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Interpreting and Using CBA Indicators in the M & E Framework for REAP

USAID/ RESTORING EFFICIENCY TO
AGRICULTURAL PRODUCTION



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DISCLAIMER

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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INTRODUCTION

Within the framework of the USAID Restoring Efficiency to Agriculture Production (REAP) Activity, CNFA has to include the development and maintenance of cost-benefit analyses (CBA) as a regular analytical instrument to track the progress of program activities, including grantees in order to provide support for informed judgment and decision making.

The USAID REAP project implemented by CNFA aims at increasing incomes and employment in rural areas by delivering firm-level investment and technical assistance to agribusiness enterprises that provide inputs, services, training and commercial markets to smallholders.

REAP will catalyze increased private investment and commercial finance to the sector, mitigate risk for rural SMEs and entrepreneurs, and expand commercially sustainable linkages between service providers, producers, post-harvest enterprises and local consulting firms. By delivering 120 matching grants worth \$6 million, REAP will also provide technical assistance to at least 700 grantee and non-grantee enterprises, impacting at least 150,000 individuals, including 37,500 women. SMEs assisted by REAP will generate at least 750 new rural jobs, \$15 million in sales of inputs and services to 135,000 smallholders, and new cash markets worth \$10 million for 2,500 producers.

To measure and improve performance, CBA should provide evidence-based project by project targets, where these targets can be incorporated into REAP's Performance Monitoring Plan (PMP) to guide project implementation.

Objective of this report

This report builds on the analysis of a previous report submitted to USAID in April, 2014 and subsequently approved that examined the integration of CBA (Cost Benefit Analysis) indicators in the M & E (Monitoring & Evaluation) framework for REAP.

The objective of this report is to examine the interpretation and use of CBA indicators in the M & E framework. We discuss the data requirements for the different types of projects, and present some preliminary guidelines on the use of CBA indicators for assessing and improving the effectiveness of the projects in the REAP portfolio. In particular, we discuss the collection of monetary measures of economic gains or losses to the stakeholders in the different categories of projects.

In this assignment, the consultant visited six project sites. The number of projects that we visited and analyzed are as follows:

- Primary production: one project
- Farm and Machinery service centers: two projects
- Processing: two projects
- Information and Service provider : one project

The information from the visits to the project sites and the mini-survey that was administered to REAP grantees will be used to assess the quality, relevance and usefulness of the CBA

indicators. At the time of the publication of this report, we have not had time to tabulate and analyze the data from the mini-surveys. Copies of the completed mini-surveys are available with the REAP M&E Manager.

OUTLINE OF THE REPORT

In **Section One**, we briefly review and discuss the data requirements for the financial and economic analyses that are included in CBA.

In **Section Two**, we discuss the use of the representative projects that will be derived from the subsets of projects.

In **Section Three**, we discuss how the economic analysis can be used to assess the effectiveness of the projects in the REAP portfolio.

In **Section Four**, we present the main conclusions and recommendations.

In **Appendix A**, we briefly discuss some conceptual issues that are relevant for the financial and economic analyses of the projects.

In **Appendix B**, we provide brief summaries on the characteristics of the six projects that we visited.

In **Appendix C**, we present a set of summary tables that may be relevant in the writing of the final narrative.

In **Appendix D**, we list the trip itinerary

As a further addendum to this report, we include the template of the mini-survey that was administered to REAP grantees as a reference.

SECTION ONE: DATA REQUIREMENTS FOR CBA INDICATORS

In this section, we briefly review and discuss the data requirements for the CBA indicators with respect to the projects in the four categories: primary production, service center, processing, and information center.

We examine the relevant information that is presented in the project reports, and discuss the data gaps that may exist in the available information. Some of the required information will be provided by the grantee (recipient of the REAP-funds) or the grantee will assist and facilitate the collection of the necessary information. The remaining required information may be collected with annual mini-surveys, focus groups, personal interviews and larger surveys.

Much of the information for the financial analyses for the projects can be obtained from the project proposals. Where available, the project proposals contain information from two years of historical financial statements, and quarterly projections of the financial statements for three future years. The indicators in the financial projections include gross margin and net income.

Previously, we had developed an EXCEL spreadsheet template for analyzing the projects. We have used this template to construct the financial cash flows for four projects: one primary production, two farm service centers, and one processing. Currently, a multi-criteria scoring protocol is used in the selection of the projects for REAP funding, and CBA is not included in the protocol for the selection process. The preliminary results suggests that the projects are financially viable, as measured by the Financial Net Present Value (FNPV), and the Financial Internal Rate of Return (FIRR).

We build on these models by adding the relevant economic parameters in order to estimate the economic and social impacts of the projects. For example, we will collect information on the net income of the direct beneficiaries of the REAP grantees, and use the net income as a measure of the economic benefits for the project.

