an entrepreneurial vision and sufficient resources to invest in new technologies, as well as access to irrigation water. Previous experience with fruit and vegetable production was helpful, but not necessary. One service provider remarked that a female participant who previously produced only basic grains implemented a drip-irrigation system, completely diversified her production, and sold a large amount of cucumbers and hot peppers following assistance. From these sales, she earned enough money to make key investments in her children’s education. Service providers estimated that each field school generally had one or two participants who experienced a large positive impact in production and sales, whereas other participants experienced modest improvements.

PBS Impact Evaluation Results: Horticulture Chain

Mathematica’s interim impact evaluation (Blair et. al, 2012) found the following impacts for a sample of farmers in the horticulture chain who received PBS assistance in 2010 and early 2011:

- ***Hectares under production:*** Farmers who were offered PBS assistance devoted a larger portion of their land to cucumber production, but devoted a smaller portion of their land to corn production than farmers who were not offered PBS.
- ***Employment:*** Farmers who were offered PBS generated slightly more full-time jobs related to fruit and vegetable production than farmers who were not offered PBS, but did not create more full-time jobs related to all crops.
- ***Investment:*** Farmers who were offered PBS made larger investments in fruit and vegetable production than farmers who were not offered PBS.
- ***Sales:*** Farmers offered PBS assistance reported higher vegetable production, particularly during 2010, but did not report significantly higher income from horticulture sales than farmers who were not offered PBS.

Reflecting on the lack of positive impact on horticulture sales found in Mathematica’s impact evaluation, one Chemonics representative reasoned that these results likely reflected the gap in services between late 2010 and early 2011. Many PBS participants in the study sample received seeds, plants, and technical assistance with soil management during the 2010 rainy season, but did not receive any assistance for several months at the end of Phase I and before the start of Phase II. Partly as a result of this gap in services, many of these producers lost their crops or produced poor quality crops in late 2010 and early 2011. Perhaps for this reason, the impact analysis found increased investments in horticulture production—particularly in Phase I—but no apparent benefit of those investments in the form of increased net income from horticulture sales.

The impact evaluation’s finding of no positive impact on fruit and vegetable sales appears at odds with Chemonics’s high sales figures reported above. However, these figures reflect divergent concepts: Chemonics figures are an aggregate estimate of all fruit and vegetable sales related to PBS assistance during the full implementation period, whereas the impact evaluation provides an estimate of the average marginal contribution of PBS assistance to farmers’ fruit and vegetable sales during a one-year follow-up period. It should be noted that Mathematica’s impact evaluation included only a sample of farmers who received PBS assistance, and followed them for a period of one year. As such, the evaluation’s findings of no impact cannot be generalized to all producers in the horticulture chain over the entire implementation period.

E. Performance Assessment

In this section, we offer an assessment of FOMILENIO's and Chemonics's general performance related to training and material assistance in the horticulture value chain. We present a separate assessment of assistance related to producer-owned enterprises in Chapter V.

Overall, FOMILENIO and Chemonics performance in the horticulture chain is best described as deficient to adequate in both Phase I and Phase II. Human resource constraints, long periods of inactivity in the field, and poorly timed donations in both phases likely limited the potential for large improvements in participants' production and sales. One clear example of poor performance among service providers in the horticulture chain is the experience of several farmers in the treatment group of the PBS impact evaluation, who planted vegetables during Phase I after receiving donated inputs and technical assistance, but failed to capitalize on these investments after assistance abruptly ended in mid-2010.

In Phase II, FOMILENIO and Chemonics demonstrated flexibility by restructuring training under a field school model and establishing El Salvador Produce to alleviate market access constraints in the horticulture sector. Because the field school model featured two additional junior staff-members for every senior staff-person, it eased human resource constraints to some extent relative to Phase I implementation. The model also facilitated strong information exchange between farmers within communities. However, field schools presented some new challenges: Junior staff proved to be an ineffective substitute for senior staff when providing direct technical assistance to farmers, and technical staff often struggled to train a heterogeneous mix of farmers. Also in Phase II, potential linkages between program participants and El Salvador Produce were limited, due in part to a lack of coordination between the enterprise and technical service providers.

Despite these deficiencies, it should be noted that PBS assistance in the horticulture chain generated impressive results for at least a portion of participants, particularly farmers in Chalatenango who adopted greenhouse technologies and fruit producers throughout the Northern Zone. In addition, even after acknowledging large deficiencies in PBS assistance, most interviewed participants expressed satisfaction with the training and donations they received from field-staff. Although this high satisfaction rate may reflect participants' potential unwillingness to express dissatisfaction for fear of being excluded from future assistance, it likely offers some insight into the quality of hands-on training provided by technical field-staff.

III. DAIRY FINDINGS

In this chapter, we discuss primary implementation findings for the dairy value chain, gleaned from interviews with FOMILENIO, Chemonics, technical subcontractor staff, and ten PBS participants. First, we summarize Phase I and Phase II implementation. Next we present implementation facilitators and challenges, followed by an assessment of PBS results and implementer performance. (See Appendix B for a full summary of findings from interviews with PBS participants.)

A. Implementation Summary

Implementers offered personalized assistance in Phase I. Featuring technical assistance and material donations, PBS assistance in Phase I focused primarily on increasing and enhancing milk production. According to FOMILENIO staff, the goal of Phase I was to provide producers with a basic knowledge of new technologies and production techniques related to milk production. The technical service provider in the dairy chain, TechnoServe, offered some training in a group setting, but field staff devoted a large portion of their time to one-on-one visits with producers. In addition, field staff provided participants with a substantial number of donations, including inputs such as seeds, construction materials to improve milking stations, and equipment for processing fodder and milking cows. At up to 200 producers for each staff person, caseloads were large in Phase I. As a result of these large caseloads, some producers received only one visit or training every four to six weeks.

Phase II implementation centered upon regional enterprises and large infrastructure investments. According to interviewed Chemonics and FOMILENIO staff, Phase II assistance changed in response to stakeholders' better understanding of weak links in the dairy value chain. Even with increased and higher quality production resulting from technical and material assistance, some producers were failing to generate added value from the sale of milk, and milk prices fluctuated widely over the course of the year. To obtain a higher and more consistent price, producers would have to organize and aggregate high-quality milk production, and sell this high-quality milk under a registered enterprise. Under PBS implementation plans for Phase II, two regional producer-owned enterprises would aggregate and sell production in their particular zones: Lácteos Morazán in the eastern part of the country, and Lácteos Zona Norte in the western part of the country. By strengthening participants' productive capacity and establishing and strengthening producer-owned enterprises, PBS assistance was designed to fully integrate efforts to increase production, strengthen business capacity, and build market linkages between milk suppliers and buyers.

“Phase II was designed to solve structural problems with supply and demand, such as cyclical price fluctuations... technical assistance and new technologies weren't enough. People would say, ‘What's the point of producing more if they'll just pay us less.’”

–FOMILENIO staff member

For this scheme to work, large investments in infrastructure and technology were necessary in the Northern Zone. Throughout the implementation period, the PBS Activity financed 488 improved milking stations, 79 mechanical milking systems, and irrigation systems for a total of 364 hectares of farmland (Chemonics, 2012). In addition, Chemonics financed a series of collection tanks in the Northern Zone, which producers used to aggregate their milk production for sale to the two producer-owned enterprises. During Phase II implementation, Chemonics financed 62 collection tanks to serve Lácteos Zona Norte and 19 collection tanks to serve Lácteos Morazán

(Chemonics, 2012). FOMILENIO also invested in enterprises' cold storage chain, or ability to transfer and store milk at low temperatures, thus ensuring a high quality product at the time of sale. For example, Chemonics financed six refrigerated milk storage and delivery vehicles for Lácteos Zona Norte and Lácteos Morazán.

Implementers adopted a field school model in Phase II. Similar to the horticulture chain, assistance in the dairy chain was provided under a field school framework, in which producers in the same geographic area were organized and trained on demonstration plots. In field schools, senior technical staff trained producers on key technologies and practices, and junior technical staff visited participants' property to ensure the correct adoption of these technologies and practices. Throughout the implementation period, a total of 47 technical field staff established and administered 144 field schools related to dairy production.

According to interviewed stakeholders, the field school approach functioned to disseminate a large amount of information to a large group of producers in an efficient manner. Chemonics staff noted that this system allowed field staff to interact more consistently with producers than the individualized assistance provided under Phase I. Another advantage of this approach was that it enhanced communication and social capital between producers in the same region. However, technical staff noted that the strongest producers often didn't attend field school sessions, as the concepts covered were not particularly relevant to their needs. As a result, technical staff often worked separately with high-volume producers in the field to help them with specific issues related to reproduction, sanitation, and alternate cattle feed.

Phase I and Phase II technical assistance focused on low-cost cattle feed. During Phase I assistance, field-staff identified a key constraint to higher production and income among producers in the Northern Zone: a lack of low-cost cattle feed. Before assistance, many producers invested in expensive cattle feed on a weekly basis, particularly in the dry season. By distributing seeds and simple machinery to participant groups, and providing technical assistance on fodder production and storage, field-staff encouraged participants to produce a large amount of fodder in the rainy season, and to process and store this fodder for use in the dry season.

Collection tanks formed the linkage between producers and enterprises. Under PBS assistance in Phase II, groups of 10 to 20 milk producers could solicit collection tanks from Lácteos Morazán or Lácteos Zona Norte. After receiving donated tanks and related equipment, groups aggregated and cooled their production in these tanks. FOMILENIO-supported enterprises provided these groups with guidance regarding tank maintenance and quality control, and established a delivery and sales arrangement with each group. Group leaders played an important role in ensuring that all members maintained a homogenous level of milk quality.

B. Implementation Facilitators

Commercial link with the Ministry of Education. As a result of outreach efforts on the part of FOMILENIO and Chemonics, the Salvadoran government was receptive to supporting newly formed producer-owned enterprises. Notably, the Ministry of Education contracted Lácteos Zona Norte in late 2010 to supply grade-A fluid milk for a large-scale initiative to provide elementary schools students with milk, the Vaso de Leche program. Under this program, the Ministry of Education bought 20,000 bottles a day from the enterprise for nine months a year. The Ministry of Agriculture also provided FOMILENIO, Chemonics, and PBS participants with technical assistance related to large-scale production for the program. To facilitate milk deliveries at the beginning of the

program, the Ministry of Health also donated some packaging machinery to newly formed enterprises.

Enhanced information exchange through field schools. Similar to the horticulture chain, stakeholders mentioned that the field school structure provided a forum for dairy farmers to share their experiences and relevant knowledge. In particular, small and relatively inexperienced producers benefited from insights offered by more established and successful producers during field school lessons and discussions.

C. Implementation Challenges

Delays in the timing of donations. Throughout PBS implementation, donation deliveries were consistently delayed, to the extent that donations often could not be used during the appropriate agricultural season or following relevant training sessions. In one instance, a field staff member reported that vitamin supplements were not available following instruction on how to use these supplements. FOMILENIO representatives stated that these delays were related to technical staff's inadequate completion of procurement forms, which often required three price quotes in order to be accepted by FOMILENIO.

Inequitable distribution of donations. Most interviewed participants felt that donations were distributed inequitably among participants in general, and that more donations were distributed to participants who had higher production before PBS assistance. Interestingly, the two interviewed participants with the highest initial milk production received the largest donations, including irrigation systems and hay shredders. Other participants consistently mentioned these two items as potential donations that could have improved the overall impact of program assistance.

Lack of resources among field schools to demonstrate technologies. Some technical staff noted that technology transfer in field schools was often limited by a lack of resources for donations in Phase II. For example, technical staff had difficulty teaching a unit on medication management because inputs were not available to administer to all participants for hands-on practice. This stood in contrast to Phase I implementation, which featured an average amount of donations that most technical staff agreed was excessive.

Substantial differences in assistance needs across regions. Before PBS assistance, producers in Chalatenango had a much higher level of milk production than producers in Morazán. In addition, producers in Chalatenango already used cold storage techniques, whereas this capacity had to be created in Morazán under the project. As a result of these differences, service providers remarked that producers in Chalatenango often knew the majority of training material before field schools had even commenced, whereas producers in Morazán often had little familiarity with this same material. Perhaps an initial assessment could have determined that producers in Morazán needed more assistance with basic production and cold storage, whereas producers in Chalatenango needed more advanced assistance with quality assurance and diversification.¹⁸

¹⁸ Lavalin completed an initial diagnostic of the dairy sector early in the compact period. However, findings from this diagnostic did not inform program implementation to the extent that different assistance packages were provided to producers in different geographic regions.

D. Results

Participants were generally satisfied with assistance. Dairy producers interviewed by Mathematica staff expressed general satisfaction with PBS assistance. All interviewed participants expressed satisfaction with assistance in Phase I, particularly due to the substantial amount of donations and personalized assistance provided throughout 2010. However, a smaller portion of interviewed participants expressed satisfaction with Phase II assistance, as some participants stated that the lack of donations and field schools' emphasis on theoretical training during Phase II were not optimal.

“Phase I assistance was excellent. I learned how to diagnose and treat illnesses, give vaccines, and birth calves. All that saved a lot of money from not having to pay the veterinarian. But Phase II was more theoretical, and all I got was some parasite medication.”

–PBS participant and milk producer

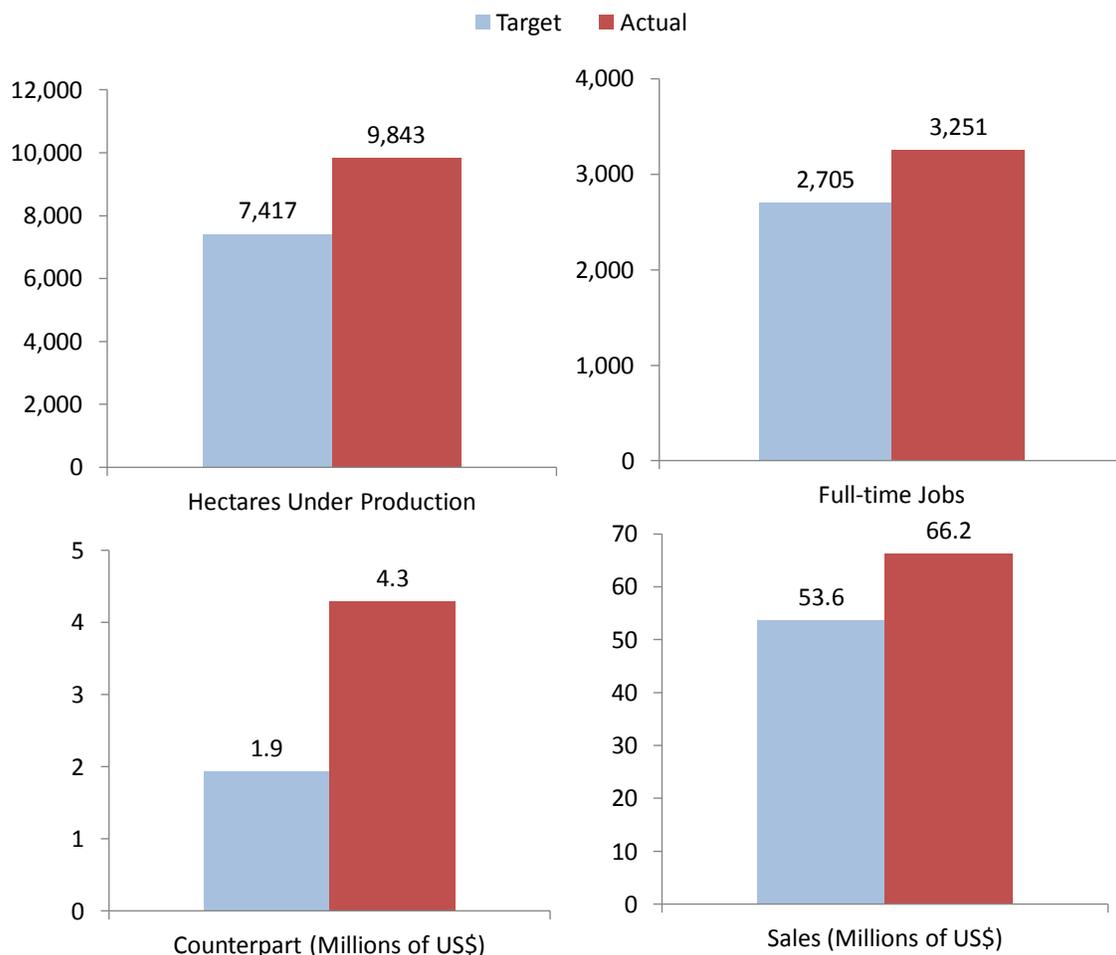
Participants spent less on cattle feed and experienced higher production and sales in the dry season. In response to PBS assistance, participants started to produce more low-cost cattle feed for the dry season and store this feed more effectively in silos; some participants also began to use alternative sources of feed such as sugarcane. Technical staff noted that improvements in producing and storing low-cost cattle feed didn't actually involve new technologies for the majority of participants. Milk producers had already used silos to store cattle feed, but field staff taught them how to construct these silos properly and use them to store materials that would boost production and sales during the dry season, when milk prices were traditionally higher. As illustrated in Figure III.1, Chemonics's administrative data indicate that PBS assistance surpassed pre-defined aggregate dairy sales goals during the implementation period by over \$12 million.

