# Millennium Challenge Account – Georgia

# Monitoring and Evaluation Plan

# Compact II

**September 2014**

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## 1. Preamble

This Monitoring and Evaluation (M&E) Plan:

- is part of the action plan set out in the MILLENNIUM CHALLENGE COMPACT (**Compact**) signed on July 26, 2013 between the United States of America, acting through the Millennium Challenge Corporation, a United States Government corporation (**MCC**), and Georgia (**Georgia**), acting through its government;
- is designed to support provisions described in *Annex III. Description of Monitoring and Evaluation Plan* of the Compact;
- is governed and following principles stipulated in the *Policy for Monitoring and Evaluation of Compacts and Threshold Programs* (DCI-2007-55.2 from 05/12/2009) (MCC M&E Policy).

This M&E Plan is considered a binding document, and failure to comply with its stipulations could result in suspension of disbursements. It may be modified or amended as necessary following the MCC M&E Policy (article 5.2), and if it is consistent with the requirements of the Compact and any other relevant supplemental legal documents.

## 2. List of Acronyms

**Compact** – Millennium Challenge Compact signed on July 26, 2013 between the United States of America, acting through the Millennium Challenge Corporation, a United States Government corporation and Georgia, acting through its government

**MCC** – Millennium Challenge Corporation

**MCA-G** – Millennium Challenge Account - Georgia

**GoG** – Government of Georgia

**MoES** – Ministry of Education and Science

**Geostat** – National Statistics Office of Georgia

**ITT** – Indicator Tracking Table

**ERR** – Economic Rate of Return

**M&E Plan** – Monitoring and Evaluation Plan

**TVET** – Technical Vocational Education and Training

**STEM** – Science, Technology, Engineering and Math

**MIS** – Management Information System

**TOR** – Terms of Reference

**QDRRP** – Quarterly Disbursement Request and Reporting Package

**DQR** – Data Quality Review

**IRB** – Institutional Review Board

**CCR** – Compact Completion Report

**O&M** – Operations and Maintenance

## 3. Compact and Objective Overview

### 3.1. Introduction

MCC and the Government of Georgia shall formulate, agree to and the Government shall implement this M&E Plan that specifies: i) how progress toward the Compact Goal, Objectives, and the intermediate results of each Project and Project Activity will be monitored; ii) a methodology, process and timeline for the evaluation of planned, ongoing, or completed Projects and Project Activities to determine their efficiency, effectiveness, impact and sustainability; and iii) other components of the M&E Plan described below.

The M&E Plan serves the following functions:

- Explains in detail how MCC and MCA - Georgia will monitor the various Projects to determine whether they are achieving their intended results and measure their larger impacts over time through evaluations.
- Outlines any M&E requirements that MCA - Georgia must meet in order to receive disbursements.
- Serves as a guide for program implementation and management, so that MCA - Georgia staff, Supervisory Board members, Stakeholder Committee(s), Implementing Entities staff, beneficiaries, and other stakeholders understand the objectives and targets they are responsible for achieving, and are aware of their progress towards those objectives and targets during implementation.
- Establishes a process to alert implementers, stakeholders and MCC to any problems in program implementation and provides the basis for making any needed program adjustments.

### 3.2. Program Logic

The goal of the Compact II is to reduce poverty through economic growth in Georgia by means of MCC's assistance to strengthen good governance, economic freedom, and investments in Georgia.

The objective of the Program is to support strategic investments to: (a) improve general education quality in Georgia through: infrastructure enhancements to the physical learning environment in schools, training for educators and school managers, and support to classroom, national and international education assessments; (b) strengthen the linkage between market-demanded skills and the supply of Georgians with technical skills relevant to the local economy; and (c) support delivery of high-quality STEM degree programs in Georgia.

The M&E Plan is built on a logic model that illustrates how the Projects and Activities contribute to the Compact Goal and the Project Objectives as described in the following sections.

### 3.2.1. Improved Learning Environment Infrastructure Activity

#### 3.2.1.1. General Description

The Improved Learning Environment Infrastructure Activity will rehabilitate rural public school facilities to address very poor physical conditions including internal utilities such as heating, electrical, water supply and sanitation systems.

The Improved Learning Environment Infrastructure Activity will involve the full internal and external rehabilitation of selected school facilities, utility upgrades, and provision of laboratories. Such an approach addresses the key elements correlating with improved educational performance, including human comfort, indoor air quality, and adequate lighting.

The selection of schools will be based on a formula that prioritizes schools according to their physical condition (dilapidated physical infrastructure), social vulnerability (higher proportion of Socially Vulnerable students), number of students enrolled and utilization rate. The above criteria have been chosen based on agreement between the Ministry of Education and science, MCC and MCA Georgia.

MCC's independent Evaluator for the Improving General Education Quality Project, Mathematica Policy Research (Mathematica), collaborated with MCC and MCA-Georgia to develop a process for selecting the schools eligible for rehabilitation. This process is expected to ensure that a package of schools is selected that allows MCC and MCA-Georgia to meet key priorities for this project, including cost-effectiveness (i.e. meeting an ERR hurdle rate), targeting of key beneficiaries, and ability to rigorously measure project outcomes and impacts through a rigorous impact evaluation.

The selection process began by selecting a pool of 425 eligible schools. The first step in this process was calculating a ranking score for each of Georgia's schools that serve secondary grades (7 to 12), using the following formula[1]:

$$\textbf{Ranking Score}_{\,i} = (-0.5\boldsymbol{\lambda} + 0.1\boldsymbol{\gamma} - 0.3\boldsymbol{\mu} + 1.5\boldsymbol{\beta} - 0.3\boldsymbol{\sigma})/5$$

$\lambda$ = School Condition (aggregate which includes roof, windows, exterior walls, etc.)

$\gamma$ = % Socially vulnerable students, $\left(\frac{\text{\# Socially vulnerable}}{\text{Total \# of students}}\right)$

$\mu$ = $M^2$ per student, a measure of underutilization $\left(\frac{\text{Total facility } M^2}{\text{Total \# of students}}\right)$

$\beta$ = Total # of students

$\sigma$ = Standard deviation[2] across each school's $\lambda$, $\gamma$, $\mu$, $\beta$

[1] The weights attached to each variable were chosen to meet specific targets on factors including ERR, social vulnerability, and space utilization. Assigning a positive or negative sign to each item allows a variable to be maximized or minimized, respectively. All variables were calculated as standard normal (z-scores) of the natural log of the original values in the school-level data.

[2] Minimizing the standard deviation helps avoid the inclusion of schools which rank highly on some variables but do not fulfill other criteria (e.g. a school with a large number of students and low $M^2$ but with low % of socially vulnerable and good condition of facilities).

After calculating these ranking scores, Mathematica identified the highest-ranked schools in each region to select which schools would be eligible for the program. That is, within each region schools were ranked from the school with the highest score to the school with the lowest score, and the schools with the highest ranks in each region were selected for the program.

The number of schools allocated to each region (Table 1) was determined by an allocation percentage that was set to match the results of the previous school selection round conducted in 2012-2013.[3]

**Table 1. Region-level allocation of schools**

| Region | Percentage Allocation | Number Selected for the 425-School List |
|---|---|---|
| Adjara (Phase 2) | 8% | 32 |
| Guria (Phase 2) | 4% | 16 |
| Imereti (Phase 3) | 20% | 78 |
| Kakheti (Phase 3) | 20% | 80 |
| Mtskheta-Mtianeti (Phase I) | 2% | 10 |
| Kvemo Kartli (Phase 2) | 15% | 62 |
| Racha-Lechkhumi and Kvemo Svaneti (Phase I) | 3% | 15 |
| Samegrelo-Zemo Svaneti (Phase 2) | 8% | 32 |
| Samtskhe-Javakheti (Phase 1) | 6% | 30 |
| Shida Kartli (Phase 1) | 14% | 70 |

In addition, an Operations and Maintenance ("***O&M***") program in the Georgian school system shall be established to ensure the sustainability of MCC's investment and more broadly to the viability of Georgian schools. The Government has committed to developing and funding a strategy to address school O&M and a plan for its implementation (collectively, a "***School O&M Plan***") with MCC support. Key elements of this School O&M Plan include hiring permanent dedicated and technically qualified staff to develop and implement the School O&M Plan. MCC will support this effort via an incentive fund of up to US$2,500,000 (Two Million, Five Hundred Thousand United States Dollars) to maintain school O&M activities.

### 3.2.1.2. Description of Outcomes

In the long run the Improved Learning Environment Infrastructure Activity is expected to produce improved student learning outcomes through learning environments that facilitate increased time on task and increased attendance. This in turn shall provide the project beneficiaries with better employment opportunities and higher incomes (outcome indicators, baselines and targets are given in Annexes 1 and 2).

[3] Specifically, the 425-school list allocated 400 schools according to these percentages, and then selected 25 additional schools from the four Phase 1 regions. The extra allowance of schools in Phase I regions allows for a larger number of school exclusions related to the program's previous design work in these areas.

#### 3.2.1.3. Description of Outputs

In the short term the Improved Learning Environment Infrastructure Activity is expected to:

- Rehabilitate up to 130 schools across the country,
- Procure lab equipment for the rehabilitated schools, and
- Improve school infrastructure maintenance practices.

For more details on output indicators, baselines and targets please refer to Annexes 1 and 2 of this plan.

### 3.2.2. Training Educators for Excellence Activity

#### 3.2.2.1. General Description

The objectives of the Training Educators for Excellence Activity are to: (1) improve math, science, geography, information and communication technology ("***ICT***"), and English teaching and learning in Grades 7-12; and (2) improve school management and (3) implement school based professional development facilitator's system. Training will also include a gender module designed to reduce teacher gender bias (identified in the study on gender barriers affecting girls and women who wish to pursue STEM education and/or occupations) in the classroom. This Activity will achieve the first objective by training approximately 23,400 math, science, geography, ICT, and English teachers and improving upon the existing system of continuous professional development. To improve school-based professional development, the Activity will train at least one school-based professional development facilitator per public school, or approximately 2,084 such facilitators. Supporting the school based professional development facilitators program will enable teachers to share knowledge and best practices among each other in order to improve teaching and learning process. To meet the second objective, this Activity will support the development of a continuous professional development framework for school principals and will provide training for up to 2,084 public school principals in Georgia.

The Implementing Entity for the Training Educators for Excellence Activity will be the Teacher Professional Development Center ("***TPDC***"), the MoES entity currently responsible for managing teacher professional development. Compact funding will support capacity building for TPDC, the development and provision of training materials and equipment, and the implementation of training courses.

The main sub-activities of the activity shall be as follows:

- Secondary school math, science, geography, ICT and English teachers professional development
- Refinement and support of the Teacher professional development system
- Professional Development of public school principals
- Development and implementation of the school based professional development System
- Professional Development of the school based professional development facilitators
- Capacity building of TPDC staff.

#### 3.2.2.2. Description of Outcomes

In the long run the Training Educators for Excellence Activity is expected to produce improved student learning outcomes through improved classroom teaching and improved management of education system. Training that addresses teacher gender bias is expected to result in larger number of girls pursuing STEM tertiary education. This in turn shall provide the project beneficiaries with better opportunities to seek further education, better employment and higher incomes (outcome indicators, baselines and targets are given in Annexes 1 and 2).

#### 3.2.2.3. Description of Outputs

In the short term the Training Educators for Excellence Activity is expected to provide training for:

- Secondary school math, science, geography, ICT and English teachers
- School-based Professional Development facilitators
- Public School principals
- TPDC staff.

For more details on output indicators, baselines and targets please refer to Annexes 1 and 2 of this plan.

### 3.2.3. Education Assessment Support Activity

#### 3.2.3.1. General Description

A rigorous testing and assessment system is needed to track student progress as well as to hold teachers, administrators, and national authorities accountable to Georgian stakeholders for achieving outcomes. National testing systems will be supplemented by participating in international benchmarking assessments such as the OECD's "Program for International Student Assessment" and Institute of Education Science's "Trends in International Math and Science Study" and "Teaching and Learning International Survey" not only to verify national results but also to track the country's performance relative to the international community. Furthermore, international assessments can help Georgia monitor system-level achievement trends in a global context over time and to further improve teaching and learning through research and analysis of assessment data.

The National Assessment and Examination Center ("***NAEC***") will be the Implementing Entity of this Activity. This investment will support NAEC to carry out (1) national; (2) international; and (3) classroom assessments of student learning, with a focus on using the results for improving the quality of general education. The investment will support the effective implementation of approximately six national assessments, including secondary school mathematics and selected sciences. This Activity will fund preparation for and participation in three international assessments aimed at measuring student and teacher performance in secondary school math, science, and ICT. Finally, NAEC will create a classroom assessment system for secondary school math and science teachers that will enable those teachers to assess their students' learning and use the results to improve teaching and learning in their classrooms.

The main sub-activities of the activity shall be as follows:

- Classroom assessment system development and implementation
- Teacher trainings in using classroom assessment tools
- Supporting implementation of the national and international assessments
- NAEC staff capacity building.

#### 3.2.3.2. Description of Outcomes

Utilization of classroom assessment tools in the classroom will enable teachers to deliver lessons that are adjusted to the student needs. Conducting national and international assessments will enable policy makers to see trends in student achievement over years nationwide as well as compare results with other countries. Based on the assessment outcomes, Ministry will plan, adjust and implement policy decisions to support improvement of the teaching quality.

In the long run the Education Assessment Support Activity is expected to produce improved student learning outcomes through improved classroom teaching. This in turn shall provide the project beneficiaries with better opportunities to seek further education, better employment and higher incomes (outcome indicators, baselines and targets are given in Annexes 1 and 2).

#### 3.2.3.3. Description of Outputs

In the short term the Education Assessment Support Activity is expected to provide the following outputs:

- Implementing classroom assessment system
- Conducting national assessments
- Supporting international assessments

For more details on output indicators, baselines and targets please refer to Annexes 1 and 2 of this plan.

### 3.2.4. Industry-led Skills and Workforce Development Project

#### 3.2.4.1. General Description

The Industry-led Skills and Workforce Development (ISWD) Project is a $16 million project under the Compact, which aims to improve the linkage between market-demanded skills and the supply of Georgians with technical skills relevant to the local economy. Investments to support TVET shall be made to address industry demand for skilled technicians and to reach potential beneficiaries who may not have the opportunity to obtain further education and training.

The four main activities under this project are designed to:

- run a competitive process to solicit and fund innovative, industry-driven proposals from Georgian TVET providers for establishing new or expanding/improving existing training

programs, to meet industry needs (Task 1: Competitive Program Improvement Grants);

- strengthen TVET provider practice by identifying, strengthening, documenting, disseminating, and promoting uptake of best practices across the sector (Task 2: Strengthening TVET Provider Practice);
- strengthen national policy with respect to industry engagement in the Georgian TVET sector (Task 3: Strengthening TVET Sector Policy);
- develop and host an annual TVET conference (Task 4: Annual TVET Conference).

#### 3.2.4.2. Description of Outcomes

In the long run the Industry-led Skills and Workforce Development Project is expected to provide increased industry engagement into the TVET sector to ensure the alignment of the TVET programs with the existing market demand. This in turn shall provide the project beneficiaries with better opportunities to seek further education, better employment and higher incomes (outcome indicators, baselines and targets are given in Annexes 1 and 2).

#### 3.2.4.3. Description of Outputs

In the short term the Industry-led Skills and Workforce Development Project is expected to provide the following outputs:

- Industry oriented TVET policies
- Identification and promotion of the best practices
- Higher quality TVET programs

For more details on output indicators, baselines and targets please refer to Annexes 1 and 2 of this plan.

### 3.2.5. STEM Higher Education Project

#### 3.2.5.1. General Description

The key objective of the GoG and MCC is the long-term delivery of high-quality STEM Bachelor's degrees in Georgia.

The purpose of the proposed investment is the following:

- Bringing a U.S. university to Georgia to partner with Georgian public universities to offer U.S. Bachelor's degree programs in the STEM academic disciplines.
- Providing capacity enhancement for Georgian Public Universities with the goal of Georgian university programs reaching international standards and acquiring international program accreditation.

