ECONOMIC ANALYSIS OF FEED THE FUTURE INVESTMENTS

Rural Value Chains Project – Anacafe

September, 2013

INTRODUCTION

In June 2012, USAID/Guatemala signed a five-year award with the local organization Associación National de Cafe (Anacafe) to implement one-half of a $42 million dollar initiative to reduce the risks of food insecurity in rural households under USAID's Feed the Future initiative (FTF). FTF Guatemala will achieve this through better yields of staple crops, diversified household income from specialty coffees or vegetables, and improved access to and availability of nutritious foods in five departments of the Western Highlands.

USAID/Guatemala conducted a cost-benefit analysis (CBA) of the project beginning in March 2012 to quantify potential costs and benefits in financial and economic terms over the standard 20-year period. The results are intended to inform decisions regarding project direction and resources. This report summarizes results from the analysis.

Team Composition

The CBA team was comprised of five members, including:

- Tom DiVincenzo – Mission Economist (USAID/Guatemala)
- Adam Sylagi – Agriculture Officer (USAID/Guatemala)
- Shamenna Gall – Agriculture Officer (USAID/El Salvador)
- Paul Rivera – Economist (California State University, Channel Islands / USAID/Washington)
- Nathan Martinez – Economist (USAID/Washington)

BACKGROUND

USAID/Guatemala has identified 30 municipalities in five departments in the Western Highlands (Huehuetenango, Quetzaltenango, Quiché, San Marcos and Totonicapán) as the area of greatest potential for high impact with respect to implementation of Feed the Future (FTF) interventions in agriculture production, poverty reduction and improved nutrition in rural households. Implementing partner Anacafe will work in 18 of these municipalities in the departments of Huehuetenango and San Marcos (see Annex 1).

The Rural Value Chain Program (RVCP) with Anacafe will increase the number of rural households participating in value chains, increase incremental value chain sales and local employment, increase household incomes, and contribute to improved nutrition in the communities in which it works.

In addition to another rural value chains implementing partner (Anacafe) who is working in other municipalities within the 30 identified, the project is geographically linked with concurrent P.L. 480 Title II programs, the mission's Community Nutrition and Health Care project, and elements of the mission's education and democracy and governance portfolios. Only net benefits of the Anacafe project will be modeled here, however.

RVCP PROJECTED IMPACT AND TARGET BENEFICIARIES

Guatemala's FTF strategy aims to reduce rural poverty and malnutrition in the Western Highlands through market-led agricultural development, prevention and treatment of under-nutrition, and improvements to humanitarian food assistance and social safety nets. RVCP will focus on market-led agricultural development. Specifically, RVCP will support rural producers associations to expand their reach, improve their market linkages, and strengthen their members' ability to produce high-quality products for export. These efforts will increase access to food by expanding and diversifying rural income and to contribute to improve the nutritional status of families benefitted under this program. This will be accomplished by expanding the participation of poor rural households in productive value chains in horticulture, coffee and handicrafts and linking those chains to local, regional, and international markets in rural households in 18 municipalities in the departments of San Marcos and Huehuetenango. The project has six components, which are:

I. Improved value chain competitiveness
II. Expanded value chain competitiveness
III. Improved agricultural productivity
IV. Expanding markets and trade
V. Increased food crop productivity and utilization
VI. Improved competitiveness of handicrafts value chain

Components V and VI will not be evaluated under this CBA because the majority of RVCP-Anacafe will affect small coffee growers, little detail is available how these components will increase household incomes, and the Anacafe project that preceded RVCP where much of the information for this analysis comes from did not work in these areas. As these components develop, a CBA of these efforts should be possible. Components I-IV will directly benefit coffee producers through a combination of increased productivity and better prices for those crops.

Over the five years of RVCP, activities are projected to reach 14,000 households in the target municipalities. Roughly 7,000 of those households will produce coffee and will be modeled here as they fall under components I-IV. These households will be located in those communities within the 18 target municipalities that demonstrate high levels of need—poverty and malnutrition—as well as potential—access to viable land and roads and existence of producer associations. At the end of the five years, this quantity of households represents more than 5 percent of the 752,000 people living in the 18 municipalities. As stated, RVCP also aims to indirectly benefit many more households through post-harvest employment and other spillover effects of the intervention. To maintain a conservative model, however, the secondary effects of the intervention are not included, nor are the effects of other USAID/Guatemala interventions that have some overlap with RVCP.