Producers' investment increased under PBS assistance. Because of cost-saving measures related to low-cost fodder production as well as rising milk prices, stakeholders stated that producers invested more in improving their milking infrastructure (such as the physical location where cattle were milked) and making other modifications to improve the quality and quantity of their production. Chemonics sources noted that, on average, producers invested much more in these improvements than was originally expected. As illustrated in Figure III.1, Chemonics's administrative data indicate that PBS assistance surpassed pre-defined counterpart contribution goals during the implementation period by over \$2 million.

Among all service providers, TechnoServe and CARE generated particularly strong results. Chemonics staff stated that in Phase II, TechnoServe and CARE were particularly adept at delivering sound technical assistance and generating positive outcomes in milk production and sales. However, Chemonics staff stated that all technical contractors did a satisfactory job and produced strong results.

Participants with more resources prior to the intervention exhibited better results. Chemonics and technical staff stated that large-scale milk producers with the capacity and will to invest were most likely to experience positive results. Said one MCC source, “The little guys did pool their production a little, but it didn't transform their lives.” Further reinforcing this trend, Lácteos Zona Norte preferred to conduct business with a relatively small number of high-volume producers. As such, small producers were largely excluded from the benefits of higher prices offered under the Vaso de Leche program. Technical staff also mentioned that other characteristics that were correlated with successful outcomes included producing milk as a primary source of income, having at least a basic level of education, and having an entrepreneurial spirit.

Figure III.1. Target and Actual Performance on PBS Outcomes, Dairy Chain



Source: Chemonics administrative data, September 2012.

Notes: Sample size is 4,391. Pilot participants are excluded. All results are cumulative from 2009 to 2012, and are not defined as impact or change in outcomes over the course of PBS implementation. Targets are from Chemonics.

Full-time jobs are defined as jobs—either held by participants or by individuals they employ—that require 250 days of labor per year. For the dairy chain, full-time jobs are calculated as a function of the following three data elements: labor devoted to milking activities, labor devoted to cattle maintenance activities, and hectares of land used by dairy producers to maintain their herd.

Counterpart is defined as participants’ investments in inputs and labor, as well as in-kind contributions from Chemonics and technical service providers.

In the dairy chain, sales are defined as a function of field-staff-reported milk production and market milk prices.

PBS assistance altered the dairy sector in the Northern Zone. According to one MCC source, the intervention had a substantial and positive effect on milk production and sales in the Northern Zone. As a result of technical assistance and infrastructure investments, PBS participants increased the quality and quantity of the milk production, which allowed them to access much higher prices. In addition, the higher level of market demand for high-quality milk—particularly with the start of the Vaso de Leche program—generated higher and more consistent seasonal milk prices in the Northern Zone in recent years. PBS program participants and non-participants alike benefited from these price increases, according to program implementers. As a result of assistance, stakeholders also believed that producers were more organized and the overall quality of milk in the region improved.

Some improvements resulted in lower levels of contracted labor. According to implementers, some participants' use of improved fodder diminished the amount of labor previously devoted to securing cattle feed from a variety of locations, which in turn led to less need for contracted labor. As a result, several producers actually increased net income through diminished labor costs and reduced employment of paid laborers.

PBS Impact Evaluation Results: Dairy Chain

Mathematica’s interim impact evaluation (Blair et. al, 2012) found the following impacts for a sample of milk producers in the dairy chain who received PBS assistance in 2010 and early 2011:

- **Employment:** Producers who were offered PBS generated more full-time jobs related to milk production than producers who were not offered PBS. However, this difference is not statistically significant.
- **Investment:** Producers who were offered PBS made larger investments in dairy production than producers who were not offered PBS. However, this difference is not statistically significant.
- **Sales:** There was a positive impact of PBS assistance on dairy producers’ net income. Producers who were offered PBS made \$1,850 more per year in dairy sales than producers who were not offered PBS. According to exploratory analyses, these impacts were concentrated among producers who had a relatively large net income from dairy production before assistance began.

Reflecting on these impact findings, one Chemonics representative reasoned that the concentration of increased production, sales, and income among established producers reflected a general tendency in the dairy sector, in which established producers have a higher likelihood of improving their production due to their access to investment capital, pre-existing market linkages, and higher degree of organization with fellow producers. In addition, several interviewed PBS participants noted that the largest producers generally received the most technical and in-kind assistance under PBS. These qualitative findings strongly corroborate the impact evaluation’s findings: Because the strongest producers appeared to have a natural advantage over small producers due to their existing resources and networks—and they also received a larger proportion of assistance under PBS—these producers’ increases in production and sales were largely responsible for positive impacts in net income for the dairy chain.

The impact evaluation’s finding of no positive impact on employment and investment in the dairy chain appears at odds with Chemonics’s performance figures reported in Table III.1. However, these figures reflect divergent concepts: Chemonics figures are an aggregate estimate of all employment and investment related to PBS assistance during the full implementation period, whereas the impact evaluation provides an estimate of the average marginal contribution of PBS assistance to producers’ employment and investment during a one-year follow-up period.

E. Performance Assessment

In this section, we offer an assessment of FOMILENIO’s and Chemonics’s general performance related to training and material assistance in the dairy value chain. An additional assessment of assistance related to producer-owned enterprises is presented in Chapter V.

Overall, implementer performance in the dairy chain is best described as adequate in both Phase I and Phase II. In both phases, high service delivery targets precluded a large average amount of technical assistance for each participant, but the combination of substantial donations in Phase I, large infrastructure investments in Phase II, and sound technical assistance in both phases played a substantial role in helping some participants cut costs, improve production and storage of fodder, and increase production and sales. However, one large drawback of technical assistance in both phases was the inequitable distribution of training and in-kind assistance among participants, with large producers receiving a larger portion of assistance relative to others.

Interviews with participants conducted by Mathematica staff provided additional support that technical and material assistance in the dairy chain was adequate in both implementation phases. Interviewed participants generally favored Phase I assistance to Phase II assistance, but the majority of interviewed PBS participants expressed satisfaction with assistance in both phases.

IV. HANDICRAFTS FINDINGS

In this chapter, we discuss primary implementation findings for the handicraft value chain, based on interviews with FOMILENIO, Chemonics, and technical subcontractor staff, as well as program participants. First, we summarize Phase I and Phase II implementation. Next we present implementation facilitators and challenges, followed by results and an assessment of implementer performance.

A. Implementation Summary

Phase I assistance focused on production. Led by Aid to Artisans, the focus of Phase I PBS assistance in the handicrafts chain was to strengthen the general productive capacity of artisans in the Northern Zone. Aid to Artisans specialists traveled to participants' communities to provide in-site training on a weekly or bi-weekly basis. Training focused on production techniques and product development. Artisan workshops developed several new product lines during Phase I, and Aid to Artisans staff made efforts to contact potential clients in El Salvador and abroad.

Phase II assistance focused on production and market access. Implemented by Swisscontact, assistance in Phase II was divided into beginner classes for less experienced artisans and intermediate classes for producers who had already learned a series of skills in Phase I. Beginner classes featured basic training in production techniques. In contrast, intermediate classes focused on production, business skills, product development, and marketing. Distinct from Phase I assistance, training sessions in Phase II were delivered at the locales of the two FOMILENIO-supported enterprises: ACOPROARTE and MOJE. These enterprises had a combined network of 148 artisan workshops: 74 of these workshops were owned by individuals, and the other 74 were artisan cooperatives (Chemonics, 2012).

Under this new scheme, ACOPROARTE and MOJE—working in partnership with Swisscontact—liaised with potential clients to determine market preferences, and Swisscontact design specialists provided technical assistance to produce handicrafts according to these preferences. Specifically, Swisscontact staff helped the enterprises develop new product lines and trained workshop members to fulfill specific orders. Swisscontact also provided enterprises with assistance in costing and inventory control. In addition, Chemonics distributed donations among enterprises and workshops, including sewing machinery and other production tools.

Phase II had a more regional focus than Phase I. In working with MOJE and ACOPROARTE, Swisscontact marketing specialists attempted to organize a network of workshops and strengthen linkages between producers and enterprises in two major geographic regions. The objective was to create productive capacity, strengthen cooperation between all relevant actors in the regions, and foster long-standing relationships with large buyers.

“The first phase was to put the house in order and to professionalize—to build productive capacity. The second phase put artisans right into the market—taught them how the real world works and introduced them to competition.”

–FOMILENIO staff member

B. Implementation Facilitators

Conducting an initial assessment of artisans' skills and needs. At the beginning of Phase II, Swisscontact completed an assessment for several groups of artisans that were transferred to Swisscontact from another handicrafts project. As part of the assessment, Swisscontact staff analyzed artisans' abilities as well as available materials in the zone, and developed an appropriate assistance plan. The assessment served to identify distinct groups of artisans and tailor technical assistance to each group's needs. This tailored technical assistance stood in contrast to technical assistance in the dairy and horticulture chains, which was largely homogenous across field schools and participants.

Aligning assistance with market demand. In contrast to the dairy and horticulture value chains, all production in the handicraft chain during Phase II was directly tailored to market demand. Once participating workshops had the capacity to produce a variety of handicrafts, Swisscontact communicated directly with national and international buyers to explain the designs and materials that were available, as well as to distribute viable product samples. Buyers considered these options and made personalized orders, and the enterprises organized workshops in their network to fill these orders. Swisscontact also financed visits from international buyers, who met with personnel from MOJE and ACOPROARTE to learn about their capabilities and market potential. Several of these international buyers eventually made consistent bi-monthly orders worth at least \$2,000.

Vertical organization and regular coordination among stakeholders. As opposed to the horticulture and dairy chains, the technical service provider (Swisscontact) was assigned directly to producer-owned enterprises, and Swisscontact staff provided all assistance with production, sales, and marketing at these enterprises' locales. As a result, there was no division between assistance focused on production and assistance focused on market access in the handicrafts chain. Throughout Phase II implementation, Swisscontact also facilitated regular communication between enterprises and artisans who received PBS assistance. FOMILENIO, Chemonics, Swisscontact, and business leaders also met regularly to discuss progress and make major decisions. Stakeholders mentioned that all organizations played an important role in these meetings. For example, Swisscontact and business staff analyzed problems and proposed solutions, and Chemonics and FOMILENIO staff authorized these solutions after conducting the necessary due diligence.

Development of product lines. Products that had a common theme—such as a matching color scheme—were very popular in the local market. For example, Sears bought entire home decoration and children's furniture product lines directly from ACOPROARTE. These product lines entailed large investments in experimentation, development, and training, as well as several fairs and expos with prospective buyers.

Transitioning from local market to national and international markets. In an interview, one technical service provider stated that Phase II PBS assistance first exposed artisans to local markets, and then introduced them to national and international markets. In Phase I, artisans and service providers primarily targeted national markets and failed. In Phase II, however, stakeholders used the local market as an opportunity to help artisans and businesses refine their products in preparation for national markets. Stakeholders mentioned that this strategy helped artisans develop products that were eventually successful in national and international markets.

Flexibility to make programmatic changes. In interviews, Swisscontact and Chemonics stated that mid-course corrections were very important to the successful implementation of the

activity. When stakeholders determined that more design experts were needed during Phase II, Swisscontact staff worked with Chemonics to adjust the existing budget to contract two additional staff. In another instance, Chemonics and FOMILENIO demonstrated flexibility and good judgment when they decided against working with a cooperative that did not prioritize handicraft production among its diverse activities. In hindsight, stakeholders determined that this decision successfully allocated scarce resources to more viable businesses.

Use of an interdisciplinary team. According to FOMILENIO staff, both Aid to Artisans and Swisscontact contracted diverse staff that had a strong understanding of product design and marketing. The presence of a variety of specialists meant that all key components of assistance were covered by PBS assistance. In addition, the involvement of FOMILENIO and Chemonics staff in large decisions added a healthy dimension of verification and creative decision-making.

Design and execution of transition plans. During the last six months of Phase II assistance, Swisscontact, Chemonics, FOMILENIO, and assisted enterprises worked together to develop a transition plan to ensure that enterprises would be capable of working autonomously once assistance ended. According to this plan, members of assisted enterprises were assigned responsibility for core functions, including product design, marketing, and sales. Swisscontact staff helped these assigned individuals perform these tasks so they could eventually handle the tasks autonomously. For example, near the end of implementation, MOJE staff began finalizing sales with no assistance from Swisscontact. Stakeholders cited the development and implementation of this transition plan as a facilitator of enterprises' long-term sustainability.

C. Implementation Challenges

Phase I assistance featured very few donations. FOMILENIO staff stated that the absence of donations (as well as financing) in Phase I assistance to artisans introduced a key constraint in the production process. Participants were capable of producing a variety of handicrafts as a result of technical assistance, but often lacked the working capital necessary to buy raw materials for production. This experience highlights that a strategic combination of training, donations, and financing is often necessary to generate technology transfer and increased production.

Unfocused assistance in Phase I. Interviewed participants noted a lack of focus in technical assistance provided in Phase I; service providers made efforts to train a large number of individuals, but the ultimate purpose of this training was unclear. In addition, stakeholders noted that product development in Phase I was somewhat untargeted and inefficient, in that artisans produced a wide range of potential products, but were unsuccessful in securing many orders for these new products.

Lack of teamwork and commitment among some assisted artisans. One service provider mentioned that participants often had difficulties working in groups due to interpersonal conflicts. In addition, one large order was not filled because artisans chose not to work during a holiday. According to the service provider, this event highlighted the need to develop participants' professionalism and entrepreneurial vision.