In Appendix A, we briefly discuss some conceptual issues that are relevant for the financial and economic analyses of the projects.

In the REAP Results Framework, the overall REAP objective is to increase the employment and income of rural households.

Employment: Number of jobs attributed to the REAP project

For all of the funded projects, we estimate the number and income of the jobs that are attributed to the REAP project. Wherever relevant, we have to distinguish between the jobs that are created by the grantee (recipient of the REAP co-share funds), and the jobs that are created in the area due to the activities of the grantee.

In primary production and processing projects, the employment of new workers may be seasonal. For example, workers may collect wild apples full time for three months in a year. Four seasonal workers, working for three months per year would be equivalent to one full-time worker. For projects with seasonal workers, we have to calculate the number of full-time equivalent seasonal workers and the corresponding wages.

- Number of seasonal workers, full time equivalent (FTE)
- ✓ Annual wage for seasonal worker, full time income equivalent (FTIE)

Employment of family labor

In a few projects, such as primary production, the family may use family labor. In this case, we would have to estimate the opportunity cost of the family labor, and include this cost in the project analysis.

Improved agricultural productivity

Next, we discuss the linkage between agricultural productivity and increase in income. In theory, the increase in net income results from the increase in agricultural productivity, as measured by the percentage increase in yields. However, in some cases, the indicators may suggest that the causal link is not strong, and this means that there should be further analysis on understanding the nature of the causal relationships between agricultural productivity, yield and income.

The CBA indicators monetize the net income of the households across the different types of employments that are generated by the different types of projects that REAP funds.

Through the REAP project, the farmers in the regions will receive new seeds and training through supported FSCs in management approaches and technologies that will increase agricultural productivity. The main indicator for the increase in productivity is the annual percentage increase in the average crop yields of the targeted agricultural products as a result of REAP assistance.

To measure the economic gains, we measure the gross margins and the net incomes for the grant recipients and the clients and farmers of the grant recipients. We will be able to obtain information on the gross margins and net income of the REAP grantees. However, depending on the project, it may not be easy to obtain reliable information on the gross margins and net incomes for the direct beneficiaries of the REAP project.

On the benefit side, we have to value the annual increases in the yields of the targeted crops, which are the main sources of the economic benefits that accrue to the beneficiaries. There are other potential economic benefits that may not be included in the yield calculations and it may be difficult to estimate the monetary values of these other factors.

- Nutritional content: the higher nutritional content of the crops may generate benefits for the consumers.
- Climate resilient seeds: Climate resilient seeds may reduce the variability in the annual yields.
- Pest, soil and water management: Improvements in pest, soil and water management may have some positive externalities that may be difficult to measure and value.

Also, on the benefit side, there may be time savings and cost savings in terms of input costs from the new technologies. In principle, these benefits should be captured in the measures of net income but most likely, they are not.

On the other hand, there may be additional costs for the new technologies that we have to take into account, such as the higher costs of the seeds and fertilizer. Again, these costs should be captured in the calculation of the net income.

In addition, the introduction of new (labor-saving) machinery and technologies could lead (potentially) to decreases in employment of semi-skilled and unskilled persons. It may be difficult to estimate these impacts.

Investment and technical assistance and training in REAP

In REAP, there are two components. Component One provides grant assistance to the selected projects, and Component Two provides training and technical assistance. REAP provides demand driven technical assistance to farmers and non-grant recipient SMEs in the agricultural sector to improve their management and operations. In addition, the grantees will develop demonstration sites, and provide training and information sessions to the clients and beneficiaries.

The activities in both components of REAP are designed to achieve the overall objective of REAP. The linkage from increased productivity, as measured by increased yields, to the increase in net income may not be as straightforward as it is stated here.

Multiple objectives and causal linkages

There are multiple objectives and these objectives are linked to multiple activities. Thus, it is not easy to separately relate each of the activities to the objectives with causal linkages.

A simple example may illustrate this point. Consider the following M & E indicator:

“% increase in average crop yields of targeted agricultural products as a result of USG/REAP assistance”

For this indicator, we can calculate two corresponding CBA indicators. One would be the value of the increase in the crop yield and the other would be the increase in net income that results from the increase in the crop yield.

Activities in both component one and two contribute to the increase in yield. In other words, together the new investment from component one and the technical training and assistance in component two lead to the increase in yield. It would be difficult to estimate the proportion of the increase in yield that is due to the training, and the proportion that is due to the new investment or management approaches.

In addition, for a variety of reasons, such as weather, price and marketing opportunities, the increase in yield may not necessarily lead to an increase in net income. Thus, it is important to measure both the % increase in yield and the increase in net income (relative to the net income in the region.)

From the financial point of view, the grantee and the farmer do not incur the costs of the technical assistance and training. However, in the economic analysis, we must recognize the cost of the REAP technical assistance and training in increasing the yields of the farmers.