<u>Beneficiaries by Farm Size and Income</u>

Beneficiary analysis was conducted using data from the National Institute of Statistics' (INE) National Survey of Livelihood, which contains data down to the departmental level, and the Government of Guatemala's municipal censes conducted under the Mi Familia Progresa social program. Both datasets were used to find populations living below and above the country's local

poverty lines for extreme and absolute poverty in accordance with INE's work on the subject. INE ran regression analyses to find those indicators in the municipal surveys that correlate closely with household income in the departmental survey. The equations were used to find extreme and absolute poverty levels in the 18 municipalities in which Anacafe will work.

Of the 7,000 households targeted by this component of RVCP, 80 percent are expected to adopt and see sustained benefits from the project. Twenty-five percent will be organic coffee farmers and 75 percent non-organic farmers with an average farm size of 0.7 hectares. A target of 20 percent of RVCP direct beneficiaries being female-headed households, roughly 1,400 of the total households will fall into this category. According to the data from municipal censes, about 20,100 women will be beneficiaries in total and 20,500 (53 percent) will be indigenous based on the region's demographics.

In addition, the analysis shows that 7,400 (19 percent) of the expected beneficiaries fall below the local extreme poverty line ($1.57/day) and 19,100 (an additional 49 percent) fall between the extreme and absolute ($3.23/day) poverty lines. Calculations of the World Bank poverty lines of $1.25 per day and $2.00 per day were not possible with the municipal censes because the indicators used were correlated only with the local poverty lines.

RVCP COST BENEFIT ANALYSIS

Overview, Assumptions and Structure of the Model

The main project deliverable will be technical assistance to the producer associations that will increase their membership, increase the productivity of their members, and increase prices received by coffee growers. Project components I-IV are related and will be delivered to the same beneficiaries. They will therefore be treated as a single intervention. This approach results in a cleaner CBA model that is still representative of the intervention. **RVCP results in a permanent jump in prices received and increases in productivity at different times during project horizon.** While increases in coffee price are expected immediately from marketing efforts, gains in productivity under the intervention scenario are expected to begin in the second year of work with a farmer and then be evenly distributed through year six. Furthermore, only 20 percent of the 7,000 households are expected to be reached in year 1, 50 percent in year two, and 80, 90 and 100 percent in years three, four and five.

Both financial and economic analyses were conducted for the intervention, although trade distortions and taxes are generally not part of farmers' costs. The difference between the two analyses is minimal, as shown below. A financial net present value (NPV) using the economic opportunity cost of capital and the modified internal rate of return are both calculated to provide additional context for the economic NPV and economic rate of return.

Taxes are generally not paid by the smallholder farmers, and therefore are not included in the on-farm cash flow. Beginning in 2013, new tax legislation will be implemented that, according to Anacafe staff, will mean that the associations will need to report income in such a way that small farmers who can currently avoid paying taxes on meager incomes will not be able to avoid detection henceforth. How this legislation is implemented will affect these farmers and their

cash flows. However, due to the uncertainty of the law de facto, those taxes (5 percent of gross sales) are not included in this model with the understanding that the model will be updated in the future.

The Government of Guatemala provides a limited number of subsidized bags of fertilizer each year. The fertilizer scheme has wavered between coupons, partial coupons, and subsidized prices. This number of subsidized bags amounted to one to two bags of fertilizer per program beneficiary since 2010 and has been declining since 2000.[1] Each bag is one quintal or 100 pounds. Because of the limited number of subsidized bags, only some farmers in certain municipalities receive the subsidized fertilizer. In the farms modeled here, farmers need 13 bags of fertilizer which only includes their needs for coffee production—not for production of crops for self-consumption such as maize or beans. This distortion represents a relatively small number of farmers receiving this subsidy, and therefore the fertilizer scheme is not incorporated into the model.