D. Results

Participants and supported enterprises reported high satisfaction with assistance and positive results. Overall, stakeholders were highly satisfied with Swisscontact’s collaboration with MOJE and ACOPROARTE. During interviews, enterprise staff noted that Swisscontact’s assistance played a vital role in generating increased sales and income among members and their networks of suppliers. Swisscontact’s outreach efforts with international buyers resulted in several large-scale orders of at least \$20,000. In addition, Swisscontact worked with ACOPROARTE to secure a \$60,000 order of religious items for an international client. As illustrated in Figure IV.1, Chemonics’s administrative data indicate that PBS assistance surpassed sales goals for the handicrafts chain by approximately \$200,000.

“For us, Swisscontact [service providers] have proven themselves as very effective. They’ve worked to help us with our needs—product design and sales...we’ve learned a lot and now we have a broader vision for the cooperative.”

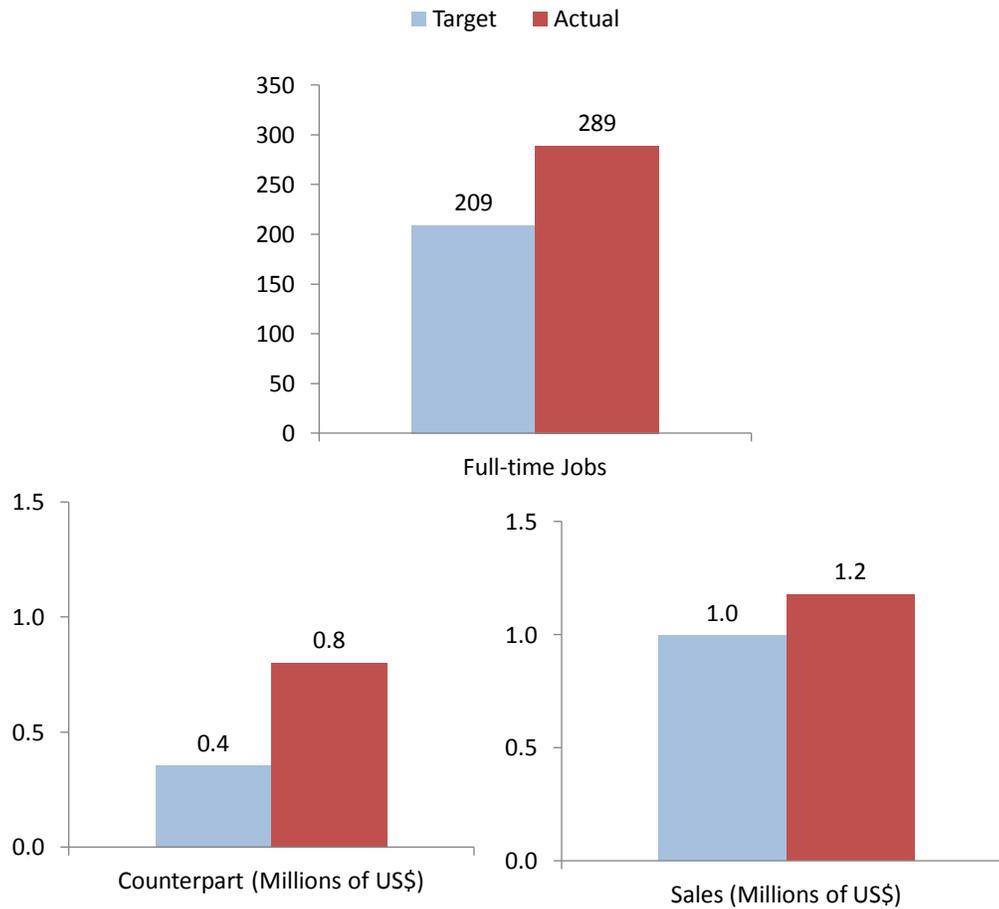
—Member of a participant-owned cooperative

Linked workshops employed more workers to fill large contracts. Stakeholders noted that workshop owners who supplied handicrafts to MOJE and ACOPROARTE contracted a substantial amount of paid labor in Phase II to meet growing demand from national and international buyers. According to MOJE sources, each workshop owner in the enterprise’s network contracted at least 5 or 6 additional workers to fill new orders that were placed in 2011 and 2012. As illustrated in Figure IV.1, Chemonics’s administrative data indicate that the PBS Activity surpassed the employment target for the handicrafts chain (of 209 full-time jobs) by 80 jobs.

Workshop owners experienced large increases in sales and income under PBS assistance. Overall, workshop owners affiliated with MOJE and ACOPROARTE benefited substantially from new contracts established under PBS assistance. In 2012, workshop owners affiliated with ACOPROARTE reported monthly sales of between \$4,000 and \$5,000 in 2012, with a healthy profit margin of around 30 percent. The owners reported that these sales were much higher than their sales prior to FOMILENIO assistance.

Two types of small-scale artisans experienced large impacts in production and sales. Stakeholders stated that two types of small-scale artisans generally benefited most from Phase II assistance: Single mothers whose primary source of income was handicraft production, and young people who generally had support from their parents. Both types of beneficiaries usually had some type of community support, which field-staff mentioned was a good source of financing.

Figure IV.1. Target and Actual Performance on PBS Outcomes, Handicrafts Chain



Source: Chemonics administrative data, September 2012.

Notes: Sample size is 1,192. Pilot participants are excluded. All results are cumulative from 2009 to 2012, and are not defined as impact or change in outcomes over the course of PBS implementation. Targets are from Chemonics.

Full-time jobs are defined as jobs—either held by participants or by individuals they employ—that require 250 days of labor per year. Full-time jobs are calculated as a function of gross sales, and sales are compiled and reported by field-staff.

Counterpart is defined as participants’ investments in inputs and labor, as well as material contributions from Chemonics and FOMILENIO.

PBS Impact Evaluation Results: Impact in the Handicrafts Chain

Mathematica’s interim impact evaluation (Blair et al., 2012) found the following impacts for a sample of producers in the handicrafts chain who received PBS assistance in late 2009 and 2010:

- **Employment:** Producers who were offered PBS generated 0.13 more full-time jobs related to handicrafts (per year) than producers who were not offered PBS.
- **Investment:** Producers who were offered PBS had similar levels of investment in handicrafts as producers who were not offered PBS.
- **Sales:** Producers who were offered PBS had similar handicrafts sales (in terms of dollar value) as producers who were not offered PBS.

One Chemonics representative reasoned that the impact evaluation’s interim results of a positive impact in paid labor—but no impact in sales and production—likely reflected the state of handicraft production among artisans in the study sample during Phase I. By late 2010, assisted artisans had begun to invest more in production, including contracting paid labor, but this production had not yet resulted in increased sales at the time of the survey. The representative suggested that the evaluation’s second follow-up surveys would likely capture positive impacts in sales, particularly in late 2010 and late 2011. In addition, stakeholders mentioned that Phase I assistance in the handicrafts chain had a strong emphasis on production, but a relatively weak emphasis on market access compared to Phase II. The lack of positive impacts on sales and income in the evaluation may reflect this prioritization of production over sales during Phase I.

The impact evaluation’s finding of no positive impact on handicraft investment and sales appears at odds with Chemonics’s high counterpart contributions and sales figures reported above. However, these figures reflect divergent concepts: Chemonics figures are an aggregate estimate of all investment and sales that are related to PBS assistance during the full implementation period, whereas the impact evaluation provides an estimate of the average marginal contribution of PBS assistance to artisans’ investment and sales during a one-year follow-up period.

E. Performance Assessment

In this section, we offer an assessment of FOMILENIO’s and Chemonics’s general performance related to training and material assistance in the handicrafts value chain. An additional assessment of assistance related to producer-owned enterprises is presented in Chapter V.

Overall, FOMILENIO’s and Chemonics’s performance in the handicrafts chain is best described as adequate in Phase I. Stakeholders viewed training in production techniques in Phase I as comprehensive and useful, but these stakeholders also noted a lack of clarity regarding program goals, particularly related to marketing and sales. In addition, the absence of donations in Phase I introduced a key constraint in the production process. Despite these obstacles, intensive training provided in Phase I gave artisans a strong productive skill set, which they used to fill a variety of orders from large clients in Phase II.

Implementer performance in Phase II is best described as exceptional. In Phase II, FOMILENIO and Chemonics staff implemented a demand-centered approach to assistance, in which implementers worked with participants to determine buyers’ preferences, develop product lines according to these preferences, and organize production once large orders were placed. In addition, the consolidation of all PBS assistance under producer-owned enterprises, as well as strong communication among stakeholders, ensured a level of coherence to PBS assistance in the

handicrafts chain that was not present in the horticulture and dairy chains. Particularly impressive was stakeholders' use of transition plans to prepare producer-owned enterprises for the conclusion of PBS assistance in 2012.

V. FINDINGS FOR PRODUCER-OWNED ENTERPRISES

The enterprise assistance component was central to PBS implementation during Phase II, as producer-owned enterprises were designed to provide PBS participants with enhanced market access during and following PBS assistance. This chapter summarizes primary findings regarding PBS implementation and results for all five producer-owned enterprises in the dairy, horticulture, and handicrafts value chains. These findings reflect data gleaned from interviews with FOMILENIO, Chemonics, technical field staff, enterprise staff, and Súper Selectos representatives. (See Appendix C for detailed findings for each of these five enterprises, including sustainability assessments for each enterprise.) First, we provide a summary of findings across all five enterprises, and then we assess implementers' performance related to assistance to these enterprises.

A. Summary of Implementation and Results

Chemonics provided a large amount of technical assistance to enterprises, but stakeholders believe additional assistance is needed. During Phase II, Chemonics contracted consultants to assist all enterprises with costing, inventory, and information systems. In addition, enterprise staff participated in training sessions on accounting, organizational strengthening, decision-making, and conflict resolution. Interviewed implementers and enterprise staff stated that although these training sessions were useful, they occurred too late in the assistance timeline and concluded before business operations could be consolidated. In particular, El Salvador Produce and Lácteos Morazán staff did not appear capable of assuming core responsibilities for their businesses—particularly analytic, administrative, and logistical tasks—in the absence of additional technical assistance. Similarly, technical service providers reported that staff from Lácteos Zona Norte would likely have difficulty conducting market studies and other technical analyses, particularly because technical service providers would no longer be available to assist with these activities.

All assisted enterprises have strong infrastructure. Through support from FOMILENIO and USAID, El Salvador Produce had several vehicles, a large warehouse, and a new cold storage facility as of mid-2012. Similarly, Lácteos Zona Norte and Lácteos Morazán received a large amount of donations, including land and offices (in the case of Lácteos Zona Norte), office equipment, cooling tanks, and vehicles. To a lesser extent, MOJE and ACOPROARTE received substantial equipment donations, and ACOPROARTE accessed funding under the PDP's Investment Support Activity to build a new production center and headquarters. With extensive infrastructure and equipment, all five supported enterprises are well positioned for business operations in the Northern Zone.

All enterprises reported employing at least 10 people following assistance. As of mid-2012, El Salvador Produce employed 15 people, Lácteos Morazán employed 12 people, and Lácteos Zona Norte employed 16 people. Because these enterprises were formed or largely reorganized by FOMILENIO, many of these new jobs can be attributed to PBS assistance. However, nearly all employee salaries at El Salvador Produce and Lácteos Morazán were still financed by FOMILENIO at this time, and the long-term sustainability of these positions was not guaranteed. As of mid-2012, a total of 11 individuals were permanently employed by ACOPROARTE; this was an increase of around 7 full-time jobs since the initiation of FOMILENIO assistance. Similarly, MOJE staff employed 10 individuals by mid-2012, and this represented an increase in employment of around 7 full- or part-time jobs from the time that FOMILENIO assistance began.

Most enterprises reported strong demand for production. With the exception of El Salvador Produce, these enterprises appeared capable of satisfying this demand. Through a contract with the Ministry of Education, Lácteos Zona Norte filled large regular orders for Grade A milk, and both handicraft enterprises fulfilled large orders from national and international buyers with increasing frequency throughout 2012. According to representatives from Súper Selectos and El Salvador Produce, national retailers would be willing to place larger orders with El Salvador Produce, but the enterprise was not yet capable of providing these buyers with a consistent supply of high-quality fruits and vegetables.

Lácteos Zona Norte appeared to harness PBS assistance strategically. Aided by large-scale infrastructure donations and FOMILENIO’s assistance with The Vaso de Leche program, Lácteos Zona Norte accumulated a strong network of affiliated dairy producers and a sustained supply of grade-A milk. In addition, Lácteos Zona Norte leadership demonstrated a capacity to harness positive publicity generated by FOMILENIO and the Ministry of Education surrounding the PBS Activity and the Vaso de Leche program. According to an MCC source, the president of Lácteos Zona Norte leveraged press coverage to promote a national campaign to promote milk from the Northern Zone and advance legislation that favored Salvadoran milk producers.

Net income is consistently negative for enterprises in the horticulture and dairy chains, but consistently positive for enterprises in the handicrafts chains. High operating costs and low profit margins for El Salvador Produce, Lácteos Morazán, and Lácteos Zona Norte have generated consistently negative net income for these three enterprises throughout 2011 and 2012. Large increases in the volume of production bought and sold would be unlikely to surmount these operating costs, given thin profit margins. In contrast, the two enterprises in the handicrafts chain, MOJE and ACOPROARTE, have experienced consistently positive net income during the same time period, largely due to healthy profit margins, modest operating costs, and consistent orders.

Strong entrepreneurial vision, leadership, and cooperation characterize handicrafts businesses and one dairy enterprise. In MOJE, ACOPROARTE—and Lácteos Zona Norte, to a lesser extent—managing directors and enterprise members appeared to have a strong entrepreneurial vision. According to stakeholders, there also appeared to be a high degree of trust between members and a healthy working relationship between the managing director and members. However, El Salvador Produce and Lácteos Morazán did not exhibit these characteristics. In particular, there appeared to be some degree of interpersonal conflict among the El Salvador Produce’s board of directors, and Lácteos Morazán’s board of directors experienced a high degree of turnover throughout 2011 and 2012.

All enterprises cited a need for additional finance, including working capital. All enterprises mentioned that large clients often do not pay for production until up to 30 days after enterprises make a delivery. To cover these payment lags, additional working capital is needed across all enterprises. ACOPROARTE staff mentioned that up to \$70,000 in working capital was needed to manage transactions with large clients, and other enterprises mentioned similar credit needs.

“We really need working capital. No banks in this country are offering it—public, private, BMI, nobody.”
—Member of a participant-owned enterprise

As of 2012, the likelihood of medium- and long-term sustainability was high for handicraft enterprises and low to moderate for horticulture and dairy enterprises. As illustrated in Table V.1, the two handicrafts businesses had a high potential for sustained operations

in the medium- and long-term, one enterprise in the dairy chain, Lácteos Zona Norte, had moderate potential, and the other two supported enterprises had low to moderate potential. In particular, low profit margins and a lack of external financing posed the largest threat to sustained operations for enterprises in the horticulture and dairy chains.

Table V.1. Sustainability Assessment for All Producer-Owned Enterprises

Enterprise	Sustainability Assessment	Discussion
El Salvador Produce	Low to Moderate	A low supply of produce, a low profit margin, a lack of financing, and apparent leadership gaps pose large risks to El Salvador Produce's sustainability. Strong market demand and excellent infrastructure and location partially offset these disadvantages.
Lácteos Morazán	Low	Low levels of demand and supply, a low profit margin, low capacity, and a dearth of financing pose large risks to Lácteos Morazán's sustainability.
Lácteos Zona Norte	Moderate	A low profit margin and a lack of financing pose large risks to Lácteos Zona Norte's sustainability. Strong social capital and excellent infrastructure and location offset these disadvantages to some extent.
ACOPROARTE	High	Sustained demand from international buyers, strong organization and entrepreneurial vision, and excellent infrastructure contribute to ACOPROARTE's high potential for sustained operations.
MOJE	Moderate to High	A strong supply from networked artisans, a healthy profit margin, and strong organization and entrepreneurial vision bode well for MOJE's medium- and long-term sustainability.