Below, we discuss the specific data requirements in each of the project categories, based on the experience in the field with the mini-surveys.

Primary production

The direct beneficiaries in primary production are the farmers who will buy outputs (rootstock), and the buyers (retailers and wholesalers) of the fruits and honey.

In the economic analysis, we have to collect information on the net economic benefit to the direct beneficiaries of our grantee. For the farmer who buys the new rootstock, the net economic benefit consists of the increase in the net income from the new rootstock.

For the other beneficiaries, such as the retailers and wholesalers, we can estimate the difference between the price that they can charge for the new apples or honey, compared to what they charged before.

The grantee also provides training and information on the new technologies and products to farmers. We have to estimate the percentage of these farmers who will buy the new products and adopt the new technologies.

The costs of providing the training and information has to be included in the economic analysis.

We interviewed a few farmers, and they did not have knowledge and experience about the benefits of the new rootstock and the new technologies. The project will be providing training workshops and information sessions on the advantages of the new outputs and new technologies.

In the next mini-survey, we have to ensure that the farmers are familiar with the questions on the mini-survey and are able to answer the questions on the benefits of the new outputs and technologies that are provided by REAP.

Farm service center

For the farm service centers, the direct beneficiaries are the new farmers who buy the new products and services, and adopt the new technologies offered by the service centers. For a typical farmer, the economic benefit consists of the increase in the net income. It may be difficult to obtain accurate information on the net income. Alternatively, we will collect information on the additional revenues that the farmer receives and the additional costs that the farmer incurs to estimate the net income.

The grantee will develop demonstration plots to provide information and training to the farmers. In addition, at the request of the grantee, REAP will finance technical training for capacity development. We have to estimate the number of farmers will buy the new products and adopt the new technologies. The economic benefit of the training consists of the net income of the farmers that buy the new products and adopt the new technologies.

In the economic analysis, we have to include the cost of the technical assistance and training that is provided by the grantee and REAP.

At each of the farm service centers, there were around fifteen clients (or farmers) who have purchased products or used the services of the center. In the discussion, many of the farmers were aware of the benefits of the new seeds and technologies. We have not tabulated the data from the survey.

Processing project

The direct beneficiaries are the buyers (retailers and wholesalers) of the processed outputs, namely fruits and herbs. We have to estimate the net gain to the buyers from purchasing from the project.

For the processing projects, we have to estimate the increase in the net income of the collectors (suppliers) who supply the wild fruits and herbs to the project. In most cases, for a collector, the net income will be the increase in the revenues received by the collector. In other cases, the net revenues may have to be adjusted by gains or losses in transportation costs or other costs.

If the processing center provides any training or technical assistance to the collectors, or trains staff in processing, then these costs should be included in the economic analysis.

At one of the processing centers, we did not meet any collectors (or suppliers) to the project due to the seasonal nature of the inputs to be collected. At the other center, there were twelve collectors of wild fruits and apples. We have not tabulated the data from the survey.

Information and Service providers

The direct beneficiaries of the information and service providers are the farmers who will use the testing services offered. The farmers will pay for the testing services (soil tests, and pest management, and product testing) if there are increases in the yields. We have to estimate the net gain to the farmer from using these services.

We did not meet any farmers at the information and testing center. Farmers and other potential clients will start using the services in a few months.

After we have tabulated and analyzed the information from the mini-surveys, we will be able to assess the quality of the information. Then we can review and revise the mini-surveys to improve the quality of the information that is collected. In the future mini-surveys, we have to ensure that the respondents are representative of the direct beneficiaries of the REAP grantees.

Sample sizes for mini-surveys

To obtain the necessary information from the direct beneficiaries, for each type of project, there should be at least 30 (representative) respondents that provide reliable and relevant data on the indicators. The survey instrument may be sent ahead of time to ensure that reliable information is obtained. I think we should highlight the fact that this sampling size is recommended taking into consideration the in-house capacity of REAP. If more in-depth and wider beneficiary survey will be required, additional (outsourcing) resources should be used to fulfill that task.

SECTION TWO: REPRESENTATIVE REAP PROJECTS

In this section, we discuss how the information on CBA indicators from the subset of projects can be aggregated and used to produce a representative profile that will enable an assessment of the overall impact of the portfolio of projects in REAP.

First, we briefly describe the characteristics of the projects. The discussion in this section is based on the material in Appendix B.

Number of projects in each category

Currently, the number of projects in each category is small, and thus the extrapolation of the impacts primary production, for example, needs to be made with caution. However, in the future, there will be more projects in each category, and then it will be easier to construct the profiles for the projects. Based on the profiles of the projects in the different categories, we can estimate the overall impacts of all the projects in the REAP portfolio.