MCA-Georgia has developed the "pre-enrollment" contract (15 months duration) under which SDSU will undertake all necessary actions to enroll students starting September 2015. This includes administrative start-up, seeking both US and Georgian accreditation for new programs, developing and articulating partner curricula, establishing an English and STEM Institute to support students who may need help in key prerequisite areas, preparing designs for rehabilitation and construction, and procuring

necessary equipment. Upon successful completion of this contract, MCA-Georgia anticipates a follow-on contract with SDSU to fund some activities through the end of the Compact (45 months duration). Over the term of the Compact, SDSU will begin funding activities through tuition and other revenues and MCA-Georgia funds will diminish respectively.

The Project shall develop and implement the following US Bachelor's programs:

- Tbilisi State University (TSU) - Electrical Engineering; Chemistry (with an emphasis in Biochemistry);
- Georgian Technical University (GTU) - Electrical Engineering (Faculty of Power, Energy and Telecommunication);
- Ilia State University (ISU) - Microelectronics and Computer Engineering;
- Ilia State University (ISU) (from year 3) - Civil and Construction Engineering
- Georgian Technical University (GTU) (from year 3) - Civil and Construction Engineering

#### 3.2.5.2. Description of Outcomes

In the long run the STEM Higher Education Project is expected to provide firm-level productivity spillovers, reduced imports of education (study abroad) and reduced imports of human capital (foreign labor). Program beneficiaries are expected to have better employment opportunities and higher incomes (outcome indicators, baselines and targets are given in Annexes 1 and 2).

#### 3.2.5.3. Description of Outputs

In the short term the STEM Higher Education Project is expected to provide the following outputs:

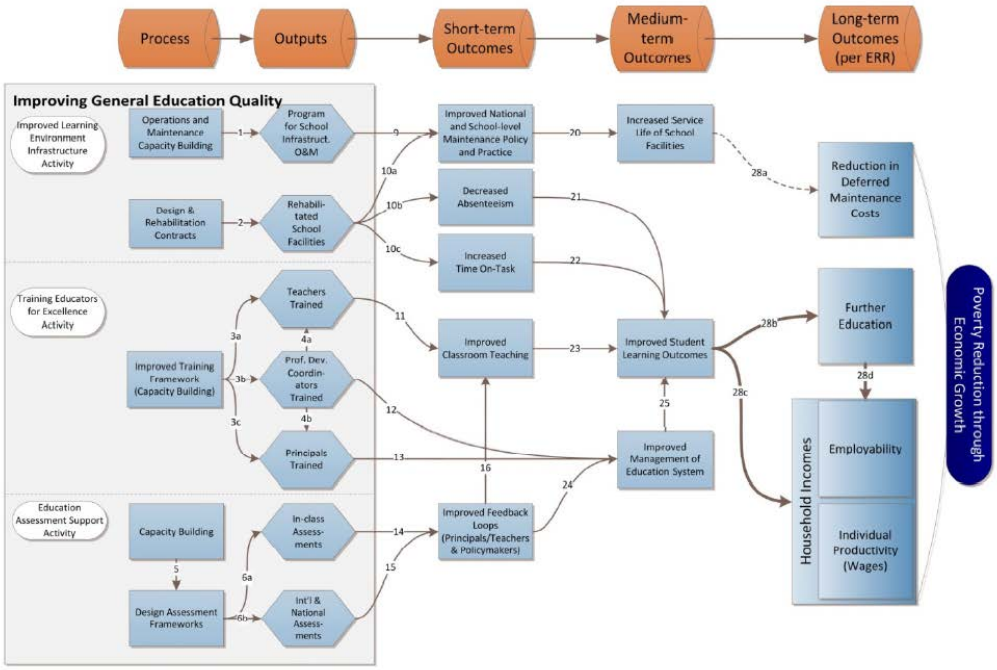
- Upgraded infrastructure and equipment
- Faculty development
- Improved curricula
- Inclusive outreach program
- Import of professors, curricula and frameworks
- Distance learning programs for Georgian students.

For more details on output indicators, baselines and targets please refer to Annexes 1 and 2 of this plan.

### 3.2.6. Program Logic Visualization

A visual description of the logic underlying the proposed Compact Projects is included in Figure 1 and 2 as follows:

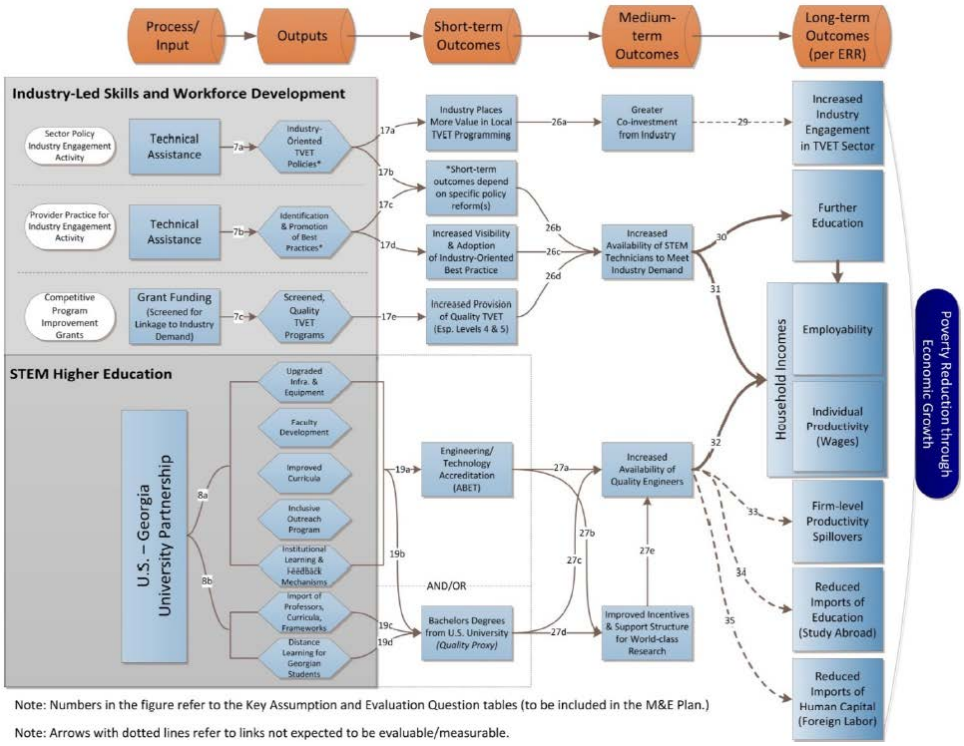
## Figure 1. Compact-wide Program Logic (1 of 2)




Note: Numbers in the figure refer to the Key Assumption and Evaluation Question tables (to be included in the M&E Plan.)

Note: Arrows with dotted lines refer to links not expected to be evaluable/measurable.

## Figure 2. Compact-wide Program Logic (2 of 2)




Note: Numbers in the figure refer to the Key Assumption and Evaluation Question tables (to be included in the M&E Plan.)

Note: Arrows with dotted lines refer to links not expected to be evaluable/measurable.

### 3.3. Projected Economic Benefits

The estimated economic rate of return (ERR) and number of beneficiaries for each project is summarized in the table below:

| Component | Budget (USD million) | Estimated ERR | Estimated Beneficiaries |
|---|---|---|---|
| I. General Education Project | 76.5 | 11% | 1.7 million |
| School rehabilitation activity (including O&M fund) | 56.5 | 10% | 348,296 |
| Teacher training activity | 14 | 18% | 1.7 million |
| Assessment activity | 6 | no estimate* | |
| II. TVET Project | 16 | | |
| Competitive grant activity | 12 | 23% | 12,389 |
| Strengthening sector policy and provide practice | 4 | no estimate | |
| III. STEM Higher Education Project | 30 | 10% | 47,124 |

** The cost of the assessment activity is included in the project level ERR estimate.*

#### 3.3.1. Improving General Education Quality Project

The project-level economic rate of return (ERR) for the *Improving General Education Quality Project*, combining all three proposed activities, is estimated at 11%. Estimates for the individual activities are discussed below. The *Education Assessment Support Activity* does not have a separate ERR estimate but the $6.0 million cost of this activity is included in the 11% project level ERR estimate.

| Project/Activity | ERR | Estimated beneficiaries including family members, over 20-year project lifetime |
|---|---|---|
| Improved Learning Environment Infrastructure Activity | 10% | 348,296 |
| Training Educators for Excellence Activity | 18% | 1.7 million |
| Improving General Education Quality Project | 11% | 1.7 million* |

*Beneficiaries of the Improved Learning Environment Infrastructure Activity are a subset of the Training Educators for Excellence Activity.

##### 3.3.1.1. Improved Learning Environment Infrastructure Activity

The economic benefit of the Improved Learning Environment Infrastructure activity is based on the number students expected to attend the rehabilitated public schools. At the time of Compact signing in July 2013 it was estimated that up to 130 schools would be rehabilitated with an average enrollment of 350 students per school. Subsequent engineering studies for an initial batch of 12 schools indicated that costs are likely to be substantially higher than previous estimates resulting in fewer schools

rehabilitated. The number of schools that can ultimately be rehabilitated within the budget envelope of $56.5 million for this activity (including $2.5 million for operations and maintenance support) is currently unknown. However, to reach an estimated rate of return of 10%, initial enrollment in the rehabilitated schools will need to be approximately 37,000 to 38,000 students. This can be achieved, for example, if 107 schools are rehabilitated with an average enrollment of 350 students per school, or a smaller number of schools with higher average enrollment.

*Maintenance assumption*: The benefits of this activity depend on future maintenance of the rehabilitation work. If adequate maintenance is not carried out, the useful lifetime of the investment is unlikely to exceed ten years, in which case the estimated ERR declines to less than 5%.

Substantial U.S. literature indicates that physical infrastructure has an important impact on learning outcomes in general education. The characteristics that have the greatest impact are classroom temperature, air quality, lighting, science labs/equipment, and acoustics.[4] By replacing wood stoves in classrooms with central heat, and by improving electrical systems, roofs, windows, and classroom facilities, the Improved Learning Environment Infrastructure Activity is expected to have a major impact on temperature, air quality, and lighting leading to an enhanced learning environment that results in i) improved school transition rates, ii) higher employment probabilities, and iii) higher future earnings for students educated in the rehabilitated schools.

*Benefit streams and key assumptions*

The current economic analysis of the Improved Learning Environment Infrastructure Activity foresees several benefit streams supporting the investment including:

- increased transition from lower to upper secondary school (from 9$^{th}$ to 10$^{th}$ grade) and higher 12$^{th}$ grade graduation rates
- increased post-secondary enrollment (vocational and higher education)
- higher probabilities of employment (including self-employment) as a result of achieving higher levels of education
- higher earnings for students who achieve higher levels of education

Key assumptions underlying the benefit streams are: (i) a minimum of 37,000 students initially enrolled in rehabilitated schools (for example, 107 schools rehabilitated with average enrollment of 350 students per school); (ii) a 10% improvement in school transition rates and post-secondary enrollment rates; and (iii) higher probabilities of employment for students who achieve higher levels of education as a result of improved school facilities. The 10% increase in school transition rates is motivated by a 2004 World Bank study which found that rehabilitation of village schools in Georgia resulted in a 13% increase in secondary school enrollment.[5]

[4] (1) Earthman, Glen I. (2002), School facility conditions and student academic achievement, Los Angeles CA: UCLA's Institute for Democracy, Education and Access. (2) Earthman, Glen I. (2004), Prioritization of 31 criteria for school building adequacy, ACLU Maryland.

[5] M. Lokshin and R. Yemtsov, "Combining Longitudinal Househeold and Community Surveys for Evaluation of Social Transfers: infrastructure rehabilitation projects in rural Georgia," *Journal of Human Development* Vol. 5, No. 2, July 2004.

*Sensitivity Analysis*

The table below illustrates the impact on the estimated rate of return for the Improved Learning Environment Infrastructure Activity of changes in one key variable holding other variables constant. Column 4 shows the critical value of each variable beyond which the ERR falls below the 10% hurdle rate. Column 5 reports the estimated ERR if the variable drops below its base value by 25% and column 6 reports the estimated ERR if the variable exceeds its base value by 25%. Movement in more than one variable would have a compound impact on the ERR. The table is based on the assumption that the number of schools rehabilitated and average enrollment is sufficient to achieve an economic rate of return of 10%, as discussed above.

**Improved Learning Infrastructure Activity**

Baseline economic rate of return = 10% (assuming 107 schools are rehabilitated and average enrollment per school=350)

| Critical Variable | Explanation | Base/Target Value | Critical Value of Variable Below Which ERR is <10% | ERR at Variable Base Value Minus 25% | ERR at Variable Base Value Plus 25% |
|---|---|---|---|---|---|
| (1) | (3) | (2) | (4) | (5) | (6) |
| Average School Size (# of Students) | Average Enrollment per School | 350 | 350 | 8.70% | 11.10% |
| # of Schools | Total Number of Schools Rehabilitated during Compact | 107 | 107 | 8.70% | 11.10% |
| Probability of Employment or Self-employment | Probability of Employment for High School Graduates* | 62% | 62% | 8.50% | 11.30% |
| Increase in School Transition Rate | Percent Increase in School Transition Rates: G1-G9, G9-G12, G12 - Higher Education, G12 to Vocational Education | 10% | 10% | 9.80% | 10.30% |

* Calculated from 2012 IHHS as (number of high school graduates employed or self-employed)/(total high school graduates)

### 3.3.1.2. Training Educators for Excellence Activity

The ERR for the Training Educators for Excellence Activity is estimated to be 18%. The estimate is based on estimates of the impact of teacher professional development on learning outcomes and future incomes drawn based on meta-analysis from the U.S. studies. The full Activity cost, estimated at $14 million, is included in the ERR estimate.

There are very few rigorous studies examining the impact of in-service teacher professional development on learning outcomes in developing countries. Even in the United States, where this topic has been extensively studied, a recent review of more than 1,300 studies found only nine that met

evidence standards.[6] Of these nine studies, five were randomized control trials and the other four used quasi-experimental design. The average effect size, defined as the standard deviation change in student achievement of the intervention group compared with the control group, was 0.54 across all nine studies, and 0.51 across the five randomized control trials. The impact on math test scores in a randomized control trial was 0.50 and this impact was statistically significant. However, the effect size for secondary school math was lower, ranging from 0.13 (Blank and de las Alas, 2010) to 0.27 (Harris and Sass, 2008). Given the lack of comparable high quality studies in developing countries, the analysis in this section makes use the U.S. finding that teacher professional development programs can raise student achievement and assumes an increase of 0.18 of a standard deviation, in line with the U.S. findings for secondary school math.

Several U.S. studies have traced the impact of improved test scores on student's future earnings by following cohorts after they leave high school and enter the labor force. Hanushek (2010) quotes several studies showing that a one standard deviation increase in mathematics performance at the end of high school translates into 10-15% higher annual earnings" and uses a point estimate of 12% as the most likely increase while noting that the estimates come from early in the worker's career (mid-to-late twenties) "suggesting the impact may actually rise with experience."[7] The current analysis uses Hanushek's point estimate of 12%.

***Benefit Streams and key assumptions***

The current economic analysis of the Training Educators for Excellence Activity foresees two benefit streams supporting the investment:

- increased student achievement resulting from increased teacher knowledge of subject content and pedagogy. Mathematics performance is expected to improve by 0.18 of a standard deviation, as found in U.S. studies. This is a conservative estimate given that the proposed project intends to provide considerably more training hours per teacher than was provided in U.S. in-service professional development programs.
- increased future earnings resulting from improved learning outcomes. In U.S. studies, a one standard deviation improvement in mathematics performance was found to translate into a 12% increase in earnings. Given an estimated 0.18 standard deviation increase in test scores resulting from the Activity, future earnings are expected to rise by 2% annually.