Because the United States is the main trading partner with Guatemala, CAFTA-DR covers almost 50 percent of Guatemala's coffee exports. Furthermore, tariffs on major agricultural inputs and tariffs on agricultural exports are zero or near zero in all cases. In those cases where tariffs that affect inputs for this model are not zero, under CAFTA-DR those rates are scheduled to be phased out by 2016.[2] For this reason, distortions on imports and exports for the purposes of this model are very small. A single conversion factor was estimated for non-labor inputs for farms such as fertilizers, pesticides and fungicides based on a foreign exchange premium calculated from World Bank trade data. In lieu of detailed data and in order to maintain a conservative estimation, the conversion factor counted transport costs as 100 percent tradable even though the actual figure is certainly not 100 percent. A separate conversion factor for family labor was estimated based on experience in other developing countries.

No loans for equipment are required of these farms both because of their small size and the severe slopes on which many of these farms are perched. These slopes do not allow for tractors, tillers, or other heavy machinery that would have trouble operating at these steep angles.

Additionally, working capital is not a factor on the majority of farms this small, as producer groups will generally hold zero-interest accounts with farmers for input costs. For example, if a small farmer needs 10 bags of fertilizer before the planting season and received this fertilizer from the producer group, the farmer incurs a debt of $300. At harvest, the farmer is obliged to sell a percentage of his crop to the producer group, which will be sold on to market by the producer group. When this crop is sold, the producer group pays the farmer for the harvest minus $300 owed for fertilizer. In these cases the farmer uses no working capital.

This model considers organic and non-organic coffee producers who sell coffee parchment to producer associations as well as "coyotes" or middle-men who will buy unsorted coffee directly

[1] Instituto de Agricultura, Recursos Naturales y Ambiente de Universidad Rafael Landivar. *Evaluacion del Programa de Fertilizantes del Ministerio de Agricultura, Ganaderia y Alimentacion.* 2013.

[2] Office of the United States Trade Representative. Legal Text of Dominican Republic – Central America Free Trade Agreement Legal Text, Schedule of Guatemala to Annex 3.3. Online at: http://www.ustr.gov/trade-agreements/free-trade-agreements/cafta-dr-dominican-republic-central-america-fta/final-text

from farmers at the farm gate. In addition to not requiring sorting of the coffee into high and low quality, the coyotes typically buy coffee in cash and can pay immediately whereas associations must aggregate and sell the coffee to buyers before paying members. The model represents this benefit from selling to coyotes as an "advantage" that is not monetary, but has the same effect as a price premium for the producers. However, as the associations provide the technical assistance, association extentionists require a percentage of the total coffee crop to be sold to the association in exchange for extension services. This percentage sold to the association is expected to increase as the association purchasing price increases.

In addition, Anacafe estimates that both organic and non-organic coffee farms will need to replace their crop within the horizon of the model. This is based on a country profile for Guatemala that shows a significant portion of the coffee plants in the country are currently or will soon be past their productive lives. Therefore 25 percent of coffee farms modeled are expected to incur costs and lose a portion of their production value over the next 20 years. These farms are expected to replant one-third of their crop in year 1, one-third in year 10 and the final third in year 20. While the additional costs of new coffee plants are not prohibitive, the losses to production are high. Farms lose this production completely for the first three years following replanting and thereafter begin experiencing staggered gains in productivity until in the sixth year after replanting those new coffee plants realize their full potential. At this point these farms are earning over Q9,000 more than previously due to both a higher incremental yield and the price increase with the project.

The farms are expected to have one manzana (0.7 hectares) dedicated to coffee production on average. While most small coffee producers also grow subsistence crops, these farmers will receive assistance focusing on coffee crop and not on subsistence farming. In this sense, there is no incremental cost or benefit to subsistence crops, and they are therefore not modeled. Most land used for coffee production was reported as physically separate from subsistence plots. It is extremely unlikely, therefore, that increased productivity would lead to changes in growing patterns on these farms because those land uses are separate.