Source: Mathematica qualitative data collection, July 2012.

B. Assessment of Assistance to Producer-Owned Enterprises

With respect to assistance to producer-owned enterprises, Chemonics provided training, donations, and organizational and logistical support to all five enterprises in a timely manner. In particular, business staff noted that most training provided by Chemonics was relevant and useful to their day-to-day operations, particularly training on budgeting software. In addition, business staff highlighted willingness on the part of Chemonics staff to diagnose and address problems as they arose throughout implementation.

Despite this strong performance, the utility of PBS assistance to dairy and horticulture enterprises is unclear, given design flaws in PBS assistance to enterprises in these chains. Specifically, Chemonics and FOMILENIO made several risky assumptions in the program design phase. First, stakeholders reasoned that an 18-month timeframe would be sufficient to establish and strengthen producer-owned enterprises (or to reorganize and strengthen an enterprise in the case of Lácteos Morazán). Second, the assistance model implied that a top-down approach to supplying PBS participants with organizational assistance, training, infrastructure, and a locale could result in the formation and consolidation of successful enterprises. Third, stakeholders reasoned that these enterprises had a viable and robust business model from the outset, even considering highly competitive agricultural markets and the inherent tension between enterprises' dual objectives of assisting small producers who received PBS assistance and attaining financial self-sustainability.

As assistance progressed, these three assumptions were proven incorrect. First, intensive and prolonged investments related to legalizing businesses, training relevant staff, and establishing and equipping locales required a longer time frame than 18 months. When PBS assistance ended in mid-2012, most stakeholders agreed that enterprise staff was not yet prepared to conduct the core functions of their businesses. Second, the top-down approach to establishing (or reorganizing) these businesses precluded the organic development of key factors to success—such as entrepreneurial vision, leadership and teamwork, and shared trust and ownership among members—particularly for El Salvador Produce and Lácteos Morazán. There is some evidence that implementers targeted strong entrepreneurs and leaders to fill these enterprises' boards and management teams. However, the collective management structure introduced under the project presupposed that these individuals could work collaboratively toward shared goals, which did not occur in the case of El Salvador Produce and Lácteos Morazán. Third, given these businesses' sustained revenue losses throughout the implementation period, the viability of these enterprises' business plans was likely not properly assessed during project development. As a result of these risky assumptions—and stakeholders' inability to improve these three enterprises' prospects for financial solvency during the implementation period—the long-term sustainability of these FOMILENIO-established enterprises was unclear when the activity ended in mid-2012.

It should be noted that Chemonics and FOMILENIO staff became aware of these difficulties—primarily facing El Salvador Produce and Lácteos Morazán—early in Phase II implementation. Preliminary sales figures indicated that these businesses were not financially viable, both businesses experienced some internal disagreements among board members and managing directors, and newly hired staff did not have the skills needed to perform the businesses' core functions. In response to these difficulties, Chemonics and FOMILENIO revised sales goals downward for these businesses, provided additional technical assistance to staff, and made efforts to secure commitments from the Salvadoran government and international donors to continue enterprise assistance following the conclusion of the PBS Activity. By the end of the activity in mid-2012, however, all three producer-owned enterprises in the dairy and horticulture sectors were reporting consistent financial losses. One FOMILENIO representative stated in an interview that these losses were fully anticipated by stakeholders, and the objective of seeking outside funding was to support these businesses into late 2012 and early 2013 until they became financially viable.

In contrast, PBS assistance to producer-owned enterprises in the handicraft chain was generally successful, despite similar constraints related to the 18-month implementation time frame. One fundamental difference between handicraft businesses (MOJE and ACOPROARTE) and other supported businesses is that these handicraft businesses had been operating successfully for several years prior to FOMILENIO assistance. As such, they had already established some degree of entrepreneurial vision, teamwork, shared trust, and ownership among members, and they had already proven that their business model could generate profits for members. Related to these factors, the technical and material assistance provided under PBS largely served to enhance and strengthen these businesses, which already possessed the core ingredients to success.

VI. GENERAL PBS FINDINGS AND CONCLUSIONS

In this chapter, we detail implementation facilitators and challenges across value chains, assess overall implementer performance related to PBS, and present key results and lessons learned throughout the course of the PBS Activity. To be included in this chapter, implementation facilitators, challenges, and results had to be present in all three value chains of interest. (See Table V.1 for a summary of these global facilitators and challenges.)

A. Implementation Facilitators

Implementer flexibility in improving the assistance model. In late 2010, Chemonics and FOMILENIO staff re-designed the PBS Activity in response to concerns from stakeholders that assistance was not succeeding in resolving key constraints related to market access and business development. Under the new scheme adopted in Phase II, assistance was comprehensive in that farmers would receive production assistance from technical service providers, as well as assistance with market access and sales from commercial service providers (producer-owned enterprises). Producers also received some instruction in business development—particularly costing techniques and legal incorporation procedures—from technical service providers. In all interviews, a variety of stakeholders expressed support for this assistance model, and stated that this model’s three-pronged focus on production, market access, and business development was the most appropriate approach to alleviating key constraints in the horticulture, dairy, and handicraft value chains.

Participant involvement in Phase II. Participating producers played a role in designing Phase II assistance, selecting Phase II providers, and evaluating providers’ performance. Notably, participants formed advisory committees to help monitor PBS assistance during Phase II. Through these committees, participants felt empowered to provide FOMILENIO and Chemonics with timely feedback regarding field staff’s performance. Stakeholders mentioned that this participation created a sense of ownership among participants, as well as a sense of implementer accountability, that was not present in Phase I.

Use of a revolving fund to distribute inputs. Under Phase II implementation, each FOMILENIO-supported enterprise established a revolving fund that provided small producers with subsidized inputs, and allowed them to finance these inputs through a payment plan (at no interest). In all value chains, participants used this fund to obtain inputs like seeds and fertilizer. Stakeholders praised the fund and recommended it be implemented in future agricultural interventions, as it helped to alleviate a structural bottleneck to production: small producers’ lack of working capital to make initial investments in inputs.

Improved system for distributing donations in Phase II. According to Chemonics and FOMILENIO representatives, the system for distributing donations improved substantially from Phase I to Phase II. In the first phase, field-staff decided who received donations and what they received, and donations were distributed directly by technical service providers. In the second phase, the process was more systematic, fair, and transparent. Technical service providers completed a simple assessment form to determine whether a participant received a donation, and what the donation would entail. Furthermore, donations were disbursed only to producers who had attended training; this increased the probability that donated inputs and technologies would be used properly. In addition, donations were stored in a central location at enterprise headquarters, and a better inventory of incoming and outgoing items was kept in Phase II versus Phase I.

Partnerships between enterprises and large buyers. In the dairy chain, Chemonics and FOMILENIO staff held a series of meetings with the Ministry of Agriculture and the Ministry of Education to secure the Vaso de Leche contract and obtain additional donations to package milk in liter-sized bottles. In the horticulture chain, Chemonics and FOMILENIO successfully obtained commitments from Súper Selectos and Walmart to buy a portion of El Salvador Produce’s production. In the handicrafts chain, Swisscontact and enterprise staff forged new and successful relationships with large national and international handicraft buyers. These efforts boosted sales for nearly all supported enterprises, and thus enhanced their financial standing at strategic moments in the enterprise development period.

Business-centered contract development in Phase II. One interviewee praised Chemonics’s approach to contracting technical assistance in Phase II, in which the board of directors of newly established businesses played an active role in selecting technical service providers with whom they would collaborate. After board members received training from Chemonics on proposal analysis, they selected contractors and approved their contracts. Chemonics remained the legal contractor of service providers, but initial buy-in from enterprise leadership was strengthened through this selection process.

B. Implementation Challenges

High service delivery targets. Particularly in Phase I, high service delivery targets in all three value chains led to a high number of participants assigned to each technical staff member (approximately 200 producers per staff member in the dairy and horticulture value chains). According to implementers and participants, this high participant-to-staff ratio diluted overall service delivery. This situation improved somewhat with the inclusion of junior staff in Phase II in dairy and horticulture chains, as these staff assisted senior field staff with their caseloads. However, stakeholders agreed that often, these junior staff members did not have enough experience to properly supervise participants’ adoption of new technologies.

Lack of market orientation in Phase I. Nearly all interviewed stakeholders noted that PBS implementation was hindered by the lack of focus on market access and business development in all three value chains during Phase I. Chemonics representatives mentioned that stakeholders understood the importance of a market focus from the beginning, as illustrated by Lavalin’s initial study of value chains in the Northern Zone and Chemonics work plans from 2008 and 2009, which outlined a value chain approach for PBS assistance.¹⁹ Despite this understanding, Chemonics staff reported that Phase I assistance focused on production due to the initial unavailability of technical staff with training and experience in market access and business development.

“The change in service providers [during Phase II] had a huge effect. I had to get comfortable with a new area, select a demonstration plot, form the groups, conduct a baseline, train the junior staff, etc. People’s original expectations weren’t met. There was no time.”

–Technical subcontractor in the horticulture chain

¹⁹ Review of Sector Studies, Lavalin 2008. 2008-2012 Work Plan: PDP, Chemonics 2008 and Life of Project Work Plan: PDP, Chemonics 2009.

Prolonged transition from Phase I to Phase II. Few PBS assistance activities occurred in the field between August 2010 and February 2011 in the dairy and horticulture chains. Technical contractors and participants in the horticulture chain in particular mentioned that the lack of assistance in late 2010 had a detrimental effect on production, as many farmers did not receive follow-up assistance for new crops they planted in the rainy season. In addition, new service providers in Phase II in all value chains had to devote substantial time to completing baseline studies, building trust with participants, and planning training modules before assistance could begin. Overall, the prolonged transition from Phase I to Phase II reduced an already limited PBS implementation period by several months.

Non-strategic use of donations. According to most interviewed stakeholders, too many donations were distributed in the horticulture and dairy chains during Phase I, to the extent that participants developed a dependence on free inputs from FOMILENIO. The change in the assistance model from Phase I to Phase II—particularly the transition from donations to subsidized inputs provided on credit—was met with a high level of resistance. Producers who had received a large number of donations in Phase I viewed the necessity of payment for inputs in Phase II as inconsistent and unfair. Several stakeholders also expressed that insufficient donations were provided to handicraft producers in Phase I, as well as to field schools in Phase II. According to these stakeholders, this lack of some minimal level of donations likely had a detrimental effect on some participants' adoption of target practices and technologies. Integrating these findings, it appears that PBS implementers never achieved the difficult task of strategically using donations to generate targeted behavior change, without fostering dependence on free inputs. Generous donations in Phase I in the horticulture and dairy chains appeared to create an unhealthy expectation of handouts, whereas a lack of donations to handicrafts producers (in Phase I) and field schools (in Phase II) often inhibited targeted behavior change.

Lack of access to working capital for small producers and supported businesses. A lack of working capital was a bottleneck across all three value chains, both at the level of the small producer and the enterprise. To some extent, revolving funds established in Phase II alleviated small producers' limited access to working capital. However, businesses' lack of working capital was a key constraint to successful and sustained business operations throughout Phase II assistance.

Short timeframe for business establishment and strengthening. In interviews, Chemonics, FOMILENIO, and enterprise staff strongly expressed that the complex process of establishing and strengthening businesses takes longer than two years to complete. Notably, consolidating relationships between businesses and suppliers, buyers, and financial institutions in this short time frame was difficult. Efforts to organize enterprises' boards of directors were also time-consuming for all parties. If assistance to businesses had begun at the inception of the PBS activity, stakeholders reasoned, the newly established businesses would now have more highly developed market linkages and more established administrative procedures.

Multiple actors and layers of oversight. The structure of the PBS Activity was complex, in that FOMILENIO staff supervised Chemonics's implementation of the program, Chemonics hired subcontractors to perform technical assistance, newly appointed enterprise staff and leadership interacted with Chemonics and FOMILENIO, and all entities liaised with MCC staff. Individuals and organizations often had different perspectives regarding the best approach to implementation, and multiple individuals would often participate in key decisions. Often, this complex structure would generate confusion regarding who was in charge or delays associated with joint decision-making. A large number of new positions and roles also complicated implementation, particularly in the case of newly established enterprises. On several occasions, members of the enterprises' board

of directors attempted to make key decisions that were under the domain of the office staff. FOMILENIO and Chemonics staff often intervened to clarify roles and resolve interpersonal conflicts, diverting staff time from other activities.

Table VI.1. Implementation Facilitators and Challenges Across Value Chains

Facilitators
<ul style="list-style-type: none"> • Stakeholder flexibility in improving the assistance model (in 2010) • Participant involvement in Phase II • Use of a revolving fund to distribute inputs • Improved system for distributing donations in Phase II • Partnerships between assisted enterprises and large buyers • Business-centered contract development in Phase II.
Challenges
<ul style="list-style-type: none"> • Large service delivery targets • Lack of market orientation in Phase I • Prolonged transition from Phase I to Phase II • Non-strategic use of donations • Lack of access to working capital for small producers and supported businesses • Short timeframe of business establishment and strengthening • Multiple actors and layers of oversight

Source: Mathematica qualitative data collection, July 2012.

C. Results

According to administrative data, PBS assistance surpassed all service delivery and outcome targets. During the implementation period, Chemonics surpassed its primary performance target of 10,500 new permanent equivalent jobs (associated with PBS assistance) by over 2,400 jobs in all value chains. In addition, Chemonics reported over \$27 million in counterpart investments from PBS participants, far surpassing the original target of slightly over \$10 million. According to Chemonics administrative data, implementers also surpassed production and sales goals in the horticulture, dairy, and handicrafts chains. In interviews, stakeholders mentioned strong production and sales in the horticulture chain related to greenhouse tomato production, large milk production increases in the dairy chain related to investments in low-cost fodder production and storage, and increased sales in the handicrafts chain linked to newly forged relationships with domestic and international buyers.

The true impact of PBS assistance is unclear. Although administrative data indicate that PBS assistance surpassed performance targets for jobs, production, and sales, the true impact of the full package of PBS assistance is unclear. Chemonics performance indicators reflect all jobs, production, and sales associated with PBS assistance during the implementation period, as opposed to the changes in these outcomes over the course of the implementation period. As such, they offer no information regarding the counterfactual—or what would have happened to PBS participants in the absence of the activity—and thus cannot be used to calculate the impact (or effect) of PBS assistance.

Mathematica conducted a rigorous evaluation to determine the impact of one year of PBS assistance in the horticulture, dairy, and handicraft chains. The evaluation results indicate that among a sample of PBS participants, the impact of one year of PBS assistance on producers' income was positive in the dairy chain, but negligible in the horticulture and handicraft chains. The evaluation

also found that PBS assistance increased job creation in the handicrafts chain, but found no conclusive evidence regarding the activity's effect on private investment.²⁰ However, because these impact findings are not generalizable to the full population of PBS participants over the entire PBS implementation period, it is impossible to make a definitive conclusion regarding the impact of the full PBS assistance package from 2008 to 2012.