[6] REL 2007, "Reviewing the evidence on how teacher professional development affects student achievement," Institute of Education Sciences, U.S. Department of Education, October 2007.

[7] Hanushek, Eric (2010) "The Economic Value of Higher Teacher Quality," Urban Institute Working Paper 56, December 2010.

### 3.3.2. Industry-led Skills and Workforce Development Project

#### 3.3.2.1. Competitive Program Improvement Grants Activity

The estimated ERR for the Competitive Program Improvement Grants Activity is 14.0% with a 95% confidence interval of 6% - 22%. This assumes total costs of $12 million that covers Activity due diligence funds (assumed to be 20% of proposal costs), technical assistance (assumed to be 15% of proposal costs), and capital-fund costs. Other costs outside of MCC funding include student tuition costs and private co-investment. Private investment (either in cash or in kind) is assumed to average approximately 30% of grant size (with a minimum of 0% and a maximum of 300%), based on experiences in Mongolia. Higher levels of private investment are correlated with better wage and employment outcomes, assuming that heavy industry involvement is a strong signal of demand for that skill. Grants are assumed to range in size from $300,000 – $3 million; with smaller grants likely to produce smaller numbers of graduates (the average cohort size is assumed to be 40). Tuition cost to students is assumed to be the equivalent to the voucher the government gives for 4/5 – level TVET (2500 GEL or around $1500 per year).
*Maintenance assumption*: This model assumes operations and maintenance costs of 3% of the grant size starting from the second year after a grant is awarded. This assumes that all grant monies are spent the year they are awarded, which may be an ambitious assumption. The assumption of 3% may also be small. Increasing O&M costs to 5% does not change the ERR estimate.

Georgian employers have expressed a need for highly trained technical vocational students that are currently not available. Although Georgian TVET centers are now permitted to offer high level (1 – 2 year certificate) TVET courses, with limited exceptions they have not begun the process of developing such programs. In some cases, engineering and other science and technology employers have taken it upon themselves to begin training programs to produce the skilled workers they require. Providing Georgian students with the opportunity to achieve higher levels of technical training should also allow them to receive higher future earnings.

*Benefit streams and key assumptions*: The current economic analysis of the Competitive Program Improvement Grants Activity foresees two distinct benefit streams supporting the investment:

- increased earnings by graduates
- higher probabilities of employment

Key assumptions underlying the benefit streams are: (i) a nominal 23.8% increase in income would accrue to graduates of technical vocational programs receiving grants (varying normally between 0 and 300% with a standard deviation of 17%), (ii) a nominal 9% increase in the probability of employment (varying normally between 0 and 14%, with a standard deviation of 6%). Because we are modeling a percentage increase in wages over a baseline wage value, the most critical factor affecting the ERR is the base wage of current graduates, which accounts for around 66% of the variance in the ERR. The current estimate is appropriately conservative for producing level IV and V TVET engineering technicians. Based on a 2010 household survey, we currently assume graduates from TVET programs supported by grants would go from the salary equivalent for “plant and machine operators and assemblers” with elementary vocational school education (319 GEL/month in 2010, 339 GEL/per month equivalent in 2011) to “plant and machine operators and assemblers” with higher education (23.8%

wage increment). After speaking with industry representatives, they suggested this was overly conservative. As an upper end to potential wage increase, then, we would take the example given by BP. Entry-level technicians currently coming to them would receive $700 per month (plus six months English language training). If those workers were coming out of the certificate program BP is planning to support, their starting salary would be $1500 per month, since they would not have to go through a lengthy on-the-job training process that entry-level employees currently go through. Thus, the ERR uses a nominal base wage (and minimum) of 319 GEL/month with an upper end of 1,120 GEL/month and a standard deviation of 400 GEL, as the figure of 319 GEL/month is likely very low, since it does not differentiate between the incomes of those individuals working full time and part time.

These same benefits would *not* necessarily be expected if grants supporting level I - III TVET programs or non-STEM fields are funded. Wage differentials and base wages for non-technical fields have not been identified and would likely vary widely depending on the fields proposed. Any grant proposals approved which fall under the levels I-III or non-STEM fields would require strong proof of their relevance and value in the job market. Additionally, it is assumed that only the best proposals would be chosen, however, there may be political pressures that mean the best proposals are not selected. This is a very real risk which could lower the ERR significantly. So long as grant manual documents and other guidance include strong economic criteria, this might be avoided.

As part of a risk identification process, the economists identified the key variables most relevant to achieving the outcomes. The following table presents a sensitivity analysis around those key variables and the critical levels to which they have to change before the investment loses viability, and the implications for design of those changes.

**Technical and Vocational Education and Training (TVET) Baseline Economic Rate of Return 14%**

| Critical Variable | Explanation | Base/Target Value | Critical Value of Variable Below Which ERR is <10% | ERR at Variable Base Value Minus 25% | ERR at Variable Base Value Plus 25% |
|---|---|---|---|---|---|
| **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** |
| Average Base Monthly Wage of Existing TVET Graduates | Average Base Value of Monthly Wage for Existing TVET Graduates that are Currently Working as Engineering Technicians | GEL 339 | GEL 280 | 8.00% | 18.00% |
| Income Increase | Average Increase of Salary of Graduates from MCC-funded Programs over Graduates from Existing TVET Programs | 23.80% | 9.00% | 12.00% | 14.00% |
| Average Cohort Size | Average Cohort Size of Programs Funded | 40 | 9 | 12.00% | 14.00% |

| Critical Variable | Explanation | Base/Target Value | Critical Value of Variable Below Which ERR is <10% | ERR at Variable Base Value Minus 25% | ERR at Variable Base Value Plus 25% |
|---|---|---|---|---|---|
| Total Number of Students Enrolled in 5 years | Total Number of Students that are Expected to Start Supported TVET Programs within the Lifetime of the Compact | 1500 | 1000 | 10.00% | 13.00% |
| Benefit Timing | Compact Year in which Graduates Enter the Workforce | Year 4 | Year 7 | 12.00% | 11.00% |

#### 3.3.2.2. Strengthening Sector Policy and Provider Practice

The Strengthening Sector Policy and Provider Practice Activity may be necessary in order to support a growing body of good practice in Georgia and to help the TVET system as a whole achieve a higher level of quality and standardization. However, it is not clear what the quantifiable benefits of this Activity would be and thus we cannot develop a realistic estimate of the benefits. Similarly, since it is still not clear in exactly what ways this Activity could help support the other TVET activities, the cost of this Activity is not included in the costs of the Competitive Program Improvement Grants Activity.

Currently benefits from improving provider practice activities are not included in the economic analysis, since we do not have the data with which to estimate potential outcomes. However, these activities are expected to have some potential economic benefits such as lowering unemployment rates, potentially raising incomes, or allowing students who otherwise might not have attended tertiary education to continue their studies and earn higher incomes. Additionally, they should help to bolster the outcomes of the larger grants and spread improvement more thoroughly throughout the entire TVET system. Thus, while there are no explicit benefits being measured from the Strengthening Sector Policy and Provider Practice Activity, those costs ($2,000,000), the Competitive Program Improvement Grants Activity ERR calculates the ERR both with and without these costs. The ERR without these costs is presented above. The ERR including the costs of the sector strengthening efforts is 13%, with a 95% confidence interval between 6% and 21%.

### 3.3.3. STEM Higher Education Project

The economic rate of return for the higher education project is estimated from information in the technical proposal and financial proposal received from San Diego State University in February 2014. Based on costs and enrollment projections in this proposal, the estimated economic rate of return for the STEM Higher Education Project is 11%. This return assumes an average operating cost (average annual tuition) of $7,434 per student in the U.S. degree program and $1,589 in the ABET-accredited partner programs from Year 7 on. If average annual operating cost/tuition rises above $8,800 per student, the estimated rate of return would decline below 10%.

The estimate assumes a combined annual student intake in the US degree programs of 495 in the first year of the program (compact year 2) rising to 610 by Year 5, with total enrollment across all four years

stabilizing at 2,155 from Year 7 on. Lower enrollment numbers would reduce the estimated rate of return.

***Benefit Streams and key assumptions***

The current economic analysis of the STEM Higher Education Project foresees four distinct benefit streams supporting the investment:

1. higher future earnings for graduates of the new programs relative to the amount that these individuals would have earned if they had attended the best Georgian university;
2. human capital externalities in the form of spillovers from an increase in the supply of well-educated STEM professionals on business productivity and on earnings and wages of other workers;
3. savings to the Georgian economy from reduced imports of highly educated and more expensive expatriate STEM professionals, and
4. savings for those students who, in the absence of the new programs, would have pursued more costly undergraduate STEM degrees at U.S. or European universities.

The calculations underlying each of these four benefit streams are discussed briefly below:

*a. Wage differential for graduates of the proposed STEM programs*

The quality of the proposed programs is anticipated to be on par with good STEM programs in the U.S. and Europe. Admittance would therefore be highly selective, similar to U.S. admissions requirements, and only the very best Georgian students would be accepted. For these highly qualified individuals, it can be assumed that, in the absence of the project, they would attend the best Georgian university. The earnings differential for these individuals is therefore the amount that they would earn after graduating from the new university relative to what they would earn if they graduated from the best local STEM programs.[8]

To estimate the likely earnings premium, a special survey of Georgian businesses was carried out through local chambers of commerce and managed by the Caucasus Resource Research Center. Respondents were asked to evaluate two hypothetical job candidates whose backgrounds are identical in all respects except that one candidate graduated from the best Georgian engineering program while the other candidate graduated from a good U.S. engineering program. One group of employers was sent a CV describing the candidate with a local education and another group was sent a CV describing the candidate with an international education. After evaluating the CVs, employers were asked to state a salary offer. The median salary offer for the candidate with a U.S. degree was $1,150 per month, while the median salary offer for the candidate with a Georgian degree was $800, a difference of 44%. This wage differential, adjusted for anticipated growth of earnings due to accumulated experience and future Georgian economic growth, was extrapolated over a thirty year period post-graduation to estimate the likely increment in lifetime earnings for future graduates of the new STEM programs.

[8] The counterfactual is that these individuals would receive a lower *quality* university education, not that they would not attend university.

*b. Human capital externalities*

In addition to private returns captured by the wage differential, education can have additional social returns. For example, an increase in the supply of educated workers can raise the productivity of businesses, leading to increased labor demand and higher earnings for a broader group of workers.

Education spillovers are commonly discussed in theoretical literature but there are few good empirical estimates of the magnitude of these spillovers. Most of the empirical literature is based on research in the U.S. and other high income economies. No suitable studies were located for Georgia or countries with similar economic conditions. Consequently an analysis of education spillovers based on U.S. data was used for this analysis and adapted to Georgian labor market conditions.

Two recent U.S. studies measure education spillovers by comparing both changes in plant level productivity over time and changes in wages of workers with different levels of education. The studies find that both productivity and wages rise more quickly in cities that experience a large increase in the share of college educated workers in the labor force, relative to cities where the college share rises more slowly. The studies also find that the increases in productivity are offset by increases in labor costs so that changes in wages fully reflect productivity growth. A one percentage point increase in the share of college graduates in the labor force raises high school dropouts' wages by 1.9%, high school graduates' wages by 1.6% and college graduates' wages by 0.4%. We apply these parameters to Georgian labor force data to calculate an average increase in wages for peripheral workers, over and above the higher wage captured by the individual graduate.

*c. Replacement of expatriate STEM professionals in Georgia with Georgian professionals*

Due to skills shortages in Georgia, some high skill positions are currently occupied by expatriate workers. If the proposed STEM program is successful, the supply of highly skilled Georgian STEM professionals should grow over time, allowing some substitution of local workers for expatriate workers. This would allow a savings to the Georgian economy from reduced payments to foreign workers.[9]

*d. Savings for students who would have studied abroad*

Some Georgians who would otherwise go abroad for undergraduate education might be induced to study at home if the proposed STEM bachelor program is successful. This would allow a savings on room, board and transport, as costs are likely to be lower in Georgia than in the U.S. or Europe.

Key assumptions underlying the benefit streams are: i) a 44% earnings premium for US degree program graduates, ii) an initial incoming class size in the US degree program of 495 rising to 610 by Year 5, and iii) a spillover impact of between 0.4% and 1.9% on productivity and earnings of other workers as a result of an increased supply of STEM graduates.

***Sensitivity analysis and resulting ranges of economic return***

The table below illustrates the impact on the estimated rate of return for the STEM Higher Education Project of changes in one key variable holding other variables constant. Column 4 shows the critical

[9] An estimate of the number of foreign STEM professionals working in Georgia was supplied by the MCA-Georgia.

value of each variable beyond which the ERR falls below the 10% hurdle rate. Column 5 reports the estimated ERR if the variable drops below its base value by 25% and column 6 reports the estimated ERR if the variable exceeds its base value by 25%. Movement in more than one variable would have a compound impact on the ERR. The two most important variables are operating cost per-student and cohort size.

**Higher Education ERR Sensitivity Analysis: baseline ERR = 11%**

| Critical Variable | Explanation | Base/Target Value | Critical Value of Variable Below Which ERR is <10% | ERR at Variable Base Value Minus 25% | ERR at Variable Base Value Plus 25% |
|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) |
| Operating Cost per Student, US Degree Program | Average CY7 Operating Cost per Student in US Degree Programs (Average Operating Cost Over 4 Years, Freshman to Senior Class) | USD 7,434 | USD 8,772 | 12.40% | 9.70% |
| Enrollment Year 7* | Total Enrollment Over all 4 Years (Freshman to Senior Class) in US Degree Programs, Year 7 | 2,155 | 1,918 | 8.80% | 12.70% |
| Investment Cost | Upfront Investment Cost during the % year Compact Period (USD million) | USD 29 | USD 54 | 11.20% | 10.60% |
| Incremental Earnings, US Degree Program | Anticipated % Increase in Earnings of New Program Graduates due to Improved Quality of Education, US Degree Program | 44% | 38% | 9.40% | 12.30% |
| Base Wage | Estimated Average Annual Earnings of New Graduates Without the Program | USD 9,600 | USD 8,352 | 9.10% | 12.50% |

* The enrollment sensitivity analysis assumes that enrollment in the ABET accredited partner degree programs changes in proportion to enrollment in the US degree programs.

### 3.3.4. Program Beneficiaries

#### 3.3.4.1. Improving General Education Quality Project

In general, beneficiaries of the Improving General Education Quality Project would be all Georgian students in grades 1-12, who would benefit from both student assessments and teacher professional

development. A smaller subset of students would also benefit from improvements to the physical infrastructure of their schools.

*Activity 1: Improved Learning Environment Infrastructure Activity.* Assuming that 107 schools are rehabilitated, with an average enrollment of 350 students per school, the initial beneficiaries of this Activity would be 37,450 students. New students entering these schools each year would add to the total number of beneficiaries over a twenty year project lifetime. Most rehabilitated schools would have twelve grades; hence the average intake of new students each year would be approximately 3,121 students. Over a twenty year project lifetime this would add an additional 59,299 students for a total of 96,749 student beneficiaries.[10] Including family members, total beneficiaries are estimated at approximately 348,296. These beneficiaries are a subset of Activity 2 beneficiaries.

*Activity 2: Training Educators for Excellence Activity.* The beneficiaries of this Activity would be students whose teachers take part in professional development. It is envisioned that all secondary school math, science, ICT and English teachers would receive training, benefitting all students in grades 7-12 over the twenty year expected lifetime of the project. In 2012, total enrollment in grades 7-9 was 134,882 and in grades 10-12, 113,602 students. Assuming an implementation success rate of 75%, 101,200 lower-secondary and 85,200 upper-secondary students (a total of 186,400 secondary students) would initially benefit from this program. With an annual intake into grade 7 of approximately 48,000 students and a 75% implementation rate, roughly 36,000 new student beneficiaries would enter secondary school each year. Over a twenty year project lifetime, this would add an additional 684,000 student beneficiaries for a total of 870,400 student beneficiaries.[11] Including family members and adjusting for possible double counting, total beneficiaries are estimated at approximately 1.7 million individuals over twenty years.