Project Costs

Three principal sources will finance the project: USAID, a cost-share arrangement with the implementing partner—Anacafe, and project leverage with sub-grantees. Expected USAID financing of Anacafe is approximately $19 million over five years. Anacafe has agreed to enter into a cost-share arrangement that will add about $4 million to project funding and to leverage funding or in-kind contributions of $4.3 million. As Anacafe does not have a budget by project component, this model proportions the annual costs of the project to the number of beneficiaries envisioned in each value chain—coffee, horticulture and handicrafts. Anacafe staff estimate that roughly 50 percent of the total budget or $13.6 million will be used for coffee farms only. The model only considers this amount the investment cost of the intervention.

The model looks at the cash flow of each type of farm without regard to this project financing, and only upon summing the net farm benefits for all beneficiaries are USAID and Anacafe costs subtracted to account for a total investment point of view.

Before project implementation, this budget can only be considered indicative. Indeed changes in the distribution are likely. Since the proposed project budget submitted to USAID was presented in fiscal year nominal dollars, the model adjusts the budget to express funds for each year in real quetzales including an adjustment in the economic analysis for Guatemala's foreign exchange premium.

Parameters

There were a number of steps required to collect the data used for the analysis. A summary of each of these steps is provided below.

Production Information

Data on current production come from internal reports provided by Anacafe and also from USAID/Guatemala's other RVCP partner, AGEXPORT. Historical production data from the past six years are used to estimate average annual percent changes that are applied to the w/o intervention counterfactual. These data are found in publically available documents published annually by the Ministry of Agriculture (MAGA in Spanish)[3]. Estimations concerning the progress of the intervention are provided by RVCP project documents showing past achievements of similar interventions as well as Anacafe staff estimations.

In the past 5 years productivity of the coffee in the country has been stagnant[4]. Therefore the model assumes that zero annual productivity growth would continue in the without-intervention scenario and in the with-intervention scenario after the five to seven year periods when farms will experience gains in productivity.

Farm Budgets/Operating Costs

Data on levels and prices of inputs come from internal reports provided by Anacafe. Inputs include:

- Seedlings
- Fertilizer
- Land Rent
- Pesticides
- Household Labor
- Nursery costs
- Organic certification

Farm inputs only vary slightly based on organic or non-organic farming techniques. The amount of family labor required is similar for both farms in with- and without-intervention scenarios, while the cost of fertilizer makes the physical input costs for non-organic coffee much more expensive. The physical costs of renovation for the farms that will need to replace a portion of their crop are about half of the additional labor required.

RVCP does not call for, and therefore the model assumes no, heavy equipment or on-farm construction. Neither tractors nor storage areas that would require loans, payback and a

[3] Ministerio de Agricultura, Ganadería y Alimentación. *El Agro en Cifras 2011*. 2011.
[4] Ibid.

depreciation schedule will be necessary to achieve the levels of productivity increases targeted. This in some part reflects the physical terrain of the country as farms typically are found on hillsides that would not support the use of heavy machinery. Intervention costs are borne by USAID and go to producer associations to pay for technical assistance. No loans are taken by the producers or producer associations. Farm inputs are consumed in the same season, and no machinery or other non-consumables need be depreciated in the Anacafe model.

Prices

Current data on product prices come from internal reports provided by Anacafe. Historical price data published by MAGA[5] from the previous five years were used to estimate average annual percent changes that are applied to the without-intervention scenario, and were compared to long-term price projections from the International Coffee Organization. Nominal prices are projected remain constant for coffee, while real prices would decrease for coffee. In keeping with the assumptions for wages and productivity growth, however, real prices are assumed to be stagnant over a long-term average as market factors calibrate and world demand for Robusta and Arabica coffee rise.

Wages are based on average reported labor costs in rural areas—less than the minimum daily wage. Family labor is considered an economic opportunity cost. Though family labor accounts for all labor in this model, the opportunity cost of this labor is imputed from hired labor costs. Therefore a switch to hired labor from family labor would not affect the model.