The aggregation depends on the degree of similarity in the projects within one category. For example, if in the processing category, there are many different types of projects, then the construction of the profile, and the aggregation and extrapolation will be more difficult and imprecise. For example, the characteristics and profile of a juice processing project will be quite different from that of a project for processing herbs.

The extrapolation from the sample projects to the other projects in the portfolio will require some judgment on the dimensions on which the projects will be compared on a proportional basis. For the profile, the easiest dimensions are probably the size of the total investment, or total annual revenues.

Category one: Primary production

We examined only one project in primary production. We would need to examine more projects in primary production before we can describe the characteristics of primary production.

Investment

The amount of REAP co-share for a project in primary production is limited to \$10,000. Thus, the investment that is required for a project in primary production is probably much less than a project in processing or a farm service center. In this case, the REAP contribution is \$9,700, and the total investment is \$38,000.. The Gross Incremental Sale in year 1 is GEL 47,700.

Employment

In terms of employment, the jobs created are seasonal in nature, and unskilled/semi-skilled. The wages are low (300 GEL per month) and may employ mostly women. In this case, there are 6 new jobs and 4 of them are for women.

Beneficiaries

The number of direct beneficiaries is 390 unique farmers.

Category two: farm and machinery service center

We examined two projects in this category. Even though both projects are in category two, they are different in many ways.

Investment

Not surprisingly, the total investment for a farm service center is approximately ten times the amount for the project in primary production.

Employment

One project will employ 5 new persons and the other will employ 10. The average monthly wage in the first project is higher than in the second project. The jobs are full-time and one-third of them are for women. The jobs are professional, skilled and unskilled.

Beneficiaries

Compared to the project in primary production, the number of beneficiaries is much higher.

Category Three: Post Harvest Handling and Processing

We examined two projects in this category.

Investment

The investment cost for a project in this category is slightly less than the cost for a farm service center.

Employment

One project will employ 10 new persons while the other will employ 14. The full-time jobs range from professional to skilled and unskilled.

Beneficiaries

In both projects, the direct beneficiaries are collectors and poor farmers who can supplement their income with seasonal work in collecting fruits and herbs.

Category four: Information and Service Providers

We examined only one project in this category. It is unlikely that there will be many funded projects in this category.

Investment

The total investment cost is more than the cost for primary production and about 40% of the cost for a farm service center or processing project.

Employment

This project creates 17 new jobs of which 12 are for women.

Beneficiaries

The number of beneficiaries is small and consists of mostly small farmers.

Based on the above description, we can make some tentative statements about the projects in the different categories along the dimensions of investment, employment and beneficiaries.

Investment

We know that the total investment required for a project in the farm service category or the processing category is higher than the amount required for primary production. For example, the amount of REAP co-sharing funds for one farm service project may be able to support ten projects in primary production. The decision to select one farm service project versus ten primary production projects **cannot** be based on the amount of investment alone.

Employment

In terms of the number of jobs, a processing project may create more jobs than a project in one of the other three categories. However, an information and testing center may create jobs that are professional or semi-skilled.

Beneficiaries

The number of beneficiaries vary across the four categories of projects. Given the diversity of beneficiaries, it is difficult to compare the relative importance of the number of beneficiaries across the projects.

We illustrate the aggregation calculation for projects in the farm service center. Based on an analysis of a subset of projects in the farm service center, we estimate that a typical farm service center with a total investment cost of \$300,000 generates 10 jobs with an average monthly wage of GEL 600. For the grantee, the annual sales are \$1,000,000, the gross margins are 20%, and the net profit is 11%. In addition, we may have information on the annual net income for a typical direct beneficiary.

Using the characteristics of this profile, we can estimate the number of jobs, the average wages and net profit for projects in the REAP portfolio that have similar characteristics. The quality of these estimates will depend on the number of projects and the similarity of the projects in the subset of projects for farm service centers.

SECTION THREE: CONCLUSIONS AND RECOMMENDATIONS

Based on the experience with the mini-surveys that were conducted in the visits to the six project sites, we conclude that more effort will be needed to collect the necessary information for estimating the values of the economic impacts that are attributable to the REAP funded projects.

Recommendations

- From round two, selected representative projects should be collected and analyzed using the EXCEL template, similar to the process which was conducted with round 1 projects
- Based on the quality of the data and information from the mini-surveys, we should revise and improve the mini-surveys in order to obtain higher quality and relevant information.
- Conduct regular mini-surveys to collect reliable data on relevant CBA indicators to estimate the economic and social impacts of the projects. For each type of project, the number of respondents should be 2530
- Data on the net income of the direct beneficiaries of the projects and other relevant economic and social indicators of the projects will be used to calculate the economic and social impacts of the projects, and the Economic Net Present Value (ENPV) and Economic Internal Rate of Return (EIRR) for the subset of projects in the different categories.
- REAP may determine that within its current staff resources, it will be useful to implement other data collection activities to add depth to the mini-surveys now conducted.