#### 3.3.4.2. Industry-led Skills and Workforce Development Project

The number of beneficiaries of the Industry-led Skills and Workforce Development Project is estimated to be 26,000. Beneficiaries will likely be from poorer households, the population that has traditionally taken advantage of technical vocational training. This Project is also expected to strengthen sector policy, to facilitate the creation of new programs, and to promote the uptake of best practice throughout the sector.

#### 3.3.4.3. STEM Higher Education Project

The beneficiaries of the STEM Higher Education Project are students who will graduate from the new degree programs, including both the US degree programs and the programs that are expected to eventually attain ABET or similar accreditation. The number of graduates is estimated from the annual intake numbers for each program as stated in the SDSU financial proposal of February 2014 and expected graduation rates. Over a twenty year period (or 20 cohorts) it is anticipated that 8,493 students will graduate from the US degree programs and 4,596 students will graduate from the ABET or

[10] The initial beneficiaries will be all students in the rehabilitated schools at the time of rehabilitation. Counting this initial cohort as year one, then over the remaining nineteen years of a twenty year project, an additional 59,299 students will enter the schools (19 x 3121).

[11] The initial cohort of student beneficiaries will be approximately 186,400 students, given an assumed implementation success rate of 75%. Counting this as the first year, then over the remaining 19 years an additional 684,000 students will benefit from the Activity for a total of 870,400 student beneficiaries.

equivalent accredited programs. Including family members, the total number of beneficiaries over twenty years is estimated at 47,124.

## 4. Monitoring Component

The Compact will be monitored systematically and progress reported regularly through the indicator tracking table (ITT). There are four levels of indicators that follow from the program logic framework: (i) process, (ii) output, (iii) outcome and (iv) goal. The various indicator levels map to the logical framework and thus allow Project developers and managers to understand to what extent planned activities are achieving their intended objectives. Monitoring data will be analyzed regularly to allow managers of MCA-Georgia and MCC to make programmatic adjustments as necessary with a view towards improving the overall implementation and results of the Program.

### 4.1. Summary of Monitoring Strategy

#### 4.1.1. Indicator Levels

The M&E plan is framed and constructed using the program logic framework approach that classifies indicators as process, output, outcome, and goal indicators.

Goal indicators monitor progress on Compact goals and help determine if MCA-Georgia and MCC are meeting their founding principle of poverty reduction through economic growth. Outcome indicators measure intermediate or medium-term effects of an intervention and are directly related through the Program Logic to the output indicators. Output indicators measure the direct result of the project activities—most commonly these are goods or services produced by the implementation of an activity. Process indicators record an event or a sign of progress toward the completion of project activities. They are a precursor to the achievement of Project Outputs and a way to ensure the work plan is proceeding on time to sufficiently guarantee that outcomes will be met as projected.[12]

#### 4.1.2. Indicator Classification

According to MCC's Monitoring and Evaluation Policy all indicators must be classified as one of the following types:

- Cumulative – to report a running total, so that each reported actual includes the previously reported actual and adds any progress made since the last reporting period.
- Level – to track trend over time.
- Date – to track calendar dates as targets

#### 4.1.3. Common Indicator

MCC has introduced common indicators for external reporting across all MCC Compacts within certain sectors. Common indicators allow MCC to aggregate and reports about results across MCA countries. MCC sector experts have developed these indicators to document sector level progress relevant to different project activity types. Each MCA must include the common indicators in their M&E Plan when the indicators are relevant to that country's Compact Activities. The common indicators relevant to the MCA Georgia Compact are included in this M&E plan.

[12] The indicator levels are formally defined in MCC's *Policy for Monitoring and Evaluation of Compacts and Threshold Programs*.

### 4.1.4. Indicator Documentation Table

The Indicator Documentation Table provides relevant details for each indicator by Project and can be found in Annex I. It provides descriptions for the indicator structure by specifying each indicator's: (i) title; (ii) definition; (iii) unit of measurement; (iv) data source; (v) method of collection; (vi) the frequency of collection; and (vii) party or parties responsible.

### 4.1.5. Indicator Definitions

This M&E Plan provides a succinct description of each indicator in Annex I. The definition of the Outcome and Objective indicators was developed by the M&E Units of MCC and MCA-Georgia in close coordination and are derived from Compact documents, the economic analysis, participatory exercises with stakeholders' participation, from national strategies and sector papers and statistics published by the National Statistics Office of Georgia (Geostat) or Georgia's Education Management Information System (EMIS). The definitions for Output and Process indicators are derived from Compact documents, Implementing Entities and implementers' work plans, and MCC external reporting requirements.

### 4.1.6. Data Sources

Data sources have been identified and vetted for all the indicators listed in Annex I. Generally, monitoring data will be obtained from various primary sources, including Implementing Entities, Service Providers, and MCA-funded surveys. In addition, the MCA-Georgia M&E unit will obtain secondary data for the high level indicators from the relevant government agencies including Geostat.

### 4.1.7. Methods of Data Collection

The data for many objective and outcome indicators will be drawn from surveys conducted by MCA-Georgia in conjunction with Implementing Entities and Service providers while the lower-level indicators will be drawn from the Project implementers' records. Indicators will be reported through a Management Information System (MIS). Data will be reported to MCA-Georgia on a monthly, quarterly, or annual basis, depending on the indicator's requirements. To ensure this, MCA-Georgia will set proper cooperation and collaboration with Implementing Entities and Contractors by putting necessary requirements for Contractors to develop and put in place proper reporting mechanisms, including potentially connection to MCA-Georgia's future MIS.

Where and if necessary, MCA-Georgia will commission surveys to collect special data in coordination with the institutions in charge of each project area. Data collection instruments (including surveys and data collection forms and registries) will be designed in a participatory manner with the Dedicated Teams of the relevant Implementing Entities. In order to provide for the specific needs of evaluations, Impact Evaluators shall be involved in the design of the surveys, including in setting the survey strategy, designing questionnaires and helping developing TORs for survey contractors.

### 4.1.8. Frequency of Data Collection

During the Compact period, data will be collected on a monthly, quarterly or annual basis, depending on the indicator.

Some of the Contractors and Implementing Entities will be required to report on project milestones and outputs quarterly, others annually. Those arrangements will be recorded in the respective contractor's TORs and Implementing Entity Agreements. Decisions on frequency will be taken for each individual implementation-related contract to reconcile MCA-Georgia's need for fresh data with administrative burden and cost efficiency.

### 4.1.9. Table of Indicator Baselines and Targets

To ensure that the Program is on track to meet its overall goals and objectives, the monitoring indicators are measured against established baselines and targets, derived from ex-ante economic rate of return analysis, other types of analysis, and project planning documents. The targets reflect the underlying assumptions made in program design about what each activity would likely achieve. Baselines and target levels for each indicator are defined in the Table of Indicator Baselines and Targets (Annex II).

Baseline figures were established using the most current and appropriate data available prior to an Activity's implementation. This can include the MCC/MCA Baseline Survey, government surveys such as those conducted by Geostat and other organizations' records. If baseline figures are revised from those used in the economic analysis, the Activity's targets, should be revised accordingly.

Targets are derived from 1) the initial economic analysis used in justifying Program investments, 2) project documents, 3) discussions with experts and consultants, and 4) implementation work plans.

Any revision of baselines and targets must adhere to MCC's policies regarding baseline and target revisions and will require MCC's formal approval.

### 4.1.10. Disaggregation of Data

Where applicable, the data will be collected, analyzed, and reported by income level, gender, age groups, regions, etc. in order to portray the benefits accruing to the different constituencies of the population.
The Indicator Documentation Table (Annex 1) identifies which indicators should be disaggregated, to the extent that it is feasible and cost-effective. Select disaggregated figures identified in the Indicator Documentation Table (Annex 1) will be reported to MCC in the quarterly Indicator Tracking Table.

### 4.1.11. Pending Baselines and Targets

At earlier stages of Compact a certain number of each Project's indicators, baselines and targets could be pending, particularly for lower level output and process indicators. The majority of these baselines and targets will be established once the feasibility and design studies' results are known. Others are pending updated data once implementation contracts are awarded and contractors have presented their work plans.

### 4.2. Data Quality Reviews (DQRs)

Data Quality Reviews will be conducted in accordance with the requirements of the MCC M&E Policy.

The objectives of DQRs are to assess the extent to which data meets the standards defined in the MCC M&E Policy in the areas of validity, reliability, timeliness, precision and integrity. Data quality reviews will be used to verify the consistency and quality of data over time across implementing agencies and other reporting institutions. DQRs will also serve to identify where the highest levels of data quality is not possible, given the realities of data collection. DQRs will help ensure that.

The particular objectives for the data quality reviews will be identification of the following parameters: (i) what proportion of the data has quality problems (completeness, conformity, consistency, accuracy, duplication, integrity); (ii) which of the records in the dataset are of unacceptably low quality; (iii) what are the most predominant data quality problems within each field.

MCA Georgia will contract an independent data quality reviewer in compliance with MCC Program Procurement Guidelines. The entity responsible for data quality reviews is expected to be hired in Year 3 of the Compact. The M&E Director and other Officers, as appropriate, within MCA Georgia should also regularly check data quality. In doing so, MCA Georgia may hire individual data quality monitors to monitor data collection and quality, as needed. Besides independent DQRs, the MCA-Georgia M&E Unit will also conduct field visits on a regular basis or whenever requested by MCC, to review the quality of the data gathered through this M&E Plan. This exercise will be done in coordination with the respective project stakeholders.

### 4.3. Standard Reporting Requirements

Performance reports serve as a vehicle by which the MCA Georgia Management informs MCC of implementation progress and on-going field revisions to Project work plans. Currently, MCC requires that MCA-Georgia submit a Quarterly MCA Disbursement Request and Reporting Package (QDRRP) each quarter. The QDRRP must contain a quarterly **Indicator Tracking Table** (ITT) which tracks progress against indicators in the M&E Plan. Guidance on fulfilling these reporting requirements is available on the MCC website at: www.mcc.gov/pages/countrytools/tools/compact-implementation.

## 5. Evaluation Component

### 5.1. Summary of Evaluation Strategy

Evaluations assess as systematically and objectively as possible the Program's rationale, relevance, effectiveness, efficiency, merits, sustainability and impact. The evaluations will strive to estimate the impacts on the targeted beneficiaries and wider regional or national economy. The evaluations will provide MCC, MCA-Georgia and other stakeholders with information during the Compact on whether or not the intended outcomes are likely to be achieved and at the Compact's end or after on the impacts that are attributable to the Program.

The evaluation strategy will be based upon scientific models that ensure the advantages of neutrality, accuracy, objectivity and the validity of the information. These models will comprise experimental and quasi-experimental designs as well as statistical modeling. Methodologies will be selected considering the cost-effectiveness of an evaluation's expected learning.

More than formal documentation of Program results, evaluation will serve as a learning tool during Compact implementation and beyond. MCC will strive to conduct evaluations in a participatory way to ensure their success and relevance while protecting the evaluations' objectivity. The participatory approach will also include continuous training for Program staff and stakeholders on evaluation methods. Participatory, qualitative evaluation will provide an opportunity to better understand stakeholders' perceptions of the results, engage a broad cross-section of stakeholders including by gender, and enhance ownership of the outcome of the development process.

While all MCC investments are built with the goal of spurring economic growth and poverty reduction, the proposed investments are directed at learning outcomes of students, meaning that household income gains are unlikely to be measurable during the life of the Compact. Fortunately, literature on the economics of education does give confidence in the positive income impacts of increased investments in education, and such gains will allow for the proxy measurement for the income gains from improvements in educational outcomes. Thus, the evaluation of impacts on beneficiary incomes will be focused on an ex-post recalculation of ERR models, which will allow MCC to combine both real income gains and education gains into a single measurement of the gains toward economic growth. Therefore, beyond proxy-means measurement of income gains, the evaluation strategy of the Compact will be that of measuring the degree to which the project's intermediate outcomes (such a learning gains) come to fruition, rather than attempting to measure income gains directly.

*The Respective Roles of MCA-Contracted Evaluations and MCC Impact Evaluations*

Both MCC and MCA Georgia will fund evaluations of the Georgia Compact from their respective budgets. MCA Georgia will fund Ad Hoc Evaluations and Mid-Term/Final Evaluations. MCC will fund Impact or Performance Evaluations of every Project.

The roles of the various evaluations are different and are intended to be complementary. The primary difference is the source of funds and the respective scopes. Methodologies also tend to differ though not necessarily. Common differences for each evaluation are noted in the following sections. The table below highlights some key differences.

***Common Differences among Evaluations Types***

| | Mid-Term and Final Evaluation | MCC Impact Evaluation | MCC Performance Evaluation | Ad Hoc Evaluation |
|---|---|---|---|---|
| **Main Objective** | Evaluates Compact progress and results in a comprehensive manner | Measures the changes in income and/or other aspects of well-being that are *attributable* to a defined (through a modeled counterfactual) | A study that seeks to answer descriptive questions, such as: what were the objectives, how was it implemented and perceived; whether expected results occurred and are sustainable | Addresses short-term information gaps |
| **Methodologies** | ▪ Interviews<br>▪ Case studies<br>▪ Statistical analysis of primary data<br>▪ Summaries of secondary data (including Impact Evaluations) | ▪ Experimental<br>▪ Quasi-experimental<br>▪ Other advanced statistical analysis | ▪ Pre-Post comparison<br>▪ Ex-post ERR<br>▪ Other | (varies) |
| **Strengths** | ▪ Broad survey of all issues<br>▪ Focus on implementation issues | ▪ Attempts to establish attribution<br>▪ Focus on high level results (impacts)<br>▪ Use of highly specialized researchers<br>▪ Quantitative focus | ▪ Attempts to answer important questions for learning about worked well and what could have been done better | ▪ Executed quickly<br>▪ In depth analysis of a single issue |
| **Funding** | MCA Compact | MCC budget | MCC budget | MCA Compact |

### 5.1.1. MCC Impact and Performance Evaluations

Impact and performance evaluations support two objectives derived from MCC's core principles: accountability and learning. Accountability refers to MCC and MCA-Georgia's obligations to report on their activities and attributable outcomes, accept responsibility for them, and disclose these findings in a public and transparent manner. Learning refers to improving the understanding of the causal relationships between interventions and changes in poverty and incomes. MCC advances the objectives of accountability and learning by selecting from a range of independent evaluation approaches. MCC currently distinguishes between two types of evaluations, impact and performance evaluations. At the minimum, each project should have an independent performance evaluation for accountability reasons.

### 5.1.2. Ad Hoc Evaluations and Special Studies

MCC or MCA-Georgia may request ad hoc evaluations or special studies of Projects, Project Activities or the Program as a whole prior to the expiration of the Compact Term to be conducted by an outside entity contracted in compliance with MCC Program Procurement Guidelines. Ad Hoc Evaluation and Special Studies are designed to provide Management staff, Supervisory Board members, program implementers, beneficiaries, and other stakeholders with information about Program implementation and results that cannot be uncovered from performance monitoring or independent evaluations alone.