Long-Term Effects and Institutionalization of the PBS Activity

When asked about the long-term impact of the PBS Activity, one representative from the Ministry of Agriculture stated that overall, the project achieved its main objectives: It created jobs, increased production, improved market access across several value chains, and strengthened producers' knowledge and skills. However, the interviewee noted that the long-term impact of the activity was not guaranteed, as additional assistance was needed to help newly established businesses grow and consolidate their operations. At the time of the interview, the Ministry of Agriculture was exploring possibilities for additional short-term funding for these businesses, provided by the Ministry of Economy or international donors.

Interestingly, the Ministry of Agriculture planned to adopt the PBS assistance model—particularly field schools and collection centers—for a new farmer assistance program outside of the Northern Zone that was scheduled to begin in 2012, called the *Programa de Agricultura Familiar*. According to the interviewed representative from the Ministry, some adjustments would be made to the model based on lessons learned from PBS. For example, given difficulties in establishing new collective enterprises using a top-down approach, the Ministry planned to encourage business development on a smaller scale by targeting individual entrepreneurs with strong potential for success. Also, the Ministry planned to provide a higher level of donations to accompany field schools, given that many stakeholders believed that insufficient donations were administered in Phase II.

Given that the Ministry of Agriculture plans to adopt some aspects of the PBS assistance model and make improvements to other aspects, it appears that knowledge and lessons from the PBS activity have been institutionalized within the ministry, at least to some extent. Efforts on the part of ministry staff to obtain additional funding for newly established businesses also indicate that some ministry personnel have taken ownership of the FOMILENIO-funded project following the close of the compact period.

Large-scale producers tended to benefit more from PBS assistance. One key theme across all value chains—but particularly in the dairy and horticulture chains—is that relatively high-resource and large-scale participants tended to profit more from PBS assistance than poor, small-scale producers. These large-scale participants tended to specialize in agricultural production and possess more land and financial resources to devote to new technologies and practices featured in training. In addition, relatively large-scale producers had more opportunities to profit from dealings with supported enterprises, particularly as these enterprises made efforts to reduce their transportation and sorting costs in 2012.

Phase II was not decisively superior to Phase I. Given the heterogeneity of actors involved, it is difficult to discern whether Phase II implementation was generally superior to Phase I. Nearly all interviewed implementers agreed that the Phase II assistance model's three-pronged focus on production, business development, and sales was superior to Phase I's production-centered

²⁰ Blair, R., Campuzano, L., Moreno, L., Morgan, S. Impact Evaluation Findings after One Year of the Productive and Business Services Activity of the Productive Development Project, El Salvador. August 22, 2012.

approach. In the handicrafts chain in particular, assisted artisans and enterprises generally favored Phase II assistance due to its more focused assistance related to product design and sales, as well as its comprehensive assistance to enterprises. However, several small-scale vegetable farmers and dairy producers expressed higher satisfaction with Phase I, particularly due to the large volume of donations they received in 2009 and 2010. Many of these producers viewed Phase II assistance at field schools as “too theoretical” compared to the more personalized technical assistance delivered in Phase I. Overall, large-scale fruit, vegetable, and milk producers appeared to benefit greatly during both phases, receiving substantial donations and infrastructure investments in both phases and benefiting from access to newly established enterprises in Phase II.

D. Overall Performance Assessment

Across all three value chains, the overall quality of PBS assistance from 2009 to 2012 is best described as adequate. This adequate rating reflects uneven performance across value chains, with particularly strong implementer performance in the handicrafts chain, adequate performance in the dairy chain, and weak to adequate performance in the horticulture chain. Particularly in Phase II, technical and material assistance to the handicrafts chain was excellent, as assistance with production techniques was seamlessly integrated with marketing and sales components, and all stakeholders worked collaboratively and flexibly to solve problems in a timely manner. In contrast, implementer performance in the horticulture chain was weak to adequate over both implementation phases, given intermittent and inconsistent technical assistance, as well as poor coordination between technical service providers and producer-owned enterprises. Assistance in the dairy chain fell between these two extremes: Despite large participant-to-staff ratios, long periods of inactivity in the field, and delays in the distribution of donations, participants reported high satisfaction with assistance and tangible improvements in production and sales in Phase I and Phase II.

E. Conclusions and Lessons Learned

Design versus Implementation. In program evaluations, it is often useful to assess the merit of a program’s design and its implementation separately, so as to distinguish between cases in which a weak design hampered implementation and cases in which a strong design was not implemented to its full potential. In the case of the PBS activity, a somewhat viable program design was implemented adequately overall, with some exceptions. Regarding the design of the PBS Activity, the original scope of the assistance model did not feature sufficient services to alleviate producers’ constraints to market access and business development. As mentioned above, this was remedied to some extent in Phase II with the introduction of the enterprise support component. However, this component had some key design flaws. In particular, FOMILENIO’s approach to establishing El Salvador Produce (as well as reorganizing Lácteos Morazán) appeared to rely on a set of weak assumptions, namely that these enterprises’ business models were financially viable in highly competitive agricultural markets, and that successful producer-owned enterprises could be formed or reorganized through a top-down approach. In addition to these deficiencies in program design, there were also key implementation challenges that compromised the program’s ability to generate desired results. As mentioned above, these included diluted service delivery in both phases, a long period of inactivity in the field, and a compressed implementation timeline in Phase II.

Despite these deficiencies in its design and implementation, the PBS Activity likely generated key results envisioned in its revised logic model. According to the activity’s basic program logic, technical assistance and donations—coupled with assistance to newly created enterprises—would help producers improve their production and sell it in bulk for a larger profit. This logic was validated to some extent in all three of the value chains in the study, in that a substantial number of

artisans, milk producers, and fruit and vegetable producers appeared to increase their sales and income as a result of the activity's combination of technical assistance, donations, and enterprise assistance. It should be noted, however, that relatively large-scale and established producers tended to benefit most from PBS assistance, and relatively poor and small-scale producers tended to benefit less. In the dairy chain in particular, large-scale producers received the most donations and technical assistance, and experienced the largest profits through milk sales to Lácteos Zona Norte.

Given that PBS assistance generated the desired outcomes, at least for a subset of the target population, it can be argued that the activity's basic program logic was sound. However, the market power envisioned in the design of Phase II assistance, in which even small producers could secure a higher profit by aggregating their production, was largely not realized. This was due to a variety of factors, including the large upfront investments required in the dairy and horticulture sectors, extra costs associated with aggregating production from small farmers, natural returns to scale for agribusinesses, and increasingly competitive agricultural markets. To some extent, program implementers may have excluded relatively smaller and poorer producers from the largest program benefits, including large infrastructure investments and personalized technical assistance. However, these decisions were likely calculated ones, as assistance to established producers was most likely to generate the largest impact on sales and income.

Long-term Sustainability. The long-term sustainability of gains made under PBS assistance is directly linked to the financial sustainability of enterprises assisted in Phase II. The future of Lácteos Zona Norte is particularly relevant, as the enterprise's contract with the Ministry of Education during 2011 and 2012 was lucrative for several members, but the organization's financial viability was unclear at the end of the compact period. As of 2012, the likelihood of medium- and long-term sustainability was high for handicraft enterprises and low to moderate for horticulture and dairy enterprises. Notably, the two handicrafts enterprises had a high potential for sustained operations in the medium- and long-term, Lácteos Zona Norte had moderate potential, and the other two supported enterprises—El Salvador Produce and Lácteos Morazán—had low to moderate potential. In particular, low profit margins and a lack of external financing posed the largest threat to sustained operations for the three enterprises in the horticulture and dairy chains.

Lessons Learned. Based on interviews with a variety of stakeholders in the dairy, horticulture, and handicraft chains, we identified the following three key lessons learned regarding PBS assistance from 2008 to 2012:

1. *Program redesign during implementation has substantial costs.* Stakeholders generally praised the demand-centered PBS assistance model introduced in 2010, which focused on establishing producer-owned enterprises capable of negotiating with large buyers. However, the lapse in services during the transition from Phase I to Phase II and the condensed timeline of Phase II implementation were major disadvantages of redesigning the program midway through implementation. Many stakeholders reasoned that if the Phase II assistance model had been implemented at the outset in 2008, the activity would have achieved more substantial and sustainable gains by 2012. In light of this finding, stakeholders should work to introduce only validated assistance models at the outset of program implementation, and limit the scale of mid-course corrections to these models. In the case of PBS assistance, for example, perhaps the enterprise support component could have been introduced in Phase II without the large-scale reorganization of service providers that left many participants without assistance for six months.

2. *Supporting viable businesses is easier than creating them.* Particularly in the case of El Salvador Produce, Phase II PBS assistance was not sufficient to place the newly established enterprise on a path to financial self-sustainability. In particular, competitive market conditions, weak incentives facing stakeholders, and a lack of ownership and capacity among enterprise members contributed to this negative outcome. In contrast, assistance to existing producer-owned enterprises in the handicraft chain was generally successful. Because these handicraft enterprises had been operating for several years prior to FOMILENIO assistance, they had already established some degree of entrepreneurial vision and ownership among members, and they had already proven the viability of their business model. In this sense, technical and material assistance provided under PBS largely served to enhance and strengthen these enterprises, which already possessed the core conditions for success. Given that these conditions are very difficult to create with a top-down approach to enterprise creation, future interventions to support productive enterprises could minimize risks (and feasibly improve chances for success) by supporting existing businesses that already exhibit the key characteristics of leadership, an entrepreneurial spirit, and a validated business model.
3. *Too few donations stifles behavior change; too many donations fosters dependence.* According to most interviewed stakeholders, overly generous donations in Phase I in the horticulture and dairy chains appeared to create an unhealthy expectation of handouts, whereas a lack of donations to handicrafts producers (in Phase I) and field schools (in Phase II) often inhibited the adoption of key practices and technologies. In hindsight, PBS implementers never achieved a strategic balance between these two extremes. Applying this finding to future agricultural interventions, stakeholders should identify strategic opportunities in which donated inputs could play an integral role in complementing technical assistance, resolving bottlenecks, encouraging counterpart contributions, and facilitating technology transfer without fostering dependence on future assistance. In particular, future assistance programs should avoid a sudden transition from generous input donations to a revolving fund approach, as it may be difficult to alter participants' expectations of free inputs once they have been provided.

It should be noted that all key stakeholders involved in the PBS Activity—including FOMILENIO, Chemonics, and MCC—were aware of these lessons throughout implementation. Chemonics and FOMILENIO staff made several efforts to improve El Salvador Produce's performance throughout implementation, and modified donations in Phase II in response to lessons learned in Phase I. In addition, stakeholders understood that the Phase II redesign would have negative consequences for service delivery. However, MCC, FOMILENIO, and Chemonics chose to pursue the new assistance model because its anticipated benefits—successful collectively owned businesses in three value chains—were perceived to outweigh these costs. In hindsight, the primary error in this approach was perhaps an incomplete understanding of the risks inherent in establishing these producer-owned enterprises. Based on several questionable assumptions, the activity devoted a large amount of resources to at least one business—and as many as three businesses—that may not survive in the medium- to long-term.

Additional Findings: Lessons Learned from Implementing an Impact Evaluation

During interviews with stakeholders, Mathematica staff discussed implementation of the PBS impact evaluation from late 2009 to mid-2011. These conversations resulted in the following three lessons learned regarding the implementation of impact evaluations of farmer assistance programs:

Emphasis must be placed on high-quality, verified lists of eligible producers. In the horticulture chain, implementers did not perform the proper due diligence when compiling lists of eligible farmers for the impact evaluation sample. Some field-staff consulted mayor's offices for lists of potential producers without verifying producers' eligibility in person. In hindsight, stakeholders agreed that implementing formal auditing procedures to ensure the accuracy of these lists would have produced more accurate sample frames for the evaluation. Future impact evaluations should budget for such auditing procedures, similar to data quality verification procedures that accompanied data collection for the impact evaluation.

Structural incentives should encourage implementers to participate in the evaluation. Implementers did have a contractual responsibility to participate in the PBS impact evaluation, but they did not have a positive incentive to participate in good faith in the evaluation—such as a potential bonus if the evaluators concluded that the activity had a positive impact. In part, this led to a low level of compliance with the evaluation protocol in the horticulture chain. Future implementer contracts could feature a mix of positive and negative incentives, as well as contractual obligations, for implementers to participate in impact evaluations in good faith.

Direct communication between implementers and evaluators regarding key outcome measures is necessary from the outset. A lack of a strong working relationship between the evaluator (Mathematica) and implementer (Chemonics) during 2009 and 2010 precluded collaboration between the two organizations regarding the measurement of key outcomes of employment and sales. Future impact evaluations could feature a stronger emphasis on collaborative processes to develop key measures at the outset of assistance programs. Such processes could facilitate valid comparisons between implementers' and evaluators' data and findings.

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APPENDIX A

SELECTION CRITERIA FOR PRODUCTION AND BUSINESS SERVICES

Phase I: Selection Criteria for Production and Business Services

Selection Criteria for the Horticulture Value Chain

The individual must comply with each of the following requirements:

- Experience or interest in producing and selling vegetables or fruits
- Interest in forming alliances with other groups of producers in the Northern Zone
- Interest in coordinating the sale of their products with those of other groups
- Desire to participate in project activities, including sharing lessons learned with other producers
- Willing to offer a counterpart contribution
- Have access to land, preferably their own land, for productive activities

Selection Criteria for the Dairy Value Chain

The individual must comply with each of the following requirements:

- Be an active cattle farmer in the Northern Zone
- Willing to assist and participate in training sessions, field days and demonstrations
- Possess a desire to increase the size of their herd
- Willing to use and offer information about positive technical and financial changes in their production
- Willing to make investments with their own funds
- Willing to implement proposed technological changes

Selection Criteria for the Handicrafts Value Chain

The individual must comply with each of the following requirements:

- Experience or interest in producing and selling handicrafts
- Work within associated groups with at least 10 members or small businesses with at least 5 employees
- Receive a score of at least 2 or more in all the diagnostic questions, and at least a total score of 34
- Service providers will give priority to groups with many members, groups with good market potential, and groups with a strong entrepreneurial attitude

Phase II: Selection Criteria for Production and Business Services

Selection Criteria for the Dairy Value Chain

The individual must comply with each of the following requirements:

- Dairy production and livestock are the individual's main profession
- The productive unit is located in the Northern Zone
- The individual has not participated and/or received grants in a different value chain in a previous implementation phase
- The individual is willing to actively attend training sessions and adopt new technologies featured in training
- The individual agrees to regularly provide information on levels of production and performance
- The individual has a minimum of 10 animals capable of reproduction
- The individual is not currently being assisted under another productive chain

Selection Criteria for the Horticulture Value Chain

The individual must comply with each of the following requirements:

- Experience or interest in producing and marketing fresh vegetables or fruit
- Interest in forming alliances with other groups of producers in the Northern Zone
- Interest in marketing and selling their products with those of other groups
- Willingness to participate in project activities, including sharing lessons learned with other producers
- Gender participation in commercial activities of the group
- Willingness to provide a counterpart contribution
- Has access to productive agricultural land
- The size of the production area for this component is not a determining factor, provided that it allows the farmer to produce crops with a market focus and generate sustainable income. The minimum area available is subject to the type of crop to be established, provided that the producer is available to cultivate their own land or use rented land for cultivation.