APPENDIX A: FINANCIAL AND ECONOMIC ANALYSIS

Below, we briefly discuss some conceptual issues that are relevant for the financial and economic analyses of the projects. The economic analysis is built on the financial analysis. Thus, it is important to understand the relationship between the two analyses.

In the REAP portfolio, there are two types of projects: new enterprises (or projects) and existing enterprises (or projects).

For existing projects, REAP is giving a grant to the project to purchase **new** equipment and **new** technical assistance and training on new products and technologies. Thus, we have to estimate the additional benefits from the increases in agricultural productivity that are attributable to the REAP grant.

New projects

It is easier to analyze new projects. For example, we may be establishing a new Farm Service Center (FSC) or a new information and testing center. In these cases, we simply construct the expected financial and economic profiles over the life of the project. For each of the line items in the financial analysis, we estimate the corresponding economic values.

Incremental analysis for existing projects

For existing projects, the analysis requires extra steps. The analysis has to be incremental. First, we have to construct the financial and economic profiles for the existing project. Second, we have to construct the financial and economic profiles for the new proposed project that builds on the existing project. We call this the “existing + new” project. Third, we have to estimate the differences between these profiles so that we can obtain the **incremental** financial profile and the **incremental** economic profile.

Economic valuation

For the economic valuation, we have to estimate the consumer surplus of the clients (farmers) who purchase the outputs, or services that are provided by the FSC or the testing center. The consumer surplus for a product or service equals the difference between the Willingness To Pay (WTP) of the consumer and the price. Since the FSC may offer a wide range of products and services, it is impractical to estimate the consumer surplus for each product or service or combinations of product and services.

Alternatively, to estimate the benefits to the farmers (consumers of the products or services), we measure the increase in the net income that they obtain from the increase in agricultural productivity (increase in yields) from using the new products (seeds, pesticides and fertilizers) and new technologies (farm services and management techniques). It would not make sense for farmers to purchase the new products and adopt the technologies if they do not realize any net benefits.

From a conceptual (and theoretical) point of view, the implementation of the new products and technologies should lead to increases in yields, which in turn lead to increases in net income (or

net gains) to the farmers. However, in practice, the causal linkages between yield and net gains may not be straightforward, and many intermediate factors could be responsible. For example, a farmer may realize the increase in net income if she is able to supply the extra production from the higher yields to a fruit processing plant. However, if there is no convenient fruit processing plant in the area, then the increase in yield may not necessarily translate to an increase in net income.

Inclusion of training costs in the economic analysis

As mentioned earlier, REAP provides funds for technical assistance and training. REAP may provide funds for information workshops, and promotional and marketing materials for the new seeds and technologies and management techniques. These costs will not be included in the financial analysis; however they have to be included in the economic analysis.

Positive and negative externalities from the new products and technologies

The economic analysis should take into account the positive and negative externalities from the new products and technologies. These values of these impacts may not be captured in the net incomes of the farmers.

Positive externalities

For the farmers, there could be valuable time savings from the adoption of new irrigation techniques and technologies.

Negative externalities

At the same time, loss in employment and jobs may result from the increased mechanization.

Interpretation of preliminary analysis

The results of some preliminary analysis of the sampled projects from round one suggest that the projects are financially viable. These results are tentative, and we have to review the assumptions to ensure that they are robust.

Farm Service Center (FSC)

For example, the nominal Financial Internal Rate of Return (FIRR) for one Farm Service Center (FSC) is around 30%. If we assume an expected inflation rate of 5%, it implies that the real rate of return is approximately 25%. Informal inquiries suggest that such a high rate of return may be plausible.

If the result is plausible, then we have to understand the reasons for such a high rate of return. There are several explanations. First, the investment in this sector may be very risky. In other words, the high rate of return is simply the compensation to the investor for the high risk. Second, it may be the case that the sector is protected and non-competitive. In other words, there are barriers to entry and it is not easy for competitors to enter the market. Third, the high return may depend on the composition of the products and services that are provided by the enterprise. For example, enterprises that sell fertilizers and pesticides are more profitable than enterprises that sell only seeds and farm services. Fourth, this FSC may be in a good location and particularly well-managed, and may have above average returns.

Processing project for wild fruits and herbs

We have also examined some projects for wild fruits and herbs. We have to measure the social impacts of such projects.

Criterion for co-share

This only suggests that our financial analyses can be used in the future to conduct ex-ante light CBA for other rounds? That would be useful but not within the REAP's current capacity. Do we need to keep it? I think as far as we are clear that we will not conduct any ex-ante CBA analyses what so ever within REAP, this paragraph can be avoided. Any other ideas?

In fact would be helpful if we state that in most cases only highly profitable enterprises are able to commit 70% co-share and for them our project is more compelling and affordable than for smaller and less developed companies. Same applies to start ups with enough cash investment capacity.