Taxes, Subsidies, Exchange Rates and Inflation

Taxes are not currently paid by producers on crop sales (see information on the new tax law on pages four and five). The producers modeled in this case are small enough to avoid taxes, and middle men or exporters generally report smaller quantities than actually purchased to compensate themselves for paying value added tax at multiple stages of the production process. As stated above, the Government of Guatemala provides a limited number of subsidized bags of fertilizer each year. Because this distortion represents a limited number of farmers receiving this small subsidy, the fertilizer scheme is not incorporated into the model. The exchange rate is applied to USAID intervention costs and to final net present value figures, and the foreign exchange premium for Guatemala was calculated to be 8 percent. USAID intervention costs are deflated by 2 percent, which is the projected average inflation rate in the US for the intervention period by the International Monetary Fund.

RESULTS OF RVCP COST BENEFIT ANALYSIS

Overview

Given the assumptions identified in the previous section, the analysis found the RVCP to have a positive financial and economic net present value over the 20 year period, and that the farmers involved will benefit substantially. The benefit to farmers is due to both the increases in prices and greater productivity enjoyed by coffee farmers with-intervention. Sensitivity analysis shows that the intervention is more sensitive to changes in coffee prices than productivity, and non-organic prices below a certain level could lead to a negative incremental NPV for the entire

[5] Ibid.

investment. The model is very sensitive to the discount rate used, as well as the assumed adoption rate by beneficiaries among other parameters.

While all farm models (organic and non-organic, with renovation and without) show a negative incremental cash flow in year 1, farms demonstrate positive incremental cash flows thereafter. Only the non-organic model farm that includes coffee plant renovations experiences an actual negative cash flow in any year—year one only. Organic and non-organic coffee with-renovation demonstrate lower incremental NPV than without renovation. While the eventual incremental returns to renovation are very high when new plants begin production, the without-renovation scenario demonstrates incremental returns much sooner. This results in a lower incremental NPV with renovation due to discounting of cash flows.

Non-organic coffee shows a higher incremental return than organic coffee due to larger potential gains in productivity during the activity. This stems from the use of fertilizer on non-organic farms. The four model farms' incremental NPV is shown in Chart 1:

Chart 1.

	NPV (in quetzales)
Organic Farms without Renovation	Q 13,000 per farm
Organic Farms with Renovation	Q 9,000 per farm
Non-organic Farms without Renovation	Q 33,000 per farm
Non-organic Farms with Renovation	Q 25,000 per farm

Including farms that will undertake renovation, the sum of all non-organic farms are projected to return an incremental NPV of Q107 million ($14 million) over the 20 year horizon. Organic farms show an incremental NPV of Q14 million ($1.8 million). These figures do not include the cost of USAID investment, however, because that cost is not available at the per-farm level. Including this cost leads to a **total incremental NPV of Q30.5 million** ($3.9 million).

Net Present Value

The model uses a standard discount rate of 12 percent to calculate the economic NPV. At this rate, the intervention's net present value is roughly Q -1.1 million. Within a range of five percent for the discount rate, the intervention's NPV changes significantly:

Project Discount Rate	NPV Organic Coffee Farm	NPV Inorganic Coffee Farm	NPV Total
8%	Q20 million	Q152 million	Q76 million
12%	**Q14 million**	**Q107 million**	**Q 30.5 million**
17%	Q9.3 million	Q73 million	Q -2.6 million

The organic and non-organic farms **do not include** RVCP project costs—only incremental cash flow on the farms. The changes due to project discount rate as shown here are dramatic, and

demonstrate that the choice of discount rate does have a significant effect on the model due to the large negative incremental cash flows during the life of the intervention.

Economic Rate of Return

While NPV serves as the ultimate barometer of intervention success in this model, it is also worthwhile to look at the economic rate of return (ERR) of the intervention. Because intervention costs cannot be divided by farm—costs are not distributed on a per household basis because household costs depend on crop, terrain, and other factors—the ERR is only calculated for the intervention as a whole. Currently, the ERR of the intervention is 16 percent, and the financial internal rate of return (IRR) is very similar at 15 percent.