Selection Criteria for the Handicrafts Value Chain

The individuals and groups must comply with each of the following requirements:

- Be willing to work with textiles, clay, wood, or recycled materials

- Have at least the basic tools for making the products they manufacture
- Be organized in groups of between 2-8 members
- At least 2 of the members must be able to read, write, and perform basic arithmetic (add, subtract, multiply and divide)
- Willingness to work with one of the project's "anchor" associations
- Possess an entrepreneurial spirit and a willingness to improve their job skills and get involved in all phases of the business (production, marketing their products, and managing activities as appropriate)
- Already produce handicrafts that meet current market needs (or incorporate suggestions and proposals of the anchor associations)
- Have products with an acceptable level of quality to meet market demand or are otherwise easily modified to meet market demand (to be evaluated by the program specialist and anchor association)
- Have a list of prices that permit the marketing of products in target markets defined by the anchor association
- Have a sustainable raw material supply
- Have a disposition to work and coordinate with a diverse group of local and external organizations (municipalities, town councils, NGOs, etc.)
- Willingness to be trained in human rights and economic issues related to the success of the program

APPENDIX B

FINDINGS FROM INTERVIEWS WITH PARTICIPANTS IN THE DAIRY CHAIN

During July 2012, Mathematica staff conducted ten interviews with PBS participants from the impact evaluation study sample. Our goal was to interview participants who experienced a large increase in net income, participants who experienced a modest increase in net income, and participants who experienced no increase in net income during the study period (according to our impact analysis) in order to compare and contrast their experiences, activities, and outcomes. About a third of the sample experienced a large income increase, a third had a small but positive income increase, and a third experienced no increase in income (or actually a decrease in income in two cases).

Some primary findings from these interviews are summarized below:

- *In-kind donations.* Regarding in-kind donations, all interviewed participants acknowledged receiving multiple donations in Phase I, as well as a few donations in Phase II. In general, participants felt that donations were distributed unequally, and that more donations were given to participants who had higher production before PBS assistance. Interestingly, the two participants in our sample with the highest initial production received the largest donations, including irrigation systems and hay shredders. Other participants consistently mentioned these two items as potential donations that could have improved the overall impact of program assistance.
- *Technical assistance.* Regarding technical assistance, all participants acknowledged receiving technical assistance during both phases. However, two participants reported that they stopped attending field schools during Phase II. Three interviewed participants reported that Phase I technical assistance was comprised of both theory and practice, but that Phase II assistance included only theoretical training. In general, these three participants praised technical assistance in Phase I (provided by TechnoServe) and expressed dissatisfaction with technical assistance in Phase II (provided by Zamorano). One participant stated that there was too great of a focus on demonstration plots in Phase II. This stood in contrast with Phase I assistance, during which field-staff visited all participants' fields on a rotating basis. However, two-thirds of interviewed participants were satisfied with technical assistance in both phases.
- *Agricultural practices.* Regarding agricultural practices, most interviewed participants mentioned that they had improved their supply of fodder through better pasture maintenance during the rainy season and better fodder storage during the dry season. Most participants received donated hayseeds in Phase I, in addition to technical assistance regarding fodder cultivation and storage. As a result of these donations and assistance, interviewed farmers reported large cost savings during the study period, as well as increased production linked to a more sustained supply of fodder. The other practice commonly mentioned in interviews was improved herd maintenance. Through training, participants learned how to diagnose common health problems, prevent mastitis, and properly inject cattle with antibiotics. Participants noted that these practices decreased their need for veterinarian services in recent months. Participants also mentioned that they improved cattle hygiene practices by applying knowledge learned through technical assistance.
- *Impacts of PBS assistance.* Regarding the effects of PBS assistance on production and costs, most participants with much improved economic outcomes (according to survey data collected for the impact analysis) stated that the combination of in-kind donations—particularly hayseeds, vitamins, and parasite medication—and technical assistance helped them reduce their costs and increase production. Some participants who experienced

moderate improvements acknowledged a small increase in production, and a couple of producers (with no registered improvements) stated that they had lower milk production as a result of recent cattle sales. As a result of substantial donations and assistance, the two largest producers in our sample acknowledged large increases in production.

- *Collaboration with FOMILENIO-supported enterprises.* None of the participants in the sample mentioned selling their production to Lácteos Zona Norte. One producer mentioned that the minimum quantity required by the enterprise was 2,000 bottles a day, and only two of the interviewed participants were able to meet that relatively high level of production.
- *Lessons learned.* When asked about weakness of PBS assistance, most participants answered that more in-kind donations in Phase II were needed. A couple of participants mentioned that more hands-on practice was needed in Phase II. One participant mentioned that small loans at favorable conditions were very important, but were not included in PBS assistance.

APPENDIX C

DETAILED FINDINGS FOR PRODUCER-OWNED ENTERPRISES

A. El Salvador Produce

El Salvador Produce is an agricultural enterprise comprised of 41 affiliated productive groups in the departments of Chalatenango, Santa Ana, Cabañas, and Morazán, with a total membership of approximately 2,000 farmers. Created under the PBS Activity, the goal of El Salvador Produce is to serve as a long-term vehicle for marketing and selling fruit and vegetable production associated with PBS assistance. Some key findings regarding El Salvador Produce's assistance, results, and sustainability (as of mid-2012) are outlined below.

A large amount of technical assistance was provided, but stakeholders believe additional assistance is needed. Starting in early 2012, Chemonics contracted consultants to assist El Salvador Produce staff with costing, inventory, and information systems. In addition, El Salvador Produce staff participated in training sessions on accounting, organizational strengthening, decision-making, and conflict resolution. One member of the board of directors stated that the training sessions were useful, but that they occurred too late in the assistance program. By mid-2012, several stakeholders questioned whether El Salvador Produce staff could assume core responsibilities—particularly administrative and logistical tasks—in the absence of additional technical assistance. Several interviewed stakeholders stated that another six months of training and technical assistance were necessary.

Assistance featured a general lack of integration between production and sales components. Enterprise staff noted that there was a lack of coordination between the enterprise and technical field-staff concerning the types of crops desired, as well as the quality and quantity of these crops. In fact, FOMILENIO and El Salvador Produce staff noted instances in which field-staff actually discouraged participants from selling their production to El Salvador Produce. As a result, there were missed opportunities for farmer groups to establish a sustained supply of a few key crops to the enterprise, which the enterprise could in turn supply to its clients on a regular basis. Recently, however, the enterprise began working directly with farmers to stagger their production over the course of the year, thus generating a consistent supply of key crops. El Salvador Produce recently contracted an individual to coordinate with farmers on staggered production who had provided technical assistance under Phase II. In this sense, there appeared to be some continuity in assistance.

There appears to be demand for production, but high-quality production is not forthcoming. In interviews, stakeholders noted that there is no shortage of potential buyers for high-quality fruits and vegetable. However, El Salvador Produce staff had experienced difficulty finding high-quality production from members and other nearby producers. In theory, El Salvador Produce has a large network of member-organizations that could provide them with produce. However, only 60 to 80 individuals sold their production directly to the enterprise as of mid-2012. Chemonics representatives attributed this low supply of high-quality production to a lack of a 'culture of quality,' as participating farmers are unaccustomed to producing high-quality produce to obtain a higher price. El Salvador Produce staff attributed the lack of high-quality production, in part, to the failure of technical assistance in generating high-quality fruit and vegetable production. One 2012 monitoring report completed by Chemonics staff also mentioned that small farmers often

choose to sell their produce at municipal and local markets rather than sell to El Salvador Produce, as they obtain higher prices at these markets from final consumers.²¹

The process of buying and selling production is not yet refined. When El Salvador Produce was first established, enterprise staff experienced difficulty with buying production; staff would visit potential suppliers multiple times, to the extent that producers had already sold their production by the time staff had returned to complete the sale. According to several interviewed stakeholders, the enterprise also experienced payment delays throughout 2011 and 2012. In an interview, El Salvador Produce staff reported recent efforts to pay farmers for their production within 7 and 15 days of delivery, and that payment delays had decreased in recent weeks.

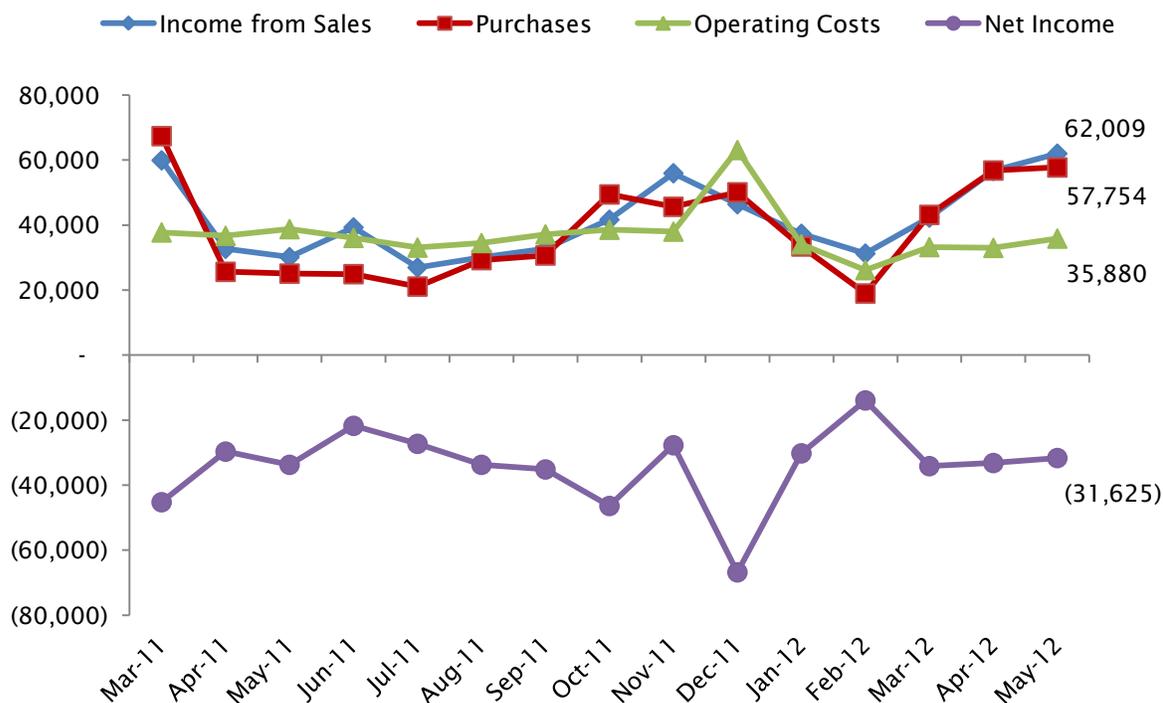
The enterprise currently employs 16 people. As of mid-2012, El Salvador Produce employed 15 people, including a general manager, 7 administrative staff, 4 technical staff, and 3 drivers. Because El Salvador Produce was established under PBS assistance, these jobs can be considered to have been generated by the PBS Activity.²²

Net income is consistently negative. As illustrated in Figure C.1, high operating costs and low profit margins between El Salvador Produce's sales and purchases have generated consistently negative net income throughout 2011 and 2012. Although income from sales appears to have increased in recent months, any profit from sales is unlikely to match the magnitude of large operating costs in the near- or medium-term. In addition, large increases in the volume of produce bought and sold would be unlikely to surmount these operating costs, given apparent small profit margins.

²¹ Informe de Recomendación Técnica para Adendar el Acuerdo de Donación Suscrito con la 'Sociedad Cooperativa de Negocios y Multiservicios de la Zona Norte de R.L. de C.V. Chemonics, April 2012.

²² However, it should be noted that there is no method to determine with certainty if the enterprise created new jobs related to the horticulture sector, or whether it attracted individuals who were already employed in the sector.

Figure C.1. Financial Indicators, El Salvador Produce, March 2011 to May 2012 (in U.S. Dollars)



Source: FOMILENIO administrative data, August 2012.

Morale and teamwork appear suboptimal. There has been turnover in enterprise staff, as well as apparent conflict between the board of directors and enterprise staff. In particular, some members of the board of directors expressed a strong desire to be involved in day-to-day decisions, which is the domain of the managing director. Despite these difficulties, implementers reported that some enterprise staff members now feel more empowered to make decisions and take ownership of the business.

The enterprise's basic infrastructure is strong. El Salvador Produce has several vehicles, a large warehouse, and a new cold storage facility. This new cold storage facility allows enterprise staff to cool production in preparation for sales. This will help decrease losses from the current rate of 30 percent to a new rate of between 5 to 10 percent, particularly for tomatoes. With extensive infrastructure and a strategic location in Chalatenango, the enterprise is in a strong strategic position to buy, aggregate, and store fruit and vegetable production in the Northern Zone.

The business model has changed over the course of implementation. When it was first established, one main objective of El Salvador Produce was to help PBS participants sell their production. Under this system, the enterprise incurred losses because it was buying all production from PBS participants, dividing it up according to quality, and selling it to a variety of buyers. In recent months, however, enterprise staff began trying to implement a more financially viable business scheme, which entails consolidating the geographic regions it serves and rejecting production that is not likely to command a good price. These recent efforts have disappointed participating farmers and technical field-staff, but they represent a move toward a sustainable business model.

Additional finance is needed. Large clients such as Súper Selectos often pay for production up to 30 days after El Salvador Produce makes a delivery. To cover these payment lags, additional

working capital is needed. In addition, El Salvador Produce has high operational costs—particularly salaries—that were previously covered by PBS assistance. It is not clear that sales will cover these operational costs in the near or medium-term future. In mid-2012, Chemonics and FOMILENIO staff were working on a proposal to secure additional funding for the enterprise. If this proposal is successful, the Ministry of Agriculture will inject money in El Salvador Produce in the short-term to help cover administrative costs. According to FOMILENIO sources, this funding will cover another 6 months of operations.

The likelihood of medium- and long-term sustainability is low to moderate. As illustrated in Table C.1, a low supply of produce, a low profit margin, and apparent organization and leadership gaps pose large risks to El Salvador Produce’s sustainability. A strong market demand and excellent infrastructure and location partially offset these disadvantages. However, given the preponderance of low and moderate risks facing El Salvador Produce, the enterprise’s potential for medium- and long-term sustainability is best assessed as low to moderate.

Table C.1. Sustainability Assessment for El Salvador Produce

Dimension	Summary	Sustainability Assessment
Market demand	Strong demand from several large buyers.	High
Enterprise supply	Limited supply of high-quality produce, to the extent that supply cannot meet current demand.	Low
Profit margin and operating costs	High operating costs and slim profit margins have consistently generated negative net income for the enterprise.	Low
Organization and leadership	Some interpersonal conflict within the board of directors, and between the manager and the board; apparent lack of leadership from the board’s chairperson.	Low
Entrepreneurial vision and business skills	Unclear vision and goals at the enterprise’s inception, but improved vision in recent months. Limited business skills among enterprise personnel. However, staff recently completed cost-benefit studies of several key crops, and appears to be building basic financial analysis skills.	Moderate
Administrative and technical capacity	Some administrative capacity, but additional assistance needed in computer skills. Some knowledge and experience with agricultural production, but additional capacity building needed.	Moderate
Infrastructure and location	Strong infrastructure, including a warehouse, a cold storage chain, vehicles, and machinery. Very strategic location in the Northern Zone.	High
Financing and working capital	Very limited supply of working capital, which limits the enterprise’s ability to fill large orders.	Low
Overall Potential for Sustained Operations		Low to Moderate

Source: Mathematica qualitative data collection, July 2012.