This also can be used ONLY in case of ex-ante light CBA I think. In the future if we are not going to do so than we don't need to keep this paragraph I think.

Constructing the economic analysis from the financial analysis for an existing project

In this section, we briefly discuss how we construct the incremental analysis, based on the economic and financial profiles. As mentioned earlier, to go from the financial profile to the economic profile we have to find the economic values for the corresponding financial values.

To obtain the **incremental** financial cash flow profile, we subtract the financial cash flow profile for the existing project from the financial cash flow profile for the "existing + new" project.

Similarly, to obtain the **incremental** economic cash flow profile, we subtract the economic cash flow profile for the **existing** project from the economic cash flow profile for the "**existing + new**" project.

Economic Internal Rate of Return (EIRR) of the incremental economic cash flow profile

Again, yes we are going to do incremental economic cash flow profile but NOT for the selection purposes. This analyses will help us to see the scenarios with and without REAP.

APPENDIX B: CBA INDICATORS AND CHARACTERISTICS OF THE SELECTED PROJECTS IN ROUND ONE

Below, for each of the four categories of project, we briefly examine the use of the CBA indicators for employment and income.

CATEGORY ONE

Primary production (IE Giorgi Tediashvili)

Compared to the projects in the other categories, for a primary production project, the amount of the new investment is relatively small (approximately \$40,000), and the co-share amount of 30% from REAP will be correspondingly small.

Since the project is small, it will be difficult (and expensive) to collect information on the monetary values that correspond to the CBA and M & E indicators.

The increase in employment is mostly unskilled seasonal work, and the net income will be the net income to the grantee.

The new rootstock that is produced and sold by the grantee will generate income for the farmers. However, it may be difficult to collect information on the net income for the small farmers.

The training provided by the grantee to the local farmers has monetary value but it will be difficult to measure this value.

Employment: Number of new jobs created

The new jobs consist of five seasonal workers, and one guard. Of the five seasonal workers, four are women. The seasonal workers are hired only for 2 or 3 months. The monthly wage is GEL 300 per month. In terms of full time employment on an annual basis, the new employment would be equivalent to 1.0 or 1.5 jobs.

The project is a family enterprise, and the owners of the business will receive the increase in the net income that is generated by the new investment.

Gross incremental sales and net income of the grantee

REAP will collect information on the gross incremental sales and on the net income of the grantee. The gross incremental sales is approximately GEL 48,000 per year. The annual net income will be a measure of the financial benefit to the grantee from the project.

Number of farmers utilizing or supplying primary agricultural products

Each year, a small number of farmers (5 to 12) will be utilizing or supplying agricultural products. It will be difficult to collect information on the net income to these farmers.

Number of individuals who have received short-term agricultural training

Every year, individuals will receive information on new technologies. It will be difficult to estimate the monetary value of this training. However we will try to get the responses from field surveys on estimated prices farmers would pay for the similar trainings.

Number of distinct clients who purchase products or services from USG assisted MSMEs

The direct beneficiaries are farmers who purchase plants, and retailers and wholesalers who purchase the apples and honey. It may be possible to collect information on the net gain that accrues to the clients, such as retailers or wholesalers, who purchase products or services from USG assisted MSMEs. Some of these clients may purchase the products to produce outputs for household consumption.

Number of hectares under improved technologies or management practices as a result of REAP assistance (ha)

Over three years, the total number of hectares under new technologies will be 34 hectares. It may be difficult to collect information on the net income that is generated by the number of hectares under improved technologies by the farmers that adopt the new technologies. Some of the net income from the improved technologies will be included in the net income that the grantee receives from the new investment.

Value of primary agricultural products supplied to MSME

In year 1, the value of the primary agricultural products supplied is GEL 7,130, and in years 2 and 3, the values are GEL 8,930 and GEL 10,730 respectively. It will be difficult to collect information on the net income that is generated by the value of the primary agricultural products supplied to MSME.

CATEGORY TWO**Farm and Machinery service centers: Alva LLC and Agrokartli Ltd**

We visited two farm and machinery service centers. REAP will provide \$143,000 and \$134,000, respectively, to the two service centers.

Employment: number of new jobs created

The service centers will create 10 and 5 new jobs, respectively. There is a mix of jobs, from professional to unskilled. Based on the monthly wage, we can calculate the total value of the annual wages for men and women from the jobs generated by the project. Half to one-third of the jobs will be for women.

Gross incremental sales and net incomes of the grantees

REAP will collect information on the gross incremental sales and on the net incomes of the grantees. Over three years, the total Gross Incremental Sales for Alva and Agrokartli are GEL 400,000 and GEL 3,000,000, respectively. The annual net incomes will be measures of the financial benefits to the grantees from the project.