Selected Sensitivity Analysis

During sensitivity analysis the key parameters affecting incremental NPV were the total area under cultivation, the total number of farmers reached, with-project price of non-organic coffee, the productivity increase in non-organic coffee, the project discount rate, and the average annual change in world coffee prices. The effects of parameters for non-organic coffee affect the model more than for organic. This results from the greater proportion of beneficiary farmers (75 percent) in non-organic coffee farming. The biggest single risk stems from the price of non-organic coffee after the intervention. Although the NPV for farmers isn't negative until prices fall to Q900 per 100 pounds of parchment coffee (which is also the current price,) the total NPV for the investment is negative at prices of Q1,100 per 100 pounds. This is just below the projected with-intervention estimation of Q1,180. At Q1,100 per 100 pounds, total NPV is over 20 times less than at Q1,180. This price is a real long-term average, but it indicates a parameter that must be monitored very closely. See Chart 2.

Chart 2.

NPV by Price of Non-Organic Coffee		
	Non-organic NPV	Total NPV
700	(83,000,000)	(160,000,000)
900	(3,700,000)	(80,600,000)
1000	36,000,000	(40,900,000)
1100	75,700,000	(1,200,000)
1180	**107,400,000**	**30,500,000**
1250	135,200,000	58,300,000

A matrix of organic and non-organic coffee prices shows that non-organic prices affect NPV more than organic. See Chart 3.

Chart 3.

Total NPV by Prices of Organic and Non-organic Parchment With-Intervention					
	950	1050	**1180**	1250	1350
900	(105,000,000)	(94,200,000)	(80,600,000)	(73,200,000)	(62,700,000)
1000	(65,000,000)	(54,500,000)	(40,900,000)	(33,500,000)	(23,000,000)
1100	(25,400,000)	(14,900,000)	(1,200,000)	6,100,000	16,600,000
1180	6,400,000	16,900,000	**30,500,000**	37,900,000	48,400,000

1300	54,000,000	64,500,000	78,100,000	85,500,000	96,000,000
1400	93,600,000	104,100,000	117,800,000	125,100,000	135,600,000

Similarly, the productivity increases expected with the intervention for non-organic coffee demonstrate a strong effect on the model; organic coffee productivity less so. See Chart 4.

Chart 4.

NPV by Average Annual Organic Yield Increase (years 2-5)				**NPV by Average Annual Non-Organic Yield Increase (years 2-5)**		
	Organic NPV	Total NPV			Non-Organic NPV	Total NPV
2.0%	7,700,000	24,300,000		7.0%	62,700,000	(14,200,000)
3.0%	12,200,000	28,700,000		9.0%	92,100,000	15,200,000
3.4%	**14,000,000**	**30,500,000**		**10.0%**	**107,400,000**	**30,500,000**
4.0%	16,700,000	33,200,000		11.0%	123,100,000	46,200,000
5.0%	21,300,000	37,900,000		13.0%	155,600,000	78,700,000

The average area cultivated by organic and non-organic farmers has a significant effect on non-organic NPV and therefore total NPV. An average area for all coffee farms under 0.55 hectares of land devoted to coffee production leads to a negative NPV for the entire project. Current estimates are that the average plot of beneficiary land will be 1 manzana or 0.7 hectares. The total number of farmers expected to be targeted under this project show similar results, and demonstrate that current targets leave this intervention with a positive NPV with significant variation depending on the parameter's value. See Chart 5.

Chart 5.

NPV by Area Under Cultivation (Hectares)				**NPV by Targeted Number of Farmers**	
	Organic NPV	Non-organic NPV	Total NPV		Total NPV
0.5	10,000,000	76,700,000	(4,200,000)	5,000	(4,200,000)
0.6	12,000,000	92,100,000	13,200,000	6,000	13,200,000
0.7	**14,000,000**	**107,400,000**	**30,500,000**	**7,000**	30,500,000
0.8	16,000,000	122,700,000	47,900,000	8,000	**47,900,000**
				9,000	65,200,000

The adoption rate of the intervention by beneficiaries has large effects on the total NPV in the model. Like all other variables noted in this sensitivity analysis, the current assumption leads to a positive NPV that is highly variable based on parameter targets. A negative NPV is only projected if the adoption rate reaches 50 percent, however, which is highly unlikely based on previous experiences with the implementing partner. The rate in the model is anticipated to be 80%, which is in line with other agriculture projects for USAID/Guatemala. See Chart 6.

Chart 6.