B. Lácteos Morazán

Formed in 2008, Lácteos Morazán is a dairy enterprise comprised of 20 affiliated productive groups in the departments of Morazán and Cabanas, with a total membership of over 1,700 individuals. Reorganized under the PBS Activity, the goal of Lácteos Morazán is to serve as a long-term vehicle for marketing and selling milk and cheese production associated with PBS assistance. Some key findings regarding Lácteos Morazán's assistance, results, and sustainability (as of mid-2012) are outlined below.

The enterprise has experienced bottlenecks in its target product line. Since FOMILENIO assistance began in 2011, Lácteos Morazán staff focused on a plan to aggregate Grade A milk, pasteurize and package it, and sell it to the final consumer. However, two large obstacles precluded this production as of July 2012: First, the enterprise had not yet received a key piece of equipment for the pasteurization process. Second, the enterprise was still in the process of receiving clearance from the Ministry of Health to produce milk for the final consumer. However, even if the enterprise were capable of producing this product line, it is unclear whether the product will be met with sufficient demand to ensure its profitability.

The enterprise currently aggregates and sells a low volume of milk. Only four high-producing members of the board of directors were selling milk regularly to the enterprise as of July 2012. The enterprise sells this milk to a nearby processing plant for a small profit. Under this scheme, the enterprise would have to collect and sell very large volumes of milk in order to fully cover its costs. This would require much higher collaboration from member organizations and nearby milk producers, who largely decided not to sell to the enterprise in recent months. One technical field staff member reflected that, "The big problem with Lácteos Morazán is that people don't feel like they're part of the company. They haven't sold milk to the business because they don't feel welcome."

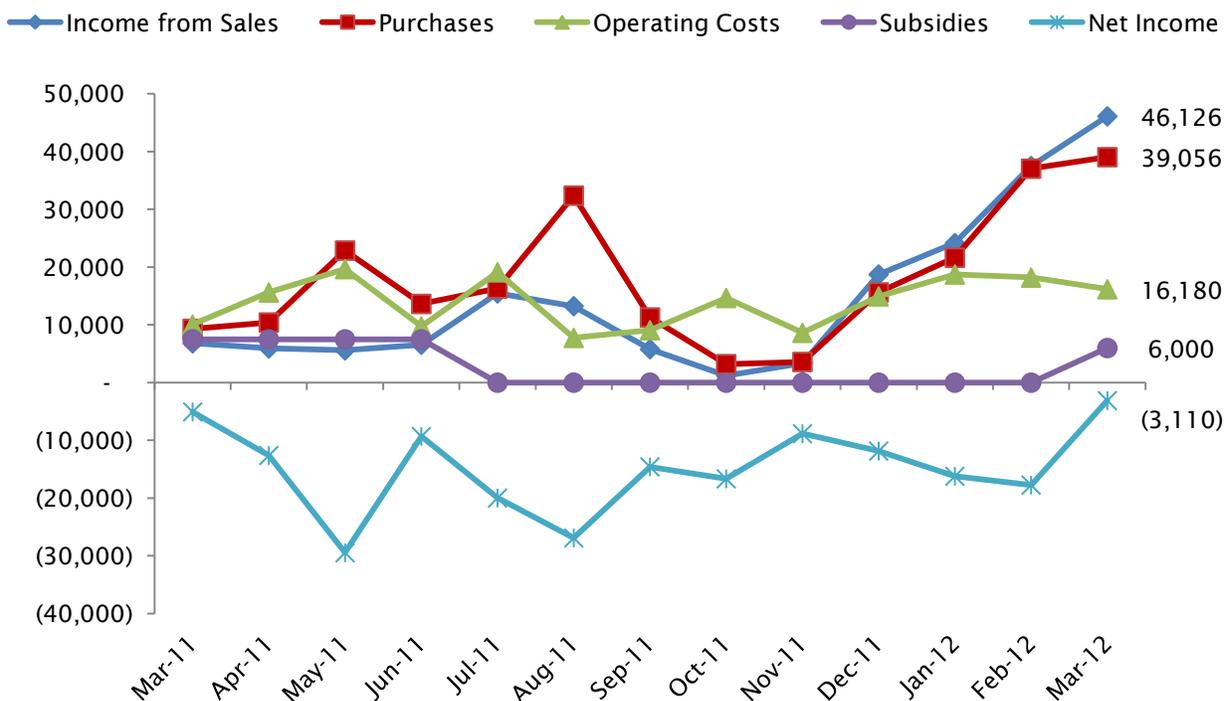
Current cheese production and potential cooperation with the Ministry of Education do not appear financially viable. In recent months, the enterprise developed a product line of artisanal cheese. However, through use of software purchased through FOMILENIO, the manager determined that this product line was not financially viable throughout the entire year. Another option is the sale of fluid milk to the Ministry of Education under the Vaso de Leche program for 38 cents a bottle. However, this option did not have a strong profit margin as of mid-2012, given high transportation costs. Given the low profitability of cheese and the non-viability of participating in the Vaso de Leche program, the managing director concluded that producing and selling pasteurized Grade A milk to the final consumer was the only option through which the value added in the plant could generate higher profit margins.

The enterprise currently employs 12 people. As of mid-2012, Lácteos Morazán employed 12 people, including a general manager, 4 administrative staff, 3 technical staff, 2 security guards, and 2 drivers. Because Lácteos Morazán was largely reorganized under PBS assistance, the majority of these jobs can be considered to have been generated by the activity.²³

²³ However, it should be noted that there is no method to determine with certainty if the enterprise created new jobs related to the horticulture sector, or whether it attracted individuals who were already employed in the sector.

The enterprise's net income is consistently negative. As illustrated in Figure C.2, high operating costs and low profit margins between the enterprise's sales and purchases have generated consistently negative net income throughout 2011 and 2012. Net income increased sharply in March 2012, however, this was caused in part by a \$6,000 subsidy from Chemonics.

Figure C.2. Financial Indicators, Lácteos Morazán, March 2011 to March 2012 (in U.S. Dollars)



Source: FOMILENIO administrative data, August 2012.

Enterprise organization is a problem. There is high turnover among the enterprise's board of directors. In addition, the current managing director had been at the enterprise for only a few months after replacing the previous managing director. As such, the board of directors and managing director had not yet mastered their core responsibilities as of mid-2012.

Working capital and investment capital are very limited. With money in the business's bank account (provided by FOMILENIO), the managing director initially obtained a loan of \$30,000 in working capital in late 2011 or early 2012. However, the enterprise had very little working capital at the time of the interview. The manager stated that he needed over \$60,000 in working capital to begin producing and pasteurizing grade-A milk, and that he would ask each of the members of the board of directors for additional financing in upcoming months.

There is a lack of technical knowledge among enterprise staff. The managing director described a trial-and-error approach to using equipment at the plant. For example, the enterprise's employees did not know how to properly use one piece of machinery for straining and drying cheese production. After experimenting with the machinery over multiple batches of production, they determined how to use the machinery properly.

The establishment of a revolving fund was well received by members. FOMILENIO established a revolving fund for Lácteos Morazán, which the director used to buy inputs in bulk at a discounted price. Then the enterprise provided these inputs on credit to member producers, and

bought more raw materials when people paid back their debts. According the director, the enterprise handled the revolving fund “like a bank” and it served a vital role in providing member producers with cheap inputs on credit.

The likelihood of medium- and long-term sustainability appears low. As illustrated in Table C.2, low levels of demand and supply, a low profit margin and high operating costs, low capacity, and a dearth of financing pose large risks to Lácteos Morazán’s sustainability. As such, the enterprise exhibits little potential for sustained operations in the medium- and long-term.

Table C.2. Sustainability Assessment for Lácteos Morazán

Dimension	Summary	Sustainability Assessment
Market demand	Unclear demand for pasteurized milk from consumers; poor demand for artisanal cheese.	Low
Enterprise supply	Weak supply of milk; currently only 4 members sell milk to the enterprise.	Low
Profit margin and operating costs	High operating costs and slim profit margins have consistently generated negative net income for the enterprise.	Low
Organization and leadership	Weak linkages between member organizations, as well as a recently reconstituted board of directors. Unclear leadership from the managing director.	Low
Entrepreneurial vision and business skills	Unclear vision among board of directors. However, the managing director appears to possess some entrepreneurial vision.	Moderate
Administrative and technical capacity	Apparent lack of understanding of installed machinery.	Low
Infrastructure and location	Strong infrastructure, including a central office with storage tanks, nearly 20 tanks in the vicinity, vehicles, and machinery. However, a pasteurization machine has not yet been installed and the enterprise’s cold storage chain is not operational.	Moderate
Financing and working capital	Limited supply of working capital, which limits the enterprise’s ability to fill large orders.	Low
Overall Potential for Sustained Operations		Low

Source: Mathematica qualitative data collection, July 2012.

C. Lácteos Zona Norte

Based in Chalatenango, Lácteos Zona Norte (also called *Ganadera de la Zona Norte*) is a dairy enterprise comprised of 25 affiliated productive groups representing over 1,000 individuals in the departments of Chalatenango, Santa Ana, La Libertad, San Salvador, and Cuscatlán. Created under the PBS Activity, the goal of Lácteos Zona Norte is to serve as a long-term vehicle for marketing and selling milk and cheese production associated with PBS assistance. Some key findings regarding Lácteos Zona Norte assistance, results, and sustainability (as of mid-2012) are outlined below.

Enterprise staff praised donations and technical assistance. When it was established, Lácteos Zona Norte received a large amount of donations, including land and offices, office equipment, cooling tanks, and vehicles. During interviews, members of the board of directors and enterprise staff mentioned that all donations had been helpful. In particular, the managing director mentioned that an accounting program was particularly useful in tracking expenses and income, as was a program to track inventory. In addition, the organization's manager and board of directors received a large number of training sessions in costing and budgeting, and other administrative practices. Chemonics also contracted an expert to help staff with business plans and strategic planning. Enterprise staff reported a high level of satisfaction with all training sessions.

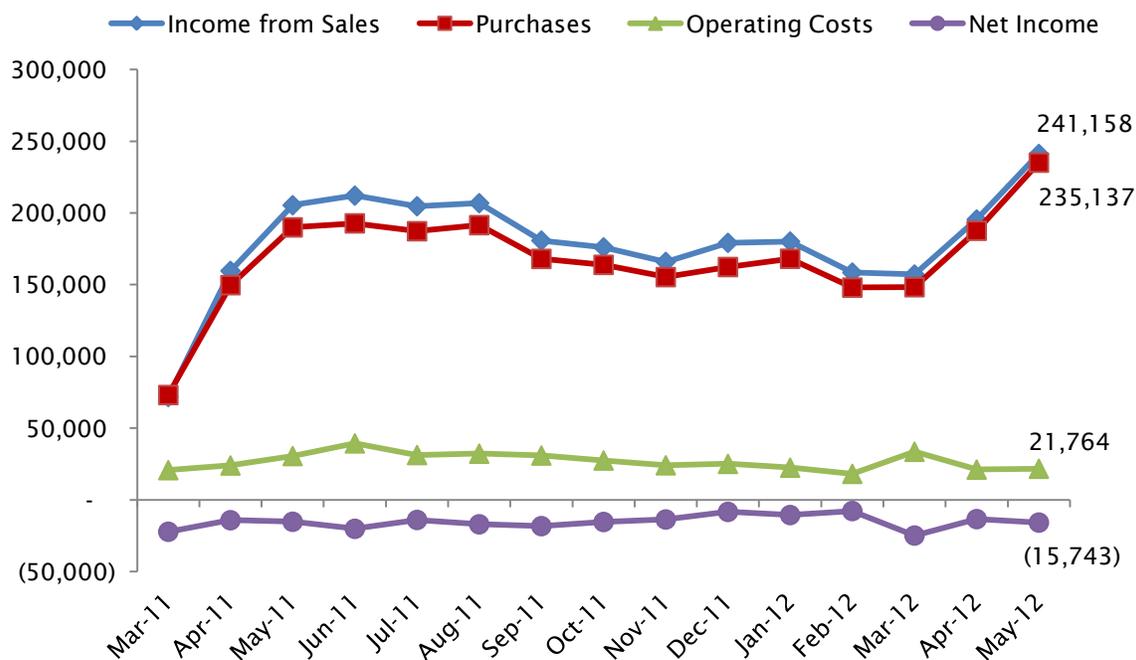
Enterprise staff appears capable, but stakeholders believe more training may be needed. Chemonics staff mentioned that managers still needed training in strategic planning and resource use. For example, there was a large potential to improve the efficiency of routes used to collect milk, and thus save resources in collection. According to Chemonics sources, members of the board of directors needed additional instruction in the hierarchy of decision-making—namely the fact that the board of directors should not interfere with day-to-day operations in the director's domain. Technical service providers also mentioned that enterprise staff likely needed additional assistance in conducting market studies and other technical analyses, particularly because technical service providers would no longer be available to assist with these activities after the activity's conclusion.

Members of the enterprise receive a high price for milk production. The organization collects and sells 30,000 bottles a day to the Ministry of Education under the Vaso de Leche program. Members receive 42 cents a bottle from the enterprise, which is 12 to 14 cents higher per bottle than they would receive from alternative buyers in the informal sector. The enterprise pays its providers every week, as opposed to once a month through the informal market. Through this program, members receive a stable price throughout the entire year. Interviewed milk producers expressed a high level of satisfaction with this arrangement, and stated confidently that they had experienced increased incomes as a result of selling milk to the enterprise.

The enterprise employs 16 people. As of mid-2012, Lácteos Zona Norte employed 16 people, including a general manager, 6 administrative staff, 7 technical staff, and 2 security guards. Because Lácteos Zona Norte was established under PBS assistance, the majority of these jobs can be considered to have been generated by the activity.

Net income is consistently negative. As illustrated in Figure C.3, high operating costs and low profit margins between the enterprise's sales and purchases have generated consistently negative net income throughout 2011 and 2012. Sales increased sharply in April and May 2012, but these increases were proportional to increased purchases, and profit margins actually decreased slightly during this time period.

Figure C.3. Financial Indicators, Lácteos Zona Norte, March 2011 to May 2012 (in U.S. Dollars)



Source: FOMILENIO administrative data, August 2012.

The Vaso de Leche program appears to have influenced prices in the zone. Enterprise members reported that they were greatly benefiting from the Vaso de Leche program. In addition, producers outside the enterprise also experienced higher prices as a result of market effects of the contract. Stakeholders reported that milk prices are more stable and generally higher as a result of this contract as well as the higher level of organization in the sector engendered by FOMILENIO assistance. Interviewed farmers also reported that they are now paid more regularly through their involvement with Lácteos Zona Norte.

Diversification of buyers and products is low. In an interview, the managing director mentioned that the board of directors was assessing the potential to find buyers outside the Ministry of Education. However, they had made little progress in diversifying the business's client base. Technical service providers remarked that the enterprise's sustainability in the absence of the Vaso de Leche program was not guaranteed. To avoid potential competition from nearby dairy plants in the future, service providers reasoned that Lácteos Zona Norte staff should dedicate resources to cultivating new clients and diversifying their production. One service provider suggested that the enterprise begin to sell a variety of products to its member-farmers, including raw materials, medications, and other inputs.

There appears to be cohesion in the organization, as well as a healthy relationship between the manager and affiliated producers. The enterprise is currently comprised of 25 member-organizations. In interviews, members remarked that they have faith in their board of directors and managing directors. According to stakeholders, board members have worked very transparently, and there is a high level of trust between the board and affiliated producers. During an interview, members of the board expressed a sense of ownership of the enterprise, and a desire to invest in the business's long-term sustainability.