## 5.2. Specific Evaluation Plans

### 5.2.1. Improving General Education Project Evaluation

**Summary Table: Improving General Education Project Evaluation**

| Evaluation Name | Summary | Questions | Methodology | Data Sources |
|---|---|---|---|---|
| **Improved Learning Environment Infrastructure Activity** | A stratified RCT design will be used to select treatment schools in different regions, from a pool of eligible schools | ▪ Did students' attendance increase as a result of rehabilitation?<br>▪ Did teachers' attendance increase?<br>▪ Did the facility rehabilitation allow students to spend more time on learning related activities?<br>▪ Do learning and other behavioral outcomes change as a result of the school rehabilitations?<br>▪ Do students' test scores change as a result of the school rehabilitations?<br>▪ Have students in rehabilitated schools had a higher rate of further education (lower dropout, higher rates of graduation, etc.)? Differences due to increased productivity or some other factor (e.g. different choice of vocation)?<br>▪ Have students in rehabilitated schools who entered the workforce experienced lower rates of unemployment?<br>▪ Have students in rehabilitated schools who entered the workforce earned higher | Stratified RCT | Administrative data on school condition, design plans, students' test scores, and surveys of the sample population. |

| Evaluation Name | Summary | Questions | Methodology | Data Sources |
|---|---|---|---|---|
| | | wages? If so, were wage differences due to increased productivity or some other factor (e.g. different choice of vocation)? | | |
| **Training Educators for Excellence Activity** | An Impact Evaluation will be used to examine the efficacy of teacher training in improving classroom time use, pedagogical skills, and students test scores. | ▪ What was the impact of the "school mentor" on teaching and learning methods and outcomes?<br>▪ Do teacher training programs, focused on science and technology, improve teacher performance?<br>▪ Do teacher training programs improve learning outcomes?<br>▪ Can teacher training improve outcomes without incentives tied to them? | RCT | Stalling Classroom Protocol, Assessment Test, Administrative data |
| **School Assessment** | The evaluation will monitor progress in the quality and frequency of school assessments. This is component could also serve as a data source for the other Gen Ed activities and their evaluations | ▪ Does teacher training in assessment administration lead to increased use of school assessments?<br>▪ Do schools used the information gathered through the standardized tests? | Performance Evaluation /Longitudinal Study | Administrative Data, Test Scores |

| Evaluation Name | Evaluation Type | Evaluator | Primary/ Secondary Methodology | Final Report Date |
|---|---|---|---|---|
| **Improved Learning Environment Infrastructure Activity** | IE | Mathematica | RCT | 08/30/2015 (First Round) |
| **Training Educators for Excellence Activity** | IE | Mathematica | RCT | TBD |
| **Education Assessment** | Performance Evaluation | Mathematica | Assessment of time series data to change in behavior related to administering tests | TBD |

#### 5.2.1.1. Improved Learning Environment Infrastructure Activity Evaluation

*Evaluation Questions*

- Did students' attendance increase as a result of rehabilitation?
- Did teachers' attendance increase?
- Did the facility rehabilitation allow students to spend more time on learning related activities?
- Do learning and other behavioral outcomes change as a result of the school rehabilitations?
- Do students' test scores change as a result of the school rehabilitations?
- Have students in rehabilitated schools had a higher rate of further education (lower dropout, higher rates of graduation, etc.)? Differences due to increased productivity or some other factor (e.g. different choice of vocation)?
- Have students in rehabilitated schools who entered the workforce experienced lower rates of unemployment?
- Have students in rehabilitated schools who entered the workforce earned higher wages? If so, were wage differences due to increased productivity or some other factor (e.g. different choice of vocation)?

*Evaluation Methodology Description*

The evaluation of the school rehabilitation activity will use stratified random assignment to treatment (rehabilitation) and control (no rehabilitation) at the school level. The randomization will be stratified by region, as detailed in Section 3.2.1. Schools for both treatment and control groups will be drawn from a pool of school deemed eligible based on cost-effectiveness, condition of the school, and targeting for minority languages.

The unit of analysis for the study will be on the individual student level. The study will follow beneficiaries and non-beneficiaries through secondary school and their entry into the labor market.

To allow for efficient contracting into individual, discrete construction phases ("Phases"), the impact evaluation design has been tailored to allow for each construction Phase to include the schools from a specific Region or group of Regions. The key threat to the evaluation design is that each construction Phase contains a specific group of Regions and that the beneficiary schools in a particular Region not be divided into separate phases. In other words, the schools from a given Region must all be constructed within the same construction season and this may reduce the number of schools overall that the intervention is able to reach Any construction schedules which do not fall inside this design will require specific authorization from all key members of the MCA-Georgia and MCC core teams, as any deviation from this design has the potential to endanger the ability of the Independent Evaluator to assess the impact of the activity. The Evaluator should attempt to leverage variations in "exposure to treatment" to better evaluate the impacts of the school rehabilitations across regions and over time.

*Data Sources*

Administrative data on school condition, design plans, students' test scores, and surveys of the sample population.

#### 5.2.1.2. Training Educators for Excellence Activity Evaluation

*Evaluation Questions*

- Do teacher training programs, focused on science and technology, improve teacher performance?
- Do teacher training programs improve learning outcomes for students?
- Do encouragement schemes haven an impact on the efficacy of teacher training?

*Evaluation Methodology Description*

For the TEE activity, primary focus for the evaluation will be to identify a method of comparing teachers who receive training through the program to a comparable group of teachers who did not receive training. From an evaluation- methods standpoint, the optimal approach would be to use a random assignment procedure to select who will receive training. The following alternatives have been proposed to achieve the above goal:

- Random assignment of teachers: under this approach, a pool of eligible teachers would be identified for the program, and a subset of those teachers would be randomly selected to receive the training and the remaining teachers who were not selected would not receive training. Comparing the outcomes of the selected trainees to the comparison group of non- trained teachers would allow the evaluation to identify the impacts of the program.

- Random assignment of schools: this approach would randomly select which schools receive training. That is, all of the teachers in a school would either be eligible or ineligible for the training program, and the evaluation would compare outcomes in the schools assigned to the training program to the outcomes in schools that were not eligible for the program.

- Phased rollout design: if the program intends to provide training opportunities to all eligible teachers in Georgia, it may not be possible to maintain a "control" group that does not receive the program during the implementation period. There are several other evaluation approaches we could discuss to accommodate this type of program design. For example, if the training will be delivered in "phases" to different groups of teachers over time, the evaluation could randomly select which teachers are assigned to each phase and compare the outcomes of teachers who participated in earlier program phases to the outcomes of teachers who have yet to receive training.

- Randomized encouragement design: If all eligible teachers will be given an opportunity to sign up for training at the same time, the evaluation could still randomly select a group of teachers to receive an encouragement or an incentive to participate (e.g., perhaps a small stipend). By comparing the differential training rates in the encouraged group to the (presumably lower) rates of training in the group that did not receive the encouragement, and measuring any differences in outcomes between the two groups, the evaluation would still be able to identify the impacts of the training program..

*Data Sources*

The evaluation will utilize administrative data from the registrars of schools in the sample. In addition, students' test scores will provide data for some of the outcome variables. Finally data on classroom time use will be important. Past studies have used data collection methods such as the Stalling Classroom protocol[13], in which trained observers make periodic and unannounced visits to classrooms to collect information on use of time and teaching materials.

#### 5.2.1.3. Education Assessment Activity Evaluation

*Evaluation Questions*

- Does teacher training in formative classroom assessment lead to improve student learning outcomes??
- Does the use of formative classroom assessment improve teacher quality?

*Evaluation Methodology*

The progress in quality and frequency of test administration in Georgian schools will be monitored through a Performance Evaluation. The data gathered from tests, especially test scores will be used as a valuable data source for the other General Education activities.

*Data Sources*

Administrative data, previous school assessments and quality reviews of those assessments.

[13] https://www.eddataglobal.org/embedded/stallings_snapshot.doc

### 5.2.3. Industry-led Skills and Workforce Development Project Evaluation

**Summary Table: Industry-led Skills and Workforce Development Project Evaluation**

| Evaluation Name | Summary | Questions | Methodology | Data Sources |
|---|---|---|---|---|
| **Sector Policy Industry Engagement Activity** | The evaluation will assess private sectoral support for TVET programs and its effect on the targeting of those programs. | ▪ Will Industry oriented TVET policies lead to more resources being devoted to local TVET programming?<br>▪ Will this sector support lead to greater private sector investment in these sectors?<br>▪ Will better industry standards lead to stronger sector engagement | Performance Evaluation, Longitudinal study | Administrative data from TVET programs, Surveys of TVET students, |
| **Provider Practice for Industry Engagement** | The evaluation will assess the use of best practices, the uptake of those local best practices and their effect on the quality of TVET programs in Georgia. | ▪ Does the identification and promotion of best practices encourage uptake of these procedures and standards?<br>▪ Does the promotion of best practices increase the quality of the TVET programs in Georgia? | Performance Evaluation | Surveys of TVET programs and certification standards, administrative data |
| **Competitive Grant Program** | The evaluation will assess the efficacy of the competitive grants process in incentivizing higher quality, and better targeted TVET programs that match labor market needs. | ▪ Do competitive grants incentivize investment in TVET programs that are industry demand driven?<br>▪ Will such a grant program produce innovative TVET programs?<br>▪ Do Competitive grants for TVET programs increase employment in targeted sectors?<br>▪ Do demand driven TVET programs increase earned income for participants of the program as compared to the status quo?<br>▪ Do the sector targeted TVET have different outcomes for men and women?<br>▪ Do the sector targeted TVET increase hours worked? | Performance Evaluation /Longitudinal study | Information on TVET programs gathered during the bidding process, Administrative data, Surveys of earnings of participants post-graduation |

| Evaluation Name | Evaluation Type | Evaluator | Primary/Secondary Methodology | Final Report Date |
|---|---|---|---|---|
| **Sector Policy Industry Engagement Activity** | Performance Evaluation | TBD | Monitoring of sector involvement in TVET programs and engagement by private sector, Longitudinal study of quality of TVET programs and impacts for employment opportunities and earnings for graduates | TBD |

| Evaluation Name | Evaluation Type | Evaluator | Primary/Secondary Methodology | Final Report Date |
|---|---|---|---|---|
| **Provider Practice for Industry Engagement** | Performance Evaluation | TBD | Monitoring of uptake of identified local best practices and their effect on the quality of TVET programs | TBD |
| **Competitive Grant Program** | Performance Evaluation | TBD | Longitudinal Study to assess progress made in TVET programs and targeting of sector needs, and impacts on employment opportunities and earnings for graduates | TBD |

#### 5.2.3.1. Sector Policy Industry Engagement Activity

*Evaluation Questions*

- Will Industry oriented TVET policies lead to more resources being devoted to local TVET programming?
- Will this sector support lead to greater private sector investment in STEM sectors?
- Will better industry standards lead to stronger career oriented programs
- Will industry demand driven programs increase employability and income earning potential for graduates of these programs?

*Evaluation Methodology*

The evaluation will monitor the progress over time with regards to increasing the number and quality of TVET programs that target skills needed in the labor market. It will also monitor sector support for these programs and the reputation of TVET programs in Georgia among employers.

*Data Sources*

Administrative data from TVET programs, and Surveys of TVET students

#### 5.2.3.2. Provider Practice for Industry Engagement Activity

*Evaluation Questions*

- Does the identification and promotion of local best practices encourage uptake of these procedures and standards?
- Does the promotion of best practices increase the quality of the TVET programs in Georgia?

*Evaluation Methodology*

The evaluation will monitor uptake of best practices regarding the structure and management of TVET programs nationally. As a counterfactual will be difficult to establish the evaluation of this activity will be a performance evaluation, noting progress over time.

#### 5.2.3.3. Competitive Grant Program

*Evaluation Questions*

- Do competitive grants incentivize design in TVET programs that are industry demand driven?
- Do competitive grants incentivize design in TVET programs that attract women into non-traditional sectors?
- Will such a grant program produce innovative TVET programs?
- Do competitive grants for TVET programs increase employment in targeted sectors?
- Do demand driven TVET programs increase earned income for participants of the program as compared to the status quo?
- Do the sector targeted TVET have different outcomes for men and women?
- Do the sector targeted TVET increase hours worked?

*Evaluation Methodology*

Randomization at this level would be very difficult and spillovers are hard to predict. A longitudinal study may help understand the efficacy of the program components in producing desired outcomes.

*Data Sources*

Administrative data from TVET programs, surveys of beneficiaries, information gathered of firms involved after bidding process, sector employment rates. Resources devoted nationally to those sectors.

### 5.2.4. STEM Higher Education Project Evaluation

**Summary Table: STEM Higher Education Project Evaluation**

| Evaluation Name | Summary | Questions | Methodology | Data Sources |
|---|---|---|---|---|
| **US-Georgia University Partnership** | Longitudinal study to assess the efficacy of university partnerships in fostering technical standards for Georgia university, and the impact of US degrees for participants in their income post-graduation | ▪ Do graduates of MCC-supported US Bachelor's program have better employment opportunities than Georgian students graduating from the non-US STEM Bachelor's programs?<br>▪ Do graduates of MCC-supported US Bachelor's program have better levels of income than Georgian students graduating from the non-US STEM Bachelor's programs?<br>▪ Does US-Georgia University Partnership program contribute towards reduction of number of Georgian students seeking education abroad?<br>▪ Does US-Georgia University Partnership program contribute towards reduction of imports of foreign professional workers hired in the STEM areas? | Performance Evaluation/ Longitudinal Studies | administrative data, results from secondary school exit exams, tracer studies, surveys of beneficiaries and non-beneficiaries after graduation from the university program |

| Evaluation Name | Summary | Questions | Methodology | Data Sources |
|---|---|---|---|---|
| | | ▪ Does US-Georgia University Partnership program contribute towards eradication of the mismatch on a Georgian labor marketplace? Does it produce skills which are in high demand of the Georgian economy? | | |

| Evaluation Name | Evaluation Type | Evaluator | Primary/ Secondary Methodology | Final Report Date |
|---|---|---|---|---|
| **US-Georgia University Partnership** | Performance Evaluation | TBD | Longitudinal study of the US Bachelor's program graduates to create a data base for impact evaluation with regard to employment opportunities and income levels | TBD |

#### 5.2.4.1. US-Georgia University Partnership Evaluation

*Evaluation Questions*

- Do graduates of MCC-supported US Bachelor's program have better employment opportunities than Georgian students graduating from the non-US STEM Bachelor's programs?
- Do graduates of MCC-supported US Bachelor's program have better levels of income than Georgian students graduating from the non-US STEM Bachelor's programs?
- Does US-Georgia University Partnership program contribute towards reduction of number of Georgian students seeking education abroad?
- Does US-Georgia University Partnership program contribute towards reduction of imports of foreign professional workers hired in the STEM areas?
- Does US-Georgia University Partnership program contribute towards eradication of the skill mismatch in the Georgian labor market? Does it produce skills which are in high demand of the Georgian economy?

*Evaluation Methodology*

Longitudinal study to evaluate the impact of the project on employment opportunities and levels of income for the US Bachelor's program graduates. While such an impact is expected to take place far beyond the lifespan of the project specifically designed tracer studies might be conducted to create a reliable data base of the program beneficiaries for further analysis.

*Data Sources*

Administrative Data, results from secondary school exit exams, Tracer studies, surveys of beneficiaries and non-beneficiaries after graduation, labor market surveys etc.

## 6. Implementation and Management of M&E

### 6.2. Responsibilities

The MCA-Georgia M&E Unit is part of the MCA Management Team, and is composed of an M&E Director who has the key responsibility of leading and managing all M&E activities; and an M&E Officer who will support the M&E Director in performing the M&E activities. Additionally, the M&E Unit will hire short-term support on an as-needed basis.