NPV by Adoption Rate of Targeted Beneficiaries			
	Organic NPV	Non-organic NPV	Total NPV

50%	8,700,000	67,100,000	(15,000,000)
60%	10,500,000	80,600,000	200,000
70%	12,200,000	94,000,000	15,300,000
80%	**14,000,000**	**107,400,000**	**30,500,000**
90%	15,700,000	120,800,000	45,700,000
100%	17,400,000	134,300,000	60,900,000

Some of these parameters will need to be monitored closely because of their potential effects on the project.

CONCLUSIONS

Overall this intervention shows a positive financial and economic total net present value, although it appears sensitive to several of the targets set by the project. The net present value to farmers (not including the funds spent by USAID), however, demonstrates very positive results. The price of coffee and the production gains achieved with the project will have large impacts on the incremental NPVs of the project. These factors are more important for non-organic coffee than for organic, but only because a larger share of the overall farms are expected to be working with non-organic coffee. If the situation were reversed and the project were to work with 75 percent organic farms, these factors would be more important for organic coffee.

The model also shows that non-organic coffee has higher economic and financial returns than organic coffee because of the increased productivity that can be achieved with the proper use of fertilizers. The model assumes the potential prices of organic and non-organic coffee with the intervention are roughly the same, but the starting prices are slightly different. According to discussions with Anacafe the price differential for organic coffee is not much different than for non-organic. The benefit of organic, however, is that if the price of coffee falls, the price of organic does not fall below a certain price floor, while the price of non-organic coffee has a greater chance of falling more precipitously. Given the tradeoffs associated with non-organic versus organic coffee, the 75/25 percent non-organic to organic division that RVCP is taking seems appropriate.

Several additions to the CBA model will be made as the project progresses, including adding project components V and VI for the development of additional value chains in horticulture and handicrafts. What would benefit the model most at the current time would be a sense of the funds flowing into and out of the producer associations for salaries, working capital and receipts from buyers. The associations are the entities directly receiving the project funding. The addition of a component for the producer groups would allow the model to directly demonstrate the linkages between the USAID funds and the beneficiaries, and potentially allow for NPV and ERR calculations per farm that include USAID investment costs and not only farmer costs. USAID/Guatemala will work with Anacafe to incorporate these additions at regular intervals throughout the project.

Annex 1.

The Thirty Municipalities included in the Feed the Future zone of influence
Estimates of Population and the Incidence of Poverty, 2011

Department and Municipality	Population	Extreme poverty (%)	Poverty (%)	Not in poverty (%)
San Marcos - Total	1,020,00	15.2%	53.4%	31.5%
Nuevo Progreso	36,000	13.8%	61.2%	25.1%
El Rodeo	17,000	12.6%	56.9%	30.5%
San Lorenzo	12,000	7.3%	56.2%	36.5%
San Miguel Ixtahuacán	36,000	52.5%	22.7%	24.8%
San Pablo	51,000	16.0%	56.7%	27.3%
San Rafael Pie de la Cuesta	16,000	3.0%	50.6%	46.5%
Sibinal	16,000	23.1%	54.1%	22.8%
Tajumulco	55,000	23.0%	46.7%	30.3%
Subtotal – 8 Municipalities	**238,000**	**24.2%**	**47.8%**	**28.0%**
Huehuetenango - Total	1,140,000	9.6%	50.9%	39.5%
Jacaltenango	44,000	15.9%	51.5%	32.6%
Chiantla	90,000	17.6%	49.0%	33.4%
San Sebastián	29,000	6.6%	60.1%	33.3%
Todos Santos	34,000	8.1%	60.3%	31.6%
Santa Cruz Barillas	134,000	26.0%	38.9%	35.1%
Cuilco	58,000	13.2%	52.9%	33.9%
Concepción Huista	19,000	11.5%	56.0%	32.5%
San Antonio Huista	18,000	2.5%	33.6%	63.9%
La Libertad	37,000	9.8%	58.8%	31.5%
La Democracia	44,000	13.0%	53.7%	33.4%
Subtotal – 10 Municipalities	**506,000**	**16.2%**	**49.2%**	**34.6%**
TOTAL – 18 Municipalities	**752,000**	**19.4%**	**48.5%**	**32.1%**

Source, INE