%increase in average crop yields of targeted agricultural products as a result of USG/REAP assistance

The percent increase in average crop yields range from 15% in year 1 to 7% in year 3.

Direct beneficiaries

The number of direct beneficiaries (in terms of number of farmers) for Alva and Agrokartli are 5,000 and 25,000 (after final verification with the grantee), respectively. Information on the gross profit margin for the farmers will be collected from a mini-survey.

Training and technical assistance

The service centers will also provide training and technical assistance to 1,500 clients each FSC, who purchase products and services from the service centers. Information on the value of the training and technical assistance will be collected from a mini-survey. Some of the benefits from the training and technical assistance will be included in the net income of the clients (farmers) who buy the net products or adopt the new technologies.

Indirect beneficiaries

Over three years, a total of 15,000 households will benefit from the output of the direct beneficiaries. It will be difficult to estimate the monetary value of these indirect benefits.

CATEGORY THREE

Post-harvest and processing facilities: Farkoni and Geoflower

We visited two of these projects. The REAP contributions for Farkoni and Geoflower are \$140,000 and \$112,493, respectively.

Employment: number of new jobs created

Farkoni will create 10 new jobs, and Geoflower will create 14 new jobs. Approximately half of the jobs will be for women. For Farkoni, the average monthly wage is GEL 250, whereas for Geoflower, the average monthly wage is GEL 500.

Gross incremental sales and net income of the grantee

Over three years, the total gross incremental sales for Farkoni and Geoflower are GEL 300,000 and GEL 550,000, respectively.

Direct beneficiaries

For Farkoni, the direct beneficiaries are the 330 collectors of wild fruits and herbs, and the buyers of the output produced. Similarly, for Geoflower, the direct beneficiaries are 122 collectors and the buyers of the output produced. On average a collector for Geoflower earns GEL 35 per day, on a seasonal basis for three months.

CATEGORY FOUR

Information and support service providers: Agropharm Ltd

The project will provide the following services: soil analysis, pest identification and agricultural product analysis. The REAP contribution for this project is \$64,000.

Employment: Number of new jobs created

The project is expected to create 17 new jobs, of which 12 will be held by women. The average monthly wage for the jobs is GEL 440.

Gross incremental sales and net income of the grantee

In year 1, the Gross Incremental Sales is expected to be GEL 126,000. Information on net income will be obtained from the grantee.

Number of individuals who have received short-term agricultural training

Over three years, approximately 3,000 persons will receive short-term training. It will be difficult to estimate the value of the short-term training.

Number of hectares under improved technologies or management practice as a result of REAP assistance (ha)

Over three years, a total of 1,430 hectares will be using improved technologies or management practices.

Direct beneficiaries

The direct beneficiaries are the 3,000 farmers who will be purchasing the testing services from the company. Information on the net income for the farmers will be collected from a mini-survey.

Indirect beneficiaries

The indirect beneficiaries are the people who benefit from the increase in food safety from the testing services. For example, there may be reduced incidence of illnesses. However, it may be difficult to obtain this information.

APPENDIX C: SUGGESTED SUMMARY TABLES FOR FUTURE REPORTING

Below we present a set of suggested summary tables that illustrate the results and analyses that will be derived from the economic analyses of the projects, and could be used for future reporting.

With co-sharing investment funds, subsidized financing, and technical assistance and training, the implementation of the REAP projects creates new jobs and increases the net incomes of the grantees and the direct beneficiaries.

Background on the REAP-funded projects

The following table shows some information on the REAP-funded projects in each of the four categories.

Results for REAP-funded projects in each category

	Number of projects	Total value of co-share funds	Average co-share funds per project
Primary production			
Farm service			
Processing			
Information			

Employment

In line with the overall REAP objective, we measure the number of jobs created in REAP-funded projects in each category.

Wages

In addition, as we present and discuss below, REAP monitors and estimates the average wages for the jobs created.

Number of jobs created and average wage in REAP-funded projects in each category

	Number of jobs	Average wage
Primary production		
Farm service		

Processing		
Information		

Net income

In addition to the job created and the wages, we also monitor the percentage increase in net income and the increase in net income (GEL) of the grantees and the direct beneficiaries of the project.

Percent increase in net income in REAP-funded projects in each category

	Grantee	Typical direct beneficiary
Primary production		
Farm service		
Processing		
Information		

Increase in net income (GEL) in REAP-funded projects in each category

	Grantee	Typical direct beneficiary
Primary production		
Farm service		
Processing		
Information		

Additional indicators on the REAP-funded projects

The following table shows values for additional indicators on the REAP-funded projects in each of the four categories.