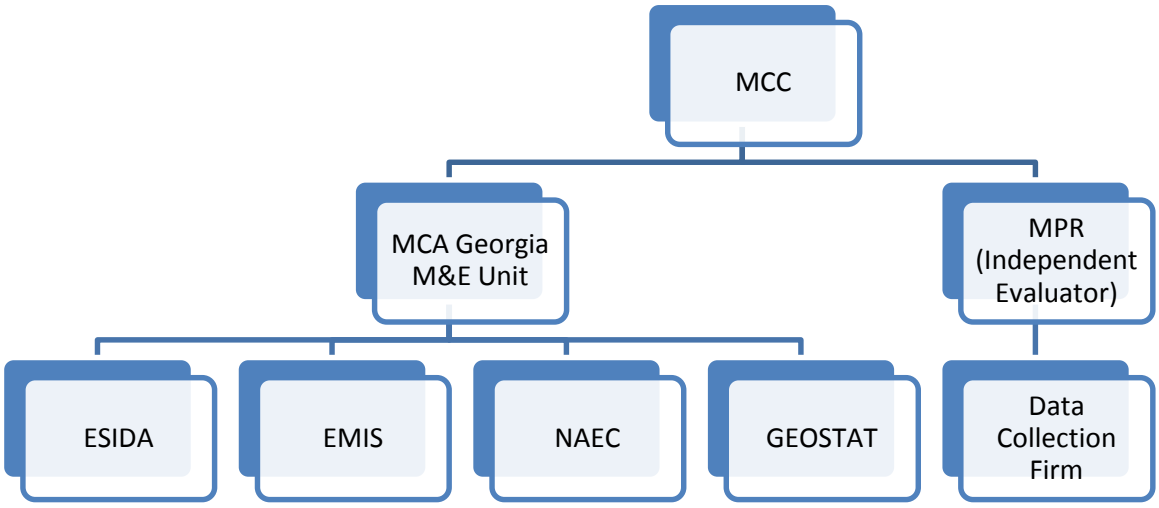
The M&E Unit will carry out, or hire contractors to complete the following and other related activities:

- Direct implementation of all activities laid out in the M&E Plan and ensure all requirements of the M&E Plan are met by MCA-Georgia
- Ensure that the M&E Plan and ERR analysis are modified and updated as improved information becomes available
- Develop and use a documentation system to ensure that key M&E actions, processes and deliverables are systematically recorded. This may be accomplished either as part of the M&E information system or independently. The documentation may encompass the following elements:

  - ✓ Process, output and outcome indicators,
  - ✓ Performance indicators (to be developed by implementers and added subsequently to the M&E Plan),
  - ✓ Changes to the M&E Plan,
  - ✓ Key M&E deliverables including TORs, contracts/agreements, data collection instruments, reports/analyses, etc.

- Develop (with the PR and ESA/Gender officers) and implement a systematic dissemination approach to ensure participation of all the stakeholders, and to facilitate feedback of lessons learned into the compact implementation process
- Organize and oversee regular independent data quality reviews on a periodic basis to assess the quality of data reported to MCA-Georgia
- Participate in project monitoring through site visits, review of project reports and analysis of performance monitoring and other data
- Update the M&E work plan periodically
- Contribute to the design of the impact evaluation strategy
- Collaborate with the Procurement Director to prepare and conduct procurement of M&E contracts.

### 6.3. Reporting/Data Flow Structure of Georgia Compact




### 6.4. MCC's Management Information System for MCA/M&E

The MCC MIS system was developed to replace the Excel submission of the ITT. The system will also aid in the automated reporting of ITT data. MCA-Georgia will be required to submit the ITT with the QDRP through the MCC MIS system and training for how to use the system is available. The ITT will be created upon the approval of the initial M&E Plan in the MCC MIS system. Any approved changes to the M&E Plan will be reflected in the ITT. In addition, the implementation of a Web-enabled MIS serves to support the timely and systematic reporting of MCA-Georgia to MCC on the ITT, and the M&E components of the Detailed Financial Plan, Procurement Plan and Narrative Report in the routine submission of the Quarterly Disbursement Request Package.

### 6.5. Review and Revision of the M&E Plan

The M&E Plan will be revised as needed during the life of the Compact to adjust to changes in the Program's design and to incorporate lessons learned for improved performance monitoring and measurement. Any revision of the M&E Plan will follow MCC's Policy for Monitoring and Evaluation of Compact approved May 2009 and updated in May 2012.

## 7. M&E Budget

The budget for the implementation of the proposed M&E activities for the five-year term of the Compact is US$ 3.5 million. The line items of this budget will be reviewed and updated as the program develops, on an annual or quarterly basis, when the respective quarterly detailed financial plan is submitted to MCC with the quarterly disbursement request.

The M&E budget does not include the M&E staff in the MCA-Georgia Management Unit whose salaries and field trips are included in the administrative budget of the Compact. The budget should not exceed the total amount over the five years, but the distribution of funding between line items and years may be adjusted according to the results of the M&E Plan's regular reviews.

**M&E Budget (2014-2019)**

| Item | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Total (USD) |
|---|---|---|---|---|---|---|
| Capacity building | | 25,000 | 50,000 | 50,000 | 25,000 | **150,000** |
| Data collection | 500,000 | 500,000 | 350,000 | 350,000 | 350,000 | **2,050,000** |
| Data quality review | | 150,000 | | 150,000 | | **300,000** |
| Evaluation[14] | | | 150,000 | | 250,000 | **400,000** |
| Monitoring[15] | 25,000 | 50,000 | 50,000 | 50,000 | 25,000 | **200,000** |
| Reporting and dissemination[16] | | 50,000 | | | 100,000 | **150,000** |
| Other[17] | 50,000 | 50,000 | 50,000 | 50,000 | 50,000 | **250,000** |
| **Grand Total (USD)** | **650,000** | **850,000** | **650,000** | **600,000** | **750,000** | **3,500,000** |

While the resources for the carrying-out of surveys are allocated by MCA-Georgia from Compact funds, the cost of independent evaluators is to be funded directly by MCC. MCC expects to commit approximately $5 million to fund the independent evaluators, divided among two to three evaluators.

## 8. Other

### 8.2. M&E Requirements for Disbursements

The MCC M&E Policy states that the M&E Plan should include "any M&E requirements that an MCA must meet in order to receive disbursements" (article 5.1.1). The Policy notes that substantial compliance with M&E Plan is a condition for approval of quarterly disbursements. In accordance with these guidelines, the following are envisaged to meet the requirements for substantial compliance with the M&E Plan including, but not limited to:

1. Having fully staffed M&E personnel or actively seeking to fulfill M&E staffing, to MCC's satisfaction.
2. Actively executing the M&E work plan to meet the reporting and data needs of professional monitoring and evaluation of the Compact Program, to MCC's satisfaction.
3. Timely managing and utilizing M&E budget in pursuing the Plan's purposes, to MCC's satisfaction.
4. Maintaining sufficient progress towards achievement of target indicators as outlined in the annexes to this Plan, to MCC's satisfaction.

[14] Independent Mid-term and Final Evaluation Reports
[15] M&E Equipment, Supervision of Data Collection, etc.
[16] Quality Review Discussions and Events
[17] Technical Assistance (ERR Consultants, Data Quality Supervisors, Consultants to Analyze Data at IEs etc.), Special Studies,

### 8.3. M&E Plan Assumptions and Risks

As with any large Compact program, a number of assumptions and risks could influence the normal process of its implementation according to the schedule and resources allocated. The assumptions and risks presented below are deemed to be applicable to this Monitoring and Evaluation Plan and other program components that relate directly to monitoring and evaluation issues. Assumptions are basically details associated with activities assumed ahead that need to occur for the monitoring and evaluation to be successfully implemented, while risks are considered factors that might restrict or limit the success of M&E.

| Key Assumptions | Risks |
|---|---|
| **Improving General Education Project: Improved Learning Environment Infrastructure Activity** | |
| Improved maintenance practices will increase the lifespan of education facilities | Lack of school funds (or unwillingness of school management to allocate a bigger portion of budgetary funds to maintain newly installed facilities) shall be considered as a major risk for improved maintenance practices. |
| Increased GoG commitment to O&M to prevent continued deterioration schools' physical infrastructure | Causal relationship between Government's commitment to O&M and school management practices are unclear. As mentioned above, lack of budgetary funds is a major constraint factor to impede school maintenance activities.<br><br>GoG commitment to allocate sufficient budgetary funds on M&O shall not be deemed a risk factor. |
| Maintenance costs will decrease in the medium and long terms based on improved maintenance policies that increase the life span of schools. | Several programmatic risks could undermine this assumption:<br><br>1. Construction costs might prove to be more expensive than anticipated, limiting the number of infrastructure systems that will be improved at treatment schools or the number of systems that can be rebuilt to high quality standards that increase building life spans.<br><br>2. Installing new systems that were not present previously (such as gas heating and additional lighting) might increase schools' running operations costs, relative to what they would have been otherwise. Although these increased expenditures can benefit students and teachers, the changes will not necessarily decrease operating costs at program schools.<br><br>3. Alternatively, investments in new school infrastructure might shift maintenance priorities away from older systems that are not improved under the ILEI program. Reducing maintenance spending on older legacy systems could reduce the life spans of schools in unanticipated ways. |
| Improved school infrastructure will lead to increased student and teacher attendance rates | Student attendance rates might be affected by additional factors such as low quality teachers, social and/or cultural behavior (e.g. early marriages,). |

| Key Assumptions | Risks |
|---|---|
| | Teacher attendance rates might be influenced by additional factors such as low financial incentives, lack of teaching staff in rural areas etc. |
| Decreased absenteeism and additional time on task shall be reflected in improved average standardized test scores | Lack of reliable nationwide data on student absenteeism and time on-task, impedes the analysis of causal relationship between the three policy variables.<br><br>In addition, student learning outcomes might be affected by various factors (e.g. teaching quality, social and cultural environment etc.) which must be taken into account. |
| **Improving General Education Project: Training Educators for Excellence Activity** | |
| Better trained school managers (principals, other administrative staff) will be more sensitive to the needs of teachers and will be able to empower them toward improved teaching, which in its turn will lead to better learning outcomes. | It appears plausible that the training program for principals could be designed and implemented in a manner that produces improved sensitivity to teachers' needs and improved management practices related to teachers' empowerment or improved teaching practices.<br><br>There is limited descriptive evidence on the quality of school management decisions and practices in Georgia. However, effective school management decisions could plausibly be linked to learning outcomes through mechanisms such as teacher hiring and retention, the number of hours dedicated to instruction during the school day, and school directors' oversight of teaching quality and teacher practices.<br><br>Lack of budgetary funds might be a risk factor for school management to provide sufficient financial benefits for teachers especially in rural areas. |
| Better trained teachers will improve internal efficiency measures (repetition rates, internal transition rates, graduation rates etc.). | There is no reliable nationwide data in Georgia to prove the casual relationship between those policy variables.<br><br>Improved internal efficiency measures might be affected by various factors in addition to better trained teachers and effective management decisions.<br><br>Social and cultural background of students in different settings needs to be taken into account. |
| Better trained teachers will lead to improved learning outcomes which will be reflected in higher students' standardized test scores. | An extensive literature provides rigorous evidence linking teacher quality and teacher performance to students' learning outcomes (for example, Chetty et al. 2011; Hanushek 2010).<br><br>Insufficient financial benefits for teachers (especially in rural areas) might be a risk factor to sustain a qualified teaching level in the long run which will negatively affect learning outcomes.<br><br>Additional factors affecting student learning outcomes (e.g. student social and cultural background) need to be taken into account as well. |
| Students experiencing improved learning outcomes will be | Although there is no rigorous evidence linking improved |

| Key Assumptions | Risks |
|---|---|
| more likely to advance to further education opportunities and experience increased lifetime earnings and higher employment rates.<br><br>There is an under-provision of highly educated workers in the labor market. Students who demonstrate improved learning due to teachers' or principals' training will experience increased lifetime earnings and higher employment rates. | learning outcomes to increased educational attainment specifically in Georgia, there is substantial evidence that these outcomes are related in other settings (for example, Chetty et al. 2011) and it is possible that these two outcomes could be causally linked in this context.<br><br>Under the assumption that improved learning produces higher educational attainment, it also appears reasonable to assume that this higher attainment could produce increases in employment rates and earnings. As shown in MCC's compact development materials, earnings and employment rates are associated with higher educational attainment in Georgia. Descriptive evidence also suggests a mismatch between the skills and training employers seek and the current workforce in Georgia (World Bank 2013).<br><br>However, higher employability rates and income levels might be affected by exogenous as well as indigenous shocks to the Georgia's economy (e.g. soundness of the macroeconomic environment, political stability and global economy trends). |
| **Improving General Education Project: Education Assessment Activity** | |
| Better teaching practices implementing classroom assessment tools will lead to better student learning outcomes. | Measures to incentivize teachers to use classroom assessment results for better teaching practices are unclear. |
| The advent of international and national evaluation, in combination with better principal training, will enable and inspire principals to manage their schools better throughout the year. | There is limited existing evidence on the relationship between international and representative (sample-based) national assessment programs and principal performance. It is not clear why publishing the results of national or international assessments (which may or may not include data from a given principal's school) should be expected to increase principals' professional efforts or school management practices. It seems to be an unstated assumption that either principals will work harder once they see the relative performance of students in their schools, or public pressure will compel them to do so. This assumption might be overly optimistic unless the assessments provide school-level data on student achievement and are linked to clear incentives for principals to improve their schools' performances. |
| **Industry-led Skills and Workforce Development Project** | |
| MCC-supported grantee programs will lead to higher employment rates and income levels for related TVET graduates. | Lack of reliable nationwide data on TVET graduates as well as low level of Georgia's labor market surveys impedes the analysis of causal relationship of this assumption.<br><br>In addition, employability and income levels might be affected by exogenous as well as indigenous shocks to the Georgia's economy (e.g. soundness of the |

| Key Assumptions | Risks |
|---|---|
| | macroeconomic environment, political stability, and global economy trends). |
| MCC supported TVET programs will cause change in social perceptions and recognition of vocational education in Georgia. | Social recognition of TVET in Georgia shall be dependent on various factors among which private sector engagement and institutional framework for social partnership being considered to have the highest priority.<br><br>Preliminary analysis outlined in the TVET industry engagement strategy submitted by MCA Georgia on July 29, 2013 stressed the lack of demand from the private sector as well as absence of institutional incentives a major risk factor for establishing a sustainable social partnership framework between vocational education and private sectors. |
| **STEM Higher Education Project** | |
| MCC-supported Bachelor's programs will lead to higher employment rates and income levels of their graduates. | Lack of reliable nationwide data on STEM graduates as well as low level of Georgia's labor market surveys impedes the analysis of causal relationship of this assumption.<br><br>In addition, employability and income levels might be affected by exogenous as well as indigenous shocks to the Georgia's economy (e.g. soundness of the macroeconomic environment, political stability, and global economy trends). |
| MCC-supported Bachelor's programs will provide qualified local labor force as a substitution for imported workers in STEM area. | No data on STEM expatriates in Georgia have been collected as well as no STEM labor market surveys have been conducted to empirically support such an assumption.<br><br>While STEM professionals are considered to be in demand at the Georgian marketplace it is difficult to quantify and provide a forecast of STEM demanded professionals. |