The organization needs additional financing and working capital. The managing director reported that the enterprise needed working capital to finance sales as well as administrative expenses. At the time of the interview, enterprise staff was engaged in conversations with public banks to obtain loans. In addition, the board of directors was developing an investment plan, which would require members to buy stocks in the enterprise.

The revolving fund appears to be working well. Through use of the revolving fund, members bought inputs at a subsidized price. Also, several farmers received machinery at a sizable discount. According to the managing director, repayment was strong. However, one technical subcontractor mentioned that the revolving fund operated at only a fraction of its capacity to distribute raw inputs to participating producers.

The likelihood of medium- and long-term sustainability appears moderate. As illustrated in Table C.3, a low profit margin and a lack of financing pose large risks to Lácteos Zona Norte's sustainability. Strong organization and excellent infrastructure and location offset these disadvantages to some extent, but the enterprise's overall potential for medium- and long-term sustainability is best assessed as moderate.

Table C.3. Sustainability Assessment for Lácteos Zona Norte

Dimension	Summary	Sustainability Assessment
Market demand	Strong demand from the Ministry of Education, but a lack of diversification of clients.	Moderate
Enterprise supply	Consistent supply of milk, but a lack of product diversification.	Moderate
Profit margin and operating costs	High operating costs and slim profit margins have consistently generated negative net income for the enterprise.	Low
Organization and leadership	Strong linkages and mutual trust between farmer groups and the enterprise, as well as a highly functioning board of directors. Strong leadership from the president of the board of directors.	High
Entrepreneurial vision and business skills	Clear vision, but an apparent lack of initiative to explore product diversification. Some business skills need strengthening, but enterprise staff appears to have a relatively high level of human capital.	Moderate
Administrative and technical capacity	No apparent deficiency in the enterprise's administrative capacity. Some potential need in capacity to conduct market studies develop new products.	Moderate
Infrastructure and location	Strong infrastructure, including a central office, storage tanks at the central office, over 50 storage tanks in the zone, and machinery. Strategic location in the Northern Zone.	High
Financing and working capital	Limited supply of working capital, which limits the enterprise's ability to fill large orders.	Low
Overall Potential for Sustained Operations		Moderate

Source: Mathematica qualitative data collection, July 2012.

D. ACOPROARTE

Established in 1996 and legally constituted in 2001, ACOPROARTE is a handicraft cooperative located in Chalatenango with 19 linked workshops in ten communities. The cooperative produces a variety of handicrafts, with a specialty in wood-working. Some key findings regarding ACOPROARTE's assistance, results, and sustainability (as of mid-2012) are outlined below.

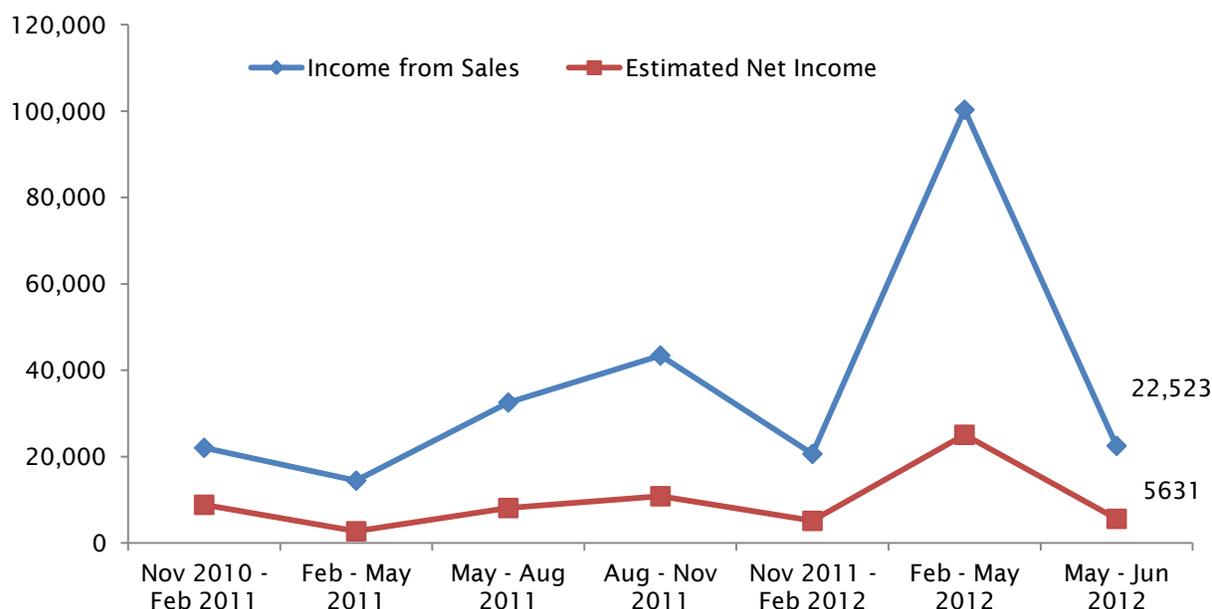
ACOPROARTE was established before PBS assistance. The organization was established in 1996 as an organization that bought and sold handicrafts. At the outset of PBS assistance, ACOPROARTE had already established its basic business model. For example, the enterprise already had high-producing members who owned workshops and contracted workers, as well as member workshops comprised of low-capacity members who worked together in a group setting. With FOMILENIO assistance, however, ACOPROARTE built and equipped their headquarters to produce a large portion of handicrafts.

Phase I assistance appeared deficient compared to Phase II assistance. According to ACOPROARTE staff, Phase I assistance appeared unfocused and too large in scope to be effective. In an interview, one member of ACOPROARTE said, "In Phase I there was a lack of clarity about what we trying to do, who we were trying to do it with, and how we would do it. All that changed in Phase II." In contrast, Phase II assistance had clear goals in production, business development, and market access, and was well executed by Swisscontact staff. However, stakeholders felt that there was not enough time in Phase II to fully execute all key components.

Assistance in Phase II focused on production techniques as well as business practices. According to enterprise staff, PBS assistance related to production focused on working with raw materials, experimenting with new color combinations, and developing product lines. There were also training units in costs and inventory, as well as in enterprise organization and administration. In the costing trainings, the organization learned how to account for direct and indirect costs, and to recycle and use second-hand materials. As a result of assistance, the organization now maintains several inventories in raw materials, non-painted materials, and final materials.

In Phase II, all production was based on demand. During 2011 and 2012, Swisscontact and ACOPROARTE worked together to present new product lines to buyers, liaise with buyers to determine their product needs, and finalize orders. Once large orders were placed, ACOPROARTE organized its workshops around producing the product. ACOPROARTE traditionally worked mostly in wood, particularly wooden crosses for a consistent European buyer. By 2012, however, the organization had expanded production to wood furniture and boxes, mirrors, textiles, candles, and other household items for Walmart and Sears.

Clients and sales increased following FOMILENIO assistance. Interviewed stakeholders agreed that FOMILENIO assistance helped members generate higher production and sales throughout 2011 and 2012. During Phase II, several large orders were placed through Swisscontact. To meet production targets for these orders, Swisscontact staff helped ACOPROARTE add several new workshops to its network of providers. At the time of the interview, each workshop owner affiliated with ACOPROARTE reported higher sales than prior to FOMILENIO assistance—between \$4,000 and \$5,000 on a monthly basis—with a healthy profit margin of around 30 percent. As a result of these orders, the cooperative experienced strong financial performance throughout 2011 and 2012. As illustrated in Figure C.4, ACOPROARTE's estimated net income was consistently positive during this time period.

Figure C.4. Financial Indicators, ACOPROARTE, November 2010 to June 2012 (in U.S. Dollars)

Source: FOMILENIO administrative data, August 2012.

Note: As of mid-2011, FOMILENIO began estimating net income for handicraft businesses as 25 percent of income from sales.

Employment increased following FOMILENIO assistance. On average, each ACOPROARTE member employed 15 people in their workshops as of mid-2012. This represents an increase of at least several people per workshop. With donations of equipment, interviewees reported that paid labor decreased somewhat in recent months. However, employment generally increased under Phase II assistance due to the large increase in demand. As of mid-2012, a total of 11 individuals were permanently employed by ACOPROARTE: 1 manager, 1 accountant, 2 local sellers, 1 assistant, 1 production manager, and 5 carpenters. According to ACOPROARTE staff, this represents an increase in employment of around 7 full-time jobs since the initiation of FOMILENIO assistance.

The revolving fund appeared to be helpful, but a higher level of financing is necessary. The FOMILENIO-established revolving fund helped the organization buy paint and wood in bulk, and distribute these materials to members. Although the group had some difficulties with the procurement process to buy these materials, members were generally satisfied. Overall, ACOPROARTE staff reported that repayment from members was strong.

Lack of working capital is the group's primary bottleneck. Members mentioned that they needed additional working capital at the enterprise level to conduct business. Large international buyers often do not pay for items for several days, but artisans and carpenters must be paid at least a portion of the final payment before they begin production. This causes an acute credit crunch for ACOPROARTE in the production phase. At the time of the interview, the group members mentioned that they needed as much as \$60,000 to \$70,000 in working capital to maintain operations at the current pace.

The organization has a strong entrepreneurial spirit and vision. The managing director and members of the association have a shared vision of what they'd like to accomplish. According to stakeholders, there appears to be a high degree of trust between members and a healthy working

relationship between the managing director and members. In addition, the managing director appears to have strong managerial and leadership skills.

ACOPROARTE's likelihood of medium- and long-term sustainability appears high. As illustrated in Table C.4, strong demand, a healthy profit margin, strong organization and entrepreneurial vision, and excellent infrastructure bode well for ACOPROARTE's medium- and long-term sustainability. A lack of working capital offsets these advantages, but the enterprise's potential for medium- and long-term sustainability is best assessed as high.

Table C.4. Sustainability Assessment for ACOPROARTE

Dimension	Summary	Sustainability Assessment
Market demand	Strong demand from several large national and international buyers.	High
Enterprise supply	Network of workshops is currently capable of filling orders.	High
Profit margin and operating costs	Healthy profit margins and moderate operating costs generate consistently positive net income.	High
Organization and leadership	Strong linkages between workshops and the enterprise, as well as a highly functioning board of directors. Strong leadership from the business's managing director.	High
Entrepreneurial vision and business skills	Clear vision and established business skills, including the ability to network with clients and assess profit margins.	High
Administrative and technical capacity	No apparent deficiency in the enterprise's administrative capacity or ability to develop and manufacture new products.	High
Infrastructure and location	Strong infrastructure, including a central office and machinery. Strategic location in a municipality known for handicraft production.	High
Financing and working capital	Limited supply of working capital, which limits the enterprise's ability to fill large orders.	Low
Overall Potential for Sustained Operations		High

Source: Mathematica qualitative data collection, July 2012.

E. MOJE

MOJE is a handicrafts cooperative comprised of 62 producer groups. Located in Ilobasco, the cooperative produces a variety of handicrafts using wood, ceramics, and metal. Some key findings regarding MOJE's assistance, results, and sustainability (as of mid-2012) are outlined below.

MOJE was established prior to FOMILENIO assistance. In part because MOJE already had an established business model and an existing network of artisan workshops, it was selected to receive PBS assistance in Phase II. In addition, MOJE staff had an established basis of entrepreneurial, technical, and creative skills, which facilitated PBS assistance with production, sales, and marketing.

Product development in Phase II was based directly on market preferences. Similar to collaborations between Swisscontact and ACOPROARTE, Swisscontact and MOJE staff collaborated in holding a series of events and fairs to determine buyers' preferences, and then tailoring new products to meet these preferences. This demand-centered approach constituted an efficient use of resources, as investments in new product lines often resulted in new orders.

Flexibility enabled more responsive implementation. Chemonics and field-staff praised the availability of mid-course corrections during Phase II. After several months of assistance, stakeholders realized they needed more design specialists to assist MOJE with new product lines. Because there was some freedom to adjust line-items in the budget, stakeholders were able to contract two additional specialists.

Trainings and technical assistance focused on production techniques as well as business practices. Assistance with production focused on working with new materials and color schemes, as well as developing new product lines. There were also units in costs and inventory, as well as in community organization. MOJE staff and participants expressed a high level of satisfaction with technical assistance from Swisscontact. However, participating artisans expressed that more assistance with product design would have been beneficial.

The revolving fund appeared to be helpful, but a higher level of financing is necessary. MOJE staff noted that large buyers often do not pay for production at the time of delivery. As of mid-2012, MOJE staff was seeking additional financing for much-needed investments and working capital. Staff noted that financing was needed to lease additional equipment, which they would in turn lease to artisans in their network.

Before assistance ended, stakeholders developed and implemented a transition plan. When six months of PBS assistance remained, Swisscontact and MOJE staff jointly developed a transition plan to equip MOJE staff to maintain sales, continue produce design, determine costs, maintain a contact list, and visit with providers once assistance had ceased. As a result of this plan, MOJE staff appeared to be in a strong position to continue operations after PBS assistance.

Providers, clients and sales have increased. Partly as a result of PBS assistance, MOJE staff reported a 70 percent increase in the number of artisans participating in their production network. In addition, MOJE has maintained their previous clients and acquired six new regular clients, some of which are international. Although they did not have a good estimate of the overall increase in net income among members, interviewed stakeholders stated that FOMILENIO assistance produced tangible increases in members' sales and income. As illustrated in Figure C.5, MOJE experienced consistently positive net income during 2011 and 2012.

Employment has increased. As of mid-2012, a total of 10 individuals were permanently employed by MOJE: 1 coordinator, 2 local sellers, one production manager, and 6 permanent artisans. According to MOJE staff, this represented an increase in employment of around 7 full- or part-time jobs since the initiation of FOMILENIO assistance. Prior to assistance, MOJE had only one coordinator and two local sellers on staff.

Figure C.5. Financial Indicators, MOJE, November 2010 to May 2012 (in U.S. Dollars)



Source: FOMILENIO administrative data, August 2012.

Note: As of mid-2011, FOMILENIO began estimating net income for handicraft businesses as 25 percent of income from sales.

MOJE's likelihood of medium- and long-term sustainability appears high. As illustrated in Table C.5, strong supply from networked artisans, a healthy profit margin, strong organization and entrepreneurial vision, and excellent infrastructure bode well for MOJE's medium- and long-term sustainability. A lack of working capital slightly offsets these advantages, but the enterprise's potential for medium- and long-term sustainability is best assessed as high.

Table C.5. Sustainability Assessment for MOJE

Dimension	Summary	Sustainability Assessment
Market demand	Substantive demand from several large national and international buyers; however, demand is not consistent across seasons.	Moderate
Enterprise supply	Network of workshops is currently capable of filling orders.	High
Profit margin and operating costs	Healthy profit margins and moderate operating costs generate consistently positive net income.	High
Organization and leadership	Strong linkages between workshops and the enterprise, as well as a highly functioning board of directors. Strong leadership from the business's managing director.	High
Entrepreneurial vision and business skills	Clear vision and well developed business skills, including the ability to network with clients and assess profit margins.	High
Administrative and technical capacity	No apparent deficiency in the enterprise's administrative capacity or ability to develop and manufacture new products. However, staff has requested additional training in product development.	Moderate
Infrastructure and location	Strong infrastructure, including a central office and machinery. Strategic location in a municipality known for handicraft production.	High
Financing and working capital	Limited supply of working capital, which limits the enterprise's ability to fill large orders.	Low
Overall Potential for Sustained Operations		Moderate to High

Source: Mathematica qualitative data collection, July 2012.