Results for REAP-funded projects in each category

	Average % increase in yield	Average gross margin	Gross incremental sales	Number of hectares under improved technologies
Primary production				
Farm service				
Processing				

Information				
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Results for a subset of REAP-funded projects in each category

	Financial Net Present Value (FNPV)	Financial Internal Rate of Return (FIRR)	Economic Net Present Value (ENPV)	Economic Internal Rate of Return (EIRR)
Primary production				
Farm service				
Processing				
Information				

Based on the results of the subset of REAP-funded projects, we can extrapolate (judiciously) to the whole portfolio of REAP-funded projects.

Results for the portfolio of REAP-funded projects

	Financial Net Present Value (FNPV)	Financial Internal Rate of Return (FIRR)	Economic Net Present Value (ENPV)	Economic Internal Rate of Return (EIRR)
Primary production				
Farm service				
Processing				
Information				

APPENDIX D: TRIP ITINERARY

Schedule of Field Visits, 8-11 July, 2014				
Date	Timing	Organization	Person (s)	Venue
8-Jul	11:00 AM	Agro Kartli, FSC/MSC	Valeri Gulbani (M&E Manager) Joseph Tham (CBA expert) Georgi Simonishvili (Grantee) Mini survey participant farmers (25 persons)	Shida Kartli, Gori
	4:00 PM	I/E Tediashvili ,PP	Valeri Gulbani (M&E Manager) Joseph Tham (CBA expert) Giorgi Tediashvili Mini survey participant farmers (23 persons)	Shida, Kartli, Kareli (Breti)
9-Jul	10:00 AM	LTD "ALVA", FSC/MSC	Valeri Gulbani (M&E Manager) Joseph Tham (CBA expert) Iza Kampladze (Grantee) Mini survey participant farmers (26 persons)	Imereti, Sachkhere
10-Jul	10:00 AM	LTD "Farkoni", SMEPHP	Valeri Gulbani (M&E Manager) Joseph Tham (CBA expert) Mamuka Alfaidze (Grantee) Mini survey participant farmers (30-35 persons) has been planned for September-October	Imereti, Kutaisi
	3:00 PM	"Agropharm +", ISP	Valeri Gulbani (M&E Manager) Joseph Tham (CBA expert) Andro Khetereli (Grantee) Mini survey participant farmers (30-35 persons) has been planned for September-October	Ozurgeti, Guria
11-Jul	10:30 AM	LTD "Geo-flower", SMEPHP	Valeri Gulbani (M&E Manager) Joseph Tham (CBA expert) Gocha Dzneldze (grantee) Mini survey participant farmers (20 persons)	Ambrolauri

Name and legal status of Company or Individual: -----

1. Contact details (Village, municipality, address, mobile phone): -----

2. In which agricultural sector you operate? (Crops, Nurseries, Fruits and vegetables, Greenhouses, Animal, Dairy,

Poultry, other): -----

3. Do you use hired labor? Yes No
If yes, how many Women: ----- Men: ----- Average days per year -----

Average wage (per hour, day or month): -----

4. Do you use unpaid labor? (Household member or others) Yes No
If yes, how many Women: ----- Men: ----- Average days per year -----

5. Number of hectares under improved technologies or management practices as a result of REAP assistance (Ha). Please fill the table below:

Type of technology	Improved Ha			
	Baseline year	PY1 Actual	PY2 target	PY3 target
Crop genetics: improved/certified seeds				
Pest management				
Disease management: integrated pest management, appropriate application of insecticides and pesticides				
Soil-related fertility and conservation, fertilizers, erosion control				
Irrigation: drip, surface, sprinkler irrigation				

Water management: non-irrigation based, water harvesting				
Other: planting density, improved mechanical and physical land preparation and harvesting				

6. % Increase in average crop yields of targeted agricultural products as a result of USG/REAP assistance:

Name of crop produced	Y1 Actual	Y2 target	Y3 target

7. Net profit per unit of crop produced:

Name and unit of crop produced	Net profit (Gel)			
	Baseline	PY1 actual	PY2 target	PY3 target

8. Which short-term training(s) in improved technologies or management practices has been received?)-----

9. Where did you hear from about this short-term training(s) in improved technologies or management practices? -----

10. How much would you have paid if that training(s) was (were) not free of charge? -----
 -----(Gel)

11. Which new technologies or management practices you have applied as a result of short-term training(s)? -----

12. As a result of adopted new technology or management practices:

a. Your income has been increased? Yes No
If yes please indicate approximate % increase -----

b. Access to investment or credit has been improved? Yes No

c. Access to market has been improved? Yes No

d. Saved time? Yes No
If yes please indicate approx. how much per day/month/year? -----

e. Other improvements have been made -----

13. Have you shared adopted new technology or management practices to others? Yes No
If yes please indicate approximate number of those individuals excluding your household members.
(Disaggregated by men/women if possible) -----

14. As a result of shared knowledge, new technology or management practices what % from those individuals has adopted the same new technology or management practices to your knowledge?
(disaggregated by men/women if possible)

Full name and a signature of the respondent: -----