## ANNEX 1.

### 1.1.Indicator Documentation Table (Monitoring Indicators for the MIS)

| Common Indicator Code | Indicator Level | Indicator Name | Definition | Unit of Measure | Disaggregation | Primary Data Source | Responsible Party | Reporting Frequency |
|---|---|---|---|---|---|---|---|---|
| **Improving General Education Project: Improved Learning Environment Infrastructure Activity** | | | | | | | | |
| E-4 | Output | Schools fully rehabilitated | The number of educational facilities constructed or rehabilitated according to standards stipulated in MCA contracts signed with implementers. | Number | | ESIDA | MCAG/ESIDA | Annual |
| | Output | Science labs installed and equipped | The total number of science labs installed through MCC-funded school rehabilitations. Science lab must be operational in order to be counted | Number | | ESIDA | MCAG/ESIDA | Annual |
| | Output | Students benefitting from MCC-installed/improved science labs | The Number of students benefitting from MCC-installed/improved science labs | Number | Gender | ESIDA | MCAG/ESIDA | Annual |
| | Process | Signing of Phase 1 Construction Contracts | Quarter in which Phase 1 construction contracts are signed | Date | | MCAG | MCAG | Annual |
| | Process | Installation of Phase 1 Science Labs | Quarter in which all Phase 1 schools' science laboratories are installed | Date | | MCAG | MCAG | Annual |
| E-2.1 | Process | Total value of construction contracts | Value of all signed contracts (including designs, construction, supervision, lab equipment) using compact funds | US Dollars | | MCAG | MCAG | Quarterly |

| Common Indicator Code | Indicator Level | Indicator Name | Definition | Unit of Measure | Disaggregation | Primary Data Source | Responsible Party | Reporting Frequency |
|---|---|---|---|---|---|---|---|---|
| E-2 | Process | Percent disbursed of educational facility construction, rehabilitation, and equipping contracts | Percentage disbursed against all signed construction contracts for education facility works or equipping. | Percentage | | MCAG | MCAG | Quarterly |
| **Improving General Education Project: Training Educators for Excellence Activity** | | | | | | | | |
| E-5 | Output | School-based professional development facilitators trained | The number of school-based professional development facilitators who complete MCC-supported training focused on supporting teachers in implementing new techniques | Number | | TPDC | MCAG/TPDC | Annual |
| E-5 | Output | School principals trained | The number of school principals who complete MCC-supported training focused on supporting teachers in implementing new techniques | Number | | TPDC | MCAG/TPDC | Annual |
| E-5 | Output | Science, math, English, and ICT teachers trained | The number of science, math, English, and ICT teachers who complete MCC-supported training focused on instructional quality as defined by the compact training activity | Number | | TPDC | MCAG/TPDC | Annual |
| | Output | Teachers enrolled in training who complete training course | Calculated as the number of teachers completing compact's designed training course divided by total number of training enrollees | Percentage | | TPDC | MCAG/TPDC | Annual |
| | Process | Completion of first cohort of teacher/principals/facilitators training | Defined as the Quarter in which first cohort of at least 100 teachers/principals/facilitators completes training activity | Date | | TPDC | MCAG/TPDC | |

| Common Indicator Code | Indicator Level | Indicator Name | Definition | Unit of Measure | Disaggregation | Primary Data Source | Responsible Party | Reporting Frequency |
|---|---|---|---|---|---|---|---|---|
| | Process | Completion of teacher training design framework | Defined as the Quarter in which design consultant's final activity design deliverable is formally approved by MCA | Date | | MCAG/Design Consultant | MCAG/Design Consultant | |
| **Improving General Education Project: Education Assessment Activity** | | | | | | | | |
| | Output | National assessments | The number of national assessments/testing frameworks developed and implemented with MCC funding | Number | | NAEC | NAEC/MCAG | Annual |
| | Output | International assessments | The number of international assessments implemented with MCC funding. Indicator will be counted upon completion of full reporting cycle specific to each international assessment (TIMSS, PISA, and TALIS) | Number | | NAEC | NAEC/MCAG | Annual |
| E-5 | Output | Secondary teachers trained in-class assessments | The number of secondary teachers trained in classroom assessment | Number | | NAEC | NAEC/MCAG | Annual |
| | Process | Completion of pilot testing of national assessment instruments | Quarter in which MCC-funded national assessment instruments are implemented in pilot form for feedback and further development | Date | | NAEC | NAEC/MCAG | |
| **Industry-led Skills and Workforce Development Project** | | | | | | | | |
| E-6 | Outcome | Students participating in MCC-supported TVET programs | The number of students enrolled or participating in MCC-supported TVET programs | Number | Gender | Grant Managing Company | MCAG/Grant Managing Company | |

| Common Indicator Code | Indicator Level | Indicator Name | Definition | Unit of Measure | Disaggregation | Primary Data Source | Responsible Party | Reporting Frequency |
|---|---|---|---|---|---|---|---|---|
| | Outcome | Enrollment in qualifications-granting programs (as a % of total TVET enrollment) | Nationwide enrollment in qualifications-granting TVET programs (especially level IV and V coursework) as a percentage of total TVET enrollment | Percentage | Gender | MoES/Survey/ Grant Managing Company | Data Collection Firm/MoES/ Grant Managing Company | Annual |
| | Outcome | Industry co-investment in TVET provision | Industry co-investment in supported programs, including both cash and in kind support | US Dollars | | Grant Managing Company | MCAG/Grant Managing Company | Annual |
| | Output | Conferences held which showcase provider best practice | The number of conferences held which showcase provider best practice | Number | | Grant Managing Company | MCAG/Grant Managing Company | Annual |
| | Output | TVET grants fully disbursed | Number of competitive grants whose full amount is disbursed before the compact end date | Number | | Grant Managing Company | MCAG/Grant Managing Company | Annual |
| E-5 | Output | Teachers trained throughout TVET supported programs | The number of teachers trained throughout TVET supported programs | Number | | Grant Managing Company | MCAG/Grant Managing Company | Annual |
| | Process | Date first grant agreement is signed | Quarter in which first grant agreement is signed with the winner of competitively-selected TVET provider | Date | | Grant Managing Company | MCAG/Grant Managing Company | |
| | Process | Date final grant agreement is signed | Quarter in which final grant agreement is signed with the winner of competitively-selected TVET provider | Date | | Grant Managing Company | MCAG/Grant Managing Company | |
| | Process | Total grant outlays | Total disbursement of grant funding under compact's competitive grant facility | US Dollars | | Grant Managing Company | MCAG/Grant Managing Company | Annual |

| Common Indicator Code | Indicator Level | Indicator Name | Definition | Unit of Measure | Disaggregation | Primary Data Source | Responsible Party | Reporting Frequency |
|---|---|---|---|---|---|---|---|---|
| | Process | Disbursement of TA Contracts | Value of all disbursement under TA Contracts | US Dollars | | Grant Managing Company | MCAG/Grant Managing Company | Annual |
| **STEM Higher Education Project** | | | | | | | | |
| E-6 | Outcome | Students enrolled in MCC-supported US Bachelor's programs | The number of students enrolled in MCC-supported US Bachelor's programs | Number | Gender | SDSU | MCAG/SDSU | Annual |
| | Outcome | Formal ABET accreditation for Georgian degree program | This indicator assumes that the option of ABET accreditation is pursued. This indicator is not relevant if this option is not pursued with Compact funds. | Date | | MoES/EQE | MoES/EQE | |
| | Outcome | Transition Rate of Students in MCC-funded Bachelor's programs | Percentage of students advancing from one level (year) of study to the next | Percentage | Gender | SDSU | SDSU | Annual |
| E-5 | Output | Georgian faculty members receiving US-based training from US partner institution | The of Georgian faculty members receiving US-based training from US partner institution | Number | Gender | SDSU | SDSU | Annual |
| E-5 | Output | Georgian faculty members receiving Georgia-based training from US partner institution | The of Georgian faculty members receiving Georgia-based training from US partner institution | Number | Gender | SDSU | SDSU | Annual |
| | Process | Signing of partnership agreement | The quarter in which a formal partnership agreement is signed between U.S. institution(s) and Georgian institution(s) | Date | | MCAG | MCAG | |

| Common Indicator Code | Indicator Level | Indicator Name | Definition | Unit of Measure | Disaggregation | Primary Data Source | Responsible Party | Reporting Frequency |
|---|---|---|---|---|---|---|---|---|
| | Process | First cohort of students enters MCC-funded Bachelor's program | The quarter in which a cohort of incoming students begins study in an MCC-funded Bachelor's program. | Date | Gender | MCAG | MCAG | |

## 1.2.Indicator Documentation Table (Evaluation Indicators for Specific Evaluation Plans)

| N | Indicator Level | Indicator Name | Definition | Unit of Measure | Disaggregation | Primary Data Source | Responsible Party |
|---|---|---|---|---|---|---|---|
| **Improving General Education Project: Improved Learning Environment Infrastructure Activity** | | | | | | | |
| 1 | Goal | Transition Rate from 9th to 10th grade | The number of students who enter 10th grade divided by number of students who completed 9th grade | Percentage | Gender/Social Vulnerability/Urban/ Rural | EMIS/Survey | MCAG/Data Collection Firm/EMIS |
| 2 | Goal | Percentage of 10th grade entrants who graduate from 12th grade | The number of 12th grade students who take and pass the 11th-12th grade exit examinations in math and science, divided by the number of 10th grade entrants in same cohort | Percentage | Gender/Social Vulnerability/Urban/ Rural | EMIS/Survey | MCAG/Data Collection Firm/EMIS |
| 3 | Goal | Percentage of high school graduates who enter university studies | The number of 12th grade students who take the UEE and are placed in a university program, divided by the number of 12th grade students who take the 12th grade exit exam | Percentage | Gender/Social Vulnerability/Urban/ Rural | EMIS/NAEC/ Survey | MCAG/Data Collection Firm/EMIS/ NAEC |
| 4 | Outcome | Students enrolled in MCC-rehabilitated schools | The number of students enrolled or participating in MCC-rehabilitated schools. | Number | Gender | ESIDA/EMIS | MCAG/ESIDA /EMIS |
| 5 | Outcome | Student attendance rates | To be defined in collaboration with standard measurement practices in Georgia (e.g. average percentage of enrolled students marked as present during one-month period of analysis) | Percentage | Gender/Social Vulnerability/Urban/ Rural | EMIS/Survey | EMIS/Data Collection Firm |
| 6 | Outcome | Teacher attendance rates | To be defined in collaboration with standard measurement practices in Georgia (e.g. average percentage of teachers marked as present during one-month period of analysis) | Percentage | Rural/Urban | Survey | Data Collection Firm |
| 7 | Outcome | Average Standardized Test Scores | Specific evaluations will be employed to track improvements in TIMSS (Trends in Mathematics and Science Study), PISA (Program for International Student Assessment), In-Class and National Assessment | Number | | NAEC | NAEC/MCAG |

| N | Indicator Level | Indicator Name | Definition | Unit of Measure | Disaggregation | Primary Data Source | Responsible Party |
|---|---|---|---|---|---|---|---|
| 8 | Outcome | Time study of students' daily time allocation | Measurement of changes in proportion of time spent on various education-enhancing activities as well as overall amount of time spent at school | Percentage | Rural/Urban | Survey | Data Collection Firm |
| 9 | Outcome | Average classroom temperature differential in winter | Average temperature of completed classrooms during a one-month sample of observations with respect to comparison classroom | Degrees Celsius | Rural/Urban/School Size | Survey | Data Collection Firm |
| 10 | Outcome | Utilization of science labs | Total time spend in labs divided by total time spend in science classes | Percentage | Rural/Urban | Survey | Data Collection Firm |
| 11 | Outcome | Teacher satisfaction with school facilities | Perception of teachers (satisfaction level measured on a scale from 1 to 5) | Number | Rural/Urban | Survey | Data Collection Firm |
| 12 | Outcome | Parent/Student satisfaction with school facilities | Perception of parents/students (satisfaction level measured on a scale from 1 to 5) | Number | Rural/Urban | Survey | Data Collection Firm |
| 13 | Outcome | Improved maintenance practices | Number of O&M related trainings, manuals, official guidelines and procedures established | Number | Rural/Urban | ESIDA | ESIDA/MCAG |
| 14 | Outcome | Improved ratings on school facilities condition assessments (at beneficiary schools) | Average Infrastructure condition assessment ranking scores elaborated by MCC/MCAG as per RDD | Number | | ESIDA | ESIDA/MCAG |

| N | Indicator Level | Indicator Name | Definition | Unit of Measure | Disaggregation | Primary Data Source | Responsible Party |
|---|---|---|---|---|---|---|---|
| **Improving General Education Project: Training Educators for Excellence Activity** | | | | | | | |
| 15 | Outcome | Teacher improvement of content knowledge over baseline score | Pre-test, post-test comparison of trained teachers' knowledge in training-relevant content areas | Number | Rural/Urban/Subject | TPDC/Survey | TPDC/Data Collection Firm/ MCAG |
| 16 | Outcome | Internal Efficiency Measures (Repetition Rates, Internal Transition Rates, etc.) | As possible, evaluation strategy will attempt to measure changes in averages in schools' internal efficiency which are attributable to compact training activity | Percentage | Gender/Social Vulnerability/Urban/ Rural | EMIS | EMIS/MCAG |
| 17 | Outcome | Students' standardized test scores | As possible, evaluation strategy will attempt to measure attributable changes in average student score on test instrument related to areas relevant to teacher training (using national assessment) | Number | Gender/Social Vulnerability/Urban/ Rural | TPDC/NAEC/ Survey | NAEC/ TPDC/Data Collection Firm/ MCAG |
| 18 | Outcome | Graduates from MCC-supported education activities | The number of students graduating from the highest grade (year) for that educational level in MCC-supported education schooling programs. | Number | Gender/Social Vulnerability/Urban/ Rural | EMIS | EMIS/MCAG |
| **Improving General Education Project: Education Assessment Activity** | | | | | | | |
| 19 | Outcome | Students participating in MCC-supported classroom assessment activities | The number of students enrolled or participating in MCC-supported classroom assessment activities | Number | Gender | NAEC | MCAG/NAEC |
| 20 | Outcome | Percentage of secondary teachers implementing classroom assessment tools | The number of secondary teachers implementing classroom assessment divided by total number of secondary teachers trained in classroom assessment | Percentage | Urban/Rural | NAEC/Survey | NAEC/Data Collection Firm/MCAG |

| N | Indicator Level | Indicator Name | Definition | Unit of Measure | Disaggregation | Primary Data Source | Responsible Party |
|---|---|---|---|---|---|---|---|
| **Industry-led Skills and Workforce Development Project** | | | | | | | |
| 21 | Goal | Employment rate differential of graduates of MCC-supported grantee programs | Average post-graduation employment rate of graduates of MCC-supported grantee programs with respect to students graduating from non-priority areas (one year after graduation) | Percentage | Gender/Social Vulnerability | Survey | Data Collection Firm |
| 22 | Goal | Wage differential of graduates of MCC-supported grantee programs | Average wage differential of graduates of MCC-supported grantee programs with respect to students graduating from non-priority areas (one year after graduation) | Number | Gender/Social Vulnerability | Survey | Data Collection Firm |
| 23 | Outcome | Change in social perceptions around MCC supported TVET programs | Survey instruments will be developed to explore the ways in which social perceptions around the value and/or social stigma of TVET act as a constraint to the supply of qualified labor (and any changes in these perceptions which can be directly/indirectly attributed to the project) | Number | Gender/Social Vulnerability | Survey | Data Collection Firm/Evaluator |
| 24 | Outcome | Students participating in MCC-supported education activities | The number of students enrolled or participating in MCC-supported educational schooling programs. | Number | Gender/Social Vulnerability | Grant Managing Company/MoES | MCAG/Grant Managing Company |
| 25 | Outcome | Drop-out rate of program beneficiaries | Number of graduates divided by total number of enrollees (weighted average across grantee's programs) | Percentage | Gender/Social Vulnerability | Grant Managing Company/MoES | MCAG/Grant Managing Company |
| 26 | Outcome | Student Internships with Industry Partners | The number of Student Internships with Industry Partners | Number | Gender/Social Vulnerability | Grant Managing Company | MCAG/Grant Managing Company |

| N | Indicator Level | Indicator Name | Definition | Unit of Measure | Disaggregation | Primary Data Source | Responsible Party |
|---|---|---|---|---|---|---|---|
| **STEM Higher Education Project** | | | | | | | |
| 27 | Goal | Wage differential of the graduates of MCC-supported Bachelor's program | Average wage differential of graduates of MCC-supported Bachelor's program with respect to average wage of comparable graduates (one year after graduation) | Number | Gender/Social Vulnerability/ABET/ US Bachelor's Program | Survey | Data Collection Firm/Evaluator |
| 28 | Outcome | Proportion of imported workers in relevant fields/program | Evaluation of the number of foreign workers hired in relevant fields. "Relevant fields" will be the specific fields in which the University Partnership will be granting Bachelor's degree | Percentage | | Survey | Data Collection Firm/Evaluator |
| 29 | Outcome | Proportion of Bachelor's-level students who study abroad in relevant fields/programs | Evaluation of the number of Georgian students studying abroad in relevant fields. "Relevant fields" will be the specific fields in which the University Partnership will be granting Bachelor's degree | Percentage | Gender | Survey | Data Collection Firm/Evaluator |
| 30 | Outcome | Increased demand for enrollment into MCC-funded Bachelor's programs over pre-existing programs | Specific evaluation instruments will explore whether increased demand exists and the degree to which it reveals students' perceptions of the programs' quality | Number | Gender/Social Vulnerability | Survey | Data Collection Firm/Evaluator |
| 31 | Outcome | Field-relevant employment rate of the graduates of MCC-supported Bachelor's program | Percentage of graduates employed in their field of study one year after graduation | Percentage | Gender/Social Vulnerability | Endline Tracer Study | Data Collection Firm/Evaluator |
| 32 | Outcome | Overall employment rate of the graduates of MCC-supported Bachelor's program | Percentage of graduates reporting remunerated employment one year after graduation | Percentage | Gender/Social Vulnerable | Endline Tracer Study | Data Collection Firm/Evaluator |

## ANNEX 2.

### 2.1. Indicator Baselines and Targets (Monitoring Indicators for the MIS)

| N | Common Indicator Code | Indicator Level | Indicator Name | Unit of Measure | Indicator Classification | Baseline (Year) | Y1 | Y2 | Y3 | Y4 | Y5 | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Improving General Education Project: Improved Learning Environment Infrastructure Activity** | | | | | | | | | | | | |
| 1 | E-4 | Output | Schools fully rehabilitated | Number | Cumulative | 0 | 30 | TBD | TBD | TBD | 130 | Up to 30 schools are expected to be rehabilitated in 2015 construction season. In total up to 130 schools are expected to be rehabilitated within the compact. Upon completion of the 2015 construction season the total number of schools shall be re-defined based on the actual cost of Phase I rehabilitation. |
| 2 | | Output | Science labs installed and equipped | Number | Cumulative | 0 | 30 | TBD | TBD | TBD | 130 | The number of rehabilitated schools shall be equipped with the labs respectively. |
| 3 | | Output | Students benefitting from MCC-installed/improved science labs | Number | Level | 0 | 10,500 | TBD | TBD | TBD | 37,450 | As per ERR assumptions (see Section 3.3.4.). |
| 4 | | Process | Signing of Phase 1 Construction Contracts | Date | Date | N/A | | 8/30/2015 | | | | As per project lead assumption. |

| N | Common Indicator Code | Indicator Level | Indicator Name | Unit of Measure | Indicator Classification | Baseline (Year) | Y1 | Y2 | Y3 | Y4 | Y5 | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | | Process | Installation of Phase 1 Science Labs | Date | Date | N/A | | 10/30/2015 | | | | As per project lead assumption. |
| 6 | E-2.1 | Process | Total value of construction contracts | US Dollars | Cumulative | 0 | 5,000,000 | 35,000,000 | 54,000,000 | 54,000,000 | 54,000,000 | 2015 construction season is calculated based on preliminary cost assumptions based on LBG estimates and pre-randomization model. Consecutive construction years are rough estimates. |
| 7 | E-2 | Process | Percent disbursed of educational facility construction, rehabilitation, and equipping contracts | Percentage | Cumulative | 0 | 1.50% | 40.00% | 80.00% | 100.00% | 100.00% | The Compact year breaks July 1st. Each construction season will include two Compact years respectively. Disbursement rates are rough estimates (the more accurate numbers will be available once phase I season is over). |
| **Improving General Education Project: Training Educators for Excellence Activity[18]** | | | | | | | | | | | | |
| 8 | E-5 | Output | School-based professional development facilitators trained | Number | Cumulative | 0 | 0 | 417 | 938 | 1,564 | 2,085 | Total number defined by the Compact. The rest are the rough estimates. Final numbers will be |

[18] Indicators will be revised upon completion of the design framework.

| N | Common Indicator Code | Indicator Level | Indicator Name | Unit of Measure | Indicator Classification | Baseline (Year) | Y1 | Y2 | Y3 | Y4 | Y5 | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | defined upon submission of the training design by GOPA. |
| 9 | E-5 | Output | School principals trained | Number | Cumulative | 0 | 0 | 417 | 938 | 1,564 | 2,085 | Total number defined by the Compact. The rest are the rough estimates. Final numbers will be defined upon submission of the training design by GOPA. |
| 10 | E-5 | Output | Science, math, English, and ICT teachers trained | Number | Cumulative | 0 | 0 | 4,680 | 10,530 | 17,550 | 23,400 | Total number defined by the Compact. The rest are the rough estimates. Final numbers will be defined upon submission of the training design by GOPA. |
| 11 | | Output | Teachers enrolled in training who complete training course | Percentage | Level | 0 | 0 | 75% | 75% | 75% | 75% | Rough estimates as per assumption of the project lead. |
| 12 | | Process | Completion of first cohort of teacher/principals/ facilitators training | Date | Date | N/A | | | 8/30/2016 | | | As per assumption from the project lead. |
| 13 | | Process | Completion of teacher training design framework | Date | Date | N/A | 2/28/2015 | | | | | As per assumption from the project lead. |

| N | Common Indicator Code | Indicator Level | Indicator Name | Unit of Measure | Indicator Classification | Baseline (Year) | Y1 | Y2 | Y3 | Y4 | Y5 | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Improving General Education Project: Education Assessment Activity** | | | | | | | | | | | | |
| 14 | | Output | National assessments | Number | Cumulative | 0 | 0 | 1 | 5 | 6 | 10 | As per Implementing Entity Agreement (IEA) with NAEC. |
| 15 | | Output | International assessments | Number | Cumulative | 0 | 1 | 3 | 3 | 3 | 5 | As per IEA with NAEC. |
| 16 | E-5 | Output | Secondary teachers trained in-class assessments | Number | Cumulative | 0 | 0 | TBD | TBD | TBD | TBD | The numbers to be defined upon submission of the classroom training designs by GOPA. |
| 17 | | Process | Completion of pilot testing of national assessment instruments | Date | Date | N/A | | 12/31/2015 | | | | As per contract with GOPA. |
| **Industry-led Skills and Workforce Development Project**[19] | | | | | | | | | | | | |
| 18 | E-6 | Outcome | Students participating in MCC-supported TVET programs | Number | Cumulative | 0 | TBD | TBD | TBD | TBD | 1500 | Total number defined as per ERR assumptions. |
| 19 | | Outcome | Enrollment in qualifications-granting programs (as a % of total TVET enrollment) | Percentage | Level | 0 | TBD | TBD | TBD | TBD | 12.50% | Initial targets will be known in Summer 2015 (after first round grantees are defined). Full picture should be available in Summer 2017. |

[19] Indicators will be revised upon completion of the grant manual.

| N | Common Indicator Code | Indicator Level | Indicator Name | Unit of Measure | Indicator Classification | Baseline (Year) | Y1 | Y2 | Y3 | Y4 | Y5 | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | 12.5% is a rough estimate assuming 12000 students are enrolled in TVET nationwide. |
| 20 | | Outcome | Industry co-investment in TVET provision | US Dollars | Cumulative | 0 | 0 | 450,000 | 1,200,000 | 1,500,000 | 1,800,000 | Minimum in-cash contribution requirement as per proposed grant manual (to be completed in December 2014). |
| 21 | | Output | Conferences held which showcase provider best practice | Number | Cumulative | 0 | N/A | 1 | 2 | 3 | 3 | As suggested by the RFP for grant manager. |
| 22 | | Output | TVET grants fully disbursed | Number | Cumulative | 0 | 0 | 0 | 5 | 5 | 10 | Minimum number as suggested by the RFP for the grant manager. |
| 23 | E-5 | Output | Teachers trained throughout TVET supported programs | Number | Cumulative | 0 | 0 | 0 | 20 | 20 | 40 | Minimum number as suggested by the project lead. Initial targets will be known in Summer 2015 (after first round grantees are defined). Full picture should be available in Summer 2017. |
| 24 | | Process | Date first grant agreement is signed | Date | Date | N/A | | 9/30/2015 | | | | As per RFP for the gran manager. |
| 25 | | Process | Date final grant agreement is signed | Date | Date | N/A | | | | 9/30/2017 | | As per RFP for the gran manager. |

| N | Common Indicator Code | Indicator Level | Indicator Name | Unit of Measure | Indicator Classification | Baseline (Year) | Y1 | Y2 | Y3 | Y4 | Y5 | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 | | Process | Total grant outlays | US Dollars | Cumulative | 0 | 0 | 3,000,000 | 8,000,000 | 10,000,000 | 12,000,000 | As per RFP and financial proposal of the gran manager. |
| 27 | E-6 | Process | Disbursement of TA Contracts | US Dollars | Cumulative | 0 | 0 | 190,000 | 380,000 | 570,000 | 760,000 | As per financial proposal of the grant manager. |
| **STEM Higher Education Project** | | | | | | | | | | | | |
| 28 | E-6 | Outcome | Students enrolled in MCC-supported US Bachelor's programs | Number | Cumulative | 0 | 0 | 425 | 850 | 1275 | 1700 | As per ERR assumptions (see Section 3.3.4.) |
| 29 | | Outcome | Formal ABET accreditation for Georgian degree program | Date | Date | N/A | N/A | N/A | N/A | N/A | 8/28/2019 | ABET Accreditation will be available after 5 years since the beginning of the program (4 years of bachelor's program plus 1 year). |
| 30 | | Outcome | Transition Rate of Students in MCC-funded Bachelor's programs | Percentage | Level | 0 | N/A | 80% | 80% | 80% | 80% | As per assumption from the project lead and SDSU. |
| 31 | E-5 | Output | Georgian faculty members receiving US-based training from US partner institution | Number | Cumulative | 0 | 15 | 30 | 45 | 60 | 75 | As per SDSU proposal. |
| 32 | E-5 | Output | Georgian faculty members receiving Georgia-based training from US partner institution | Number | Cumulative | 0 | 15 | 30 | 45 | 60 | 75 | As per SDSU proposal. |

| N | Common Indicator Code | Indicator Level | Indicator Name | Unit of Measure | Indicator Classification | Baseline (Year) | Y1 | Y2 | Y3 | Y4 | Y5 | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | | Process | Signing of partnership agreement | Date | Date | N/A | 8/30/2014 | | | | | Accomplished. |
| 34 | | Process | First cohort of students enters MCC-funded Bachelor's program | Date | Date | N/A | | 10/1/2015 | | | | As per SDSU proposal. |

## 2.2. Indicator Baselines and Targets (Evaluation Indicators for Specific Evaluation Plans)

| N | Indicator Level | Indicator Name | Unit of Measure | Indicator Classification | Baseline (Year) | Y1 | Y2 | Y3 | Y4 | Y5 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Improving General Education Project: Improved Learning Environment Infrastructure Activity** | | | | | | | | | | |
| 1 | Goal | Transition Rate from 9th to 10th grade | Percentage | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 2 | Goal | Percentage of 10th grade entrants who graduate from 12th grade | Percentage | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 3 | Goal | Percentage of high school graduates who enter university studies | Percentage | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 4 | Outcome | Students enrolled in MCC-rehabilitated schools | Number | Cumulative | 0 | TBD | TBD | TBD | TBD | TBD |
| 5 | Outcome | Student attendance rates | Percentage | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 6 | Outcome | Teacher attendance rates | Percentage | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 7 | Outcome | Average Standardized Test Scores | Number | Level | TBD | TBD | TBD | TBD | TBD | TBD |

| N | Indicator Level | Indicator Name | Unit of Measure | Indicator Classification | Baseline (Year) | Y1 | Y2 | Y3 | Y4 | Y5 |
|---|---|---|---|---|---|---|---|---|---|---|
| 8 | Outcome | Time study of students' daily time allocation | Percentage | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 9 | Outcome | Average classroom temperature differential in winter | Degrees Celsius | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 10 | Outcome | Utilization of science labs | Percentage | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 11 | Outcome | Teacher satisfaction with school facilities | Number | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 12 | Outcome | Parent/Student satisfaction with school facilities | Number | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 13 | Outcome | Improved maintenance practices | Number | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 14 | Outcome | Improved ratings on school facilities condition assessments (at beneficiary schools) | Number | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| **Improving General Education Project: Training Educators for Excellence Activity** | | | | | | | | | | |
| 15 | Outcome | Teacher improvement of content knowledge over baseline score | Number | Level | TBD | TBD | TBD | TBD | TBD | TBD |

| N | Indicator Level | Indicator Name | Unit of Measure | Indicator Classification | Baseline (Year) | Y1 | Y2 | Y3 | Y4 | Y5 |
|---|---|---|---|---|---|---|---|---|---|---|
| 16 | Outcome | Internal Efficiency Measures (Repetition Rates, Internal Transition Rates, etc.) | Percentage | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 17 | Outcome | Students' standardized test scores | Number | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 18 | Outcome | Graduates from MCC-supported education activities | Number | Cumulative | 0 | TBD | TBD | TBD | TBD | TBD |
| **Improving General Education Project: Education Assessment Activity** | | | | | | | | | | |
| 19 | Outcome | Students participating in MCC-supported classroom assessment activities | Number | Cumulative | 0 | TBD | TBD | TBD | TBD | TBD |
| 20 | Outcome | Percentage of secondary teachers implementing classroom assessment tools | Percentage | Level | 0 | TBD | TBD | TBD | TBD | 50% |
| **Industry-led Skills and Workforce Development Project** | | | | | | | | | | |
| 21 | Goal | Employment rate differential of graduates of MCC-supported grantee programs | Percentage | Level | N/A | | | | | 9% increase over comparison group |
| 22 | Goal | Wage differential of graduates of MCC-supported grantee programs | Number | Level | N/A | | | | | 23% increase over comparison group |

| N | Indicator Level | Indicator Name | Unit of Measure | Indicator Classification | Baseline (Year) | Y1 | Y2 | Y3 | Y4 | Y5 |
|---|---|---|---|---|---|---|---|---|---|---|
| 23 | Outcome | Change in social perceptions around MCC supported TVET programs | Number | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 24 | Outcome | Students participating in MCC-supported education activities | Number | Cumulative | 0 | N/A | TBD | TBD | TBD | TBD |
| 25 | Outcome | Drop-out rate of program beneficiaries | Percentage | Level | 0 | N/A | TBD | TBD | TBD | TBD |
| 26 | Outcome | Student Internships with Industry Partners | Number | Cumulative | 0 | N/A | TBD | TBD | TBD | TBD |
| **STEM Higher Education Project** | | | | | | | | | | |
| 27 | Goal | Wage differential of the graduates of MCC-supported Bachelor's program | Number | Level | N/A | N/A | N/A | N/A | N/A | 44% increase over top Georgian degree |
| 28 | Outcome | Proportion of imported workers in relevant fields/program | Percentage | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 29 | Outcome | Proportion of Bachelor's-level students who study abroad in relevant fields/programs | Percentage | Level | TBD | TBD | TBD | TBD | TBD | TBD |
| 30 | Outcome | Increased demand for enrollment into MCC-funded Bachelor's programs over pre-existing programs | Number | Level | 0 | TBD | TBD | TBD | TBD | TBD |

| N | Indicator Level | Indicator Name | Unit of Measure | Indicator Classification | Baseline (Year) | Y1 | Y2 | Y3 | Y4 | Y5 |
|---|---|---|---|---|---|---|---|---|---|---|
| 31 | Outcome | Field-relevant employment rate of the graduates of MCC-supported Bachelor's program | Percentage | Level | 0 | N/A | N/A | N/A | N/A | N/A |
| 32 | Outcome | Overall employment rate of the graduates of MCC-supported Bachelor's program | Percentage | Level | 0 | N/A | N/A | N/A | N/A | N/A |

## ANNEX 3.

### 3.1. Modifications to the M&E Plan

As this is the inaugural M&E Plan for the Compact, no modifications have been made. In further revisions, this section will reflect modifications from this inaugural version.

The following are changes which have occurred to the M&E framework (Compact's Annex III) since the signature of the Compact in June 2013:

- Indicators have been separated into two types:
  - ✓ "monitoring" indicators, referring to those indicators whose progress is expected to be reported on at least on an annual basis.
  - ✓ "evaluation" indicators are those whose progress will be reported less than annually, generally in coordination with the delivery of survey reports and/or evaluation reports.

- Evaluation methodology has changed for the ILEI activity of the Improving General Education Quality Project.
  - ✓ Formerly expected to evaluate the project's impacts using a Regression Discontinuity Design (RDD), the ILEI evaluation is now planned as a randomized controlled trial (RCT), in coordination with the project's stakeholders and its independent Evaluator (Mathematica Policy Research).