

Malawi - Power Sector Reform

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Overview

Identification

COUNTRY

Malawi

EVALUATION TITLE

Power Sector Reform

EVALUATION TYPE

Independent Performance Evaluation

ID NUMBER

DDI-MCC-MWI-ENERGY-PSRP-2014-v02

Overview

ABSTRACT

Social Impact was contracted by MCC to develop and conduct an evaluation of the Malawi Compact. Specifically, SI has been tasked to “assess the program design and implementation to develop the most rigorous evaluation design feasible, whether it is a performance or impact evaluation, and identify the most appropriate evaluation methodology feasible given the context.”

Efforts to identify a research design that would allow for a rigorously defined counterfactual were unsuccessful, and as a result this design document outlines plans for a rigorous performance evaluation that will aim to measure key outcome indicators early on in the Compact, midway through, and at the end of the Compact, as well as track changes over time. This evaluation is designed to address the core questions of the evaluation (Table 1) Since the proposed design is a performance evaluation, it is important to note that it may not be possible to state with confidence how the power sector in Malawi has changed (or not changed) as a result of the Compact, as it will not be possible to control for other potential causes of change. In some cases, however, it may be feasible to identify and potentially rule out alternative explanations.

The inability to define a counterfactual requires a reformulation of some of the initial evaluation questions originally proposed by MCC, including some core questions included in the SI-MCC contract. In addition, the Evaluation Assessment Report revealed that both SI and MCC had substantial concerns with regard to the original research questions proposed in Social Impact's contract. This is natural given the way that interventions change over time, and that the proposed questions should be feasible to answer based on the data that can be collected as part of the evaluation. Based on SI's comprehensive desk review, information gathered during the scoping trip, and frequent communication with MCC and MCA-M, the SI evaluation team has developed research questions and research approaches for the PSRP and the IDP project components, as proposed in Tables 2 and 3, respectively. The original questions and the suggested modifications for each question are presented in the Appendix.

Research Questions

Through a rigorous performance evaluation, the evaluation design aims to answer the following core evaluation questions and several complementary research questions:

1. What declines in poverty, increases in economic growth, reductions in the electricity related cost of doing business, increases in access to electricity, and increases in value added production are observed over the life of the Compact?
2. What were the results of the interventions - intended and unintended, positive or negative?
3. Are there differences in outcomes of interest by gender, age and income? Sex and income disaggregated information for businesses and households will be pursued to the extent possible.
4. What are the lessons learned and are they applicable to other similar projects?
5. What is the likelihood that the results of the Project will be sustained over time?
6. At the household level, the evaluations shall focus on the following program/project/activities impacts on household and

individuals: income; expenditures, consumption and access to energy; individual time devoted to leisure and productive activities.

7. At the enterprise level, the evaluation shall focus on the potential impact of the program/project/activities on: business profitability and productivity; value added production and investment; employment and wage changes; energy consumption and sources of energy used; business losses.

8. At the regulatory, institutional and policy level, the evaluation shall explore the potential impacts of the program/project/activities on: utility operating costs and losses; financial sustainability; private investment, particularly in generation; expansion of electricity access for customers, particularly the poor.

To answer these questions, the PSRP evaluation design will leverage diverse research methodologies with different timelines for data collection. The evaluation design can be broken into:

- PSRP evaluation: The PSRP design incorporates five data collection activities, including: (1) quantitative indicators from the M&E Plan and Malawi Energy Regulatory Authority (MERA) key performance indicators, (2) workflow analyses with relevant units, such as billing and procurement, (3) a series of largely qualitative research activities (with some mini-surveys included), (4) a proposed survey of Electricity Supply Corporation of Malawi (ESCOM) employees, and (5) the PSRP process evaluation, focused on implementation and achievement of implementation milestones and outputs will be folded into the PSRP data collection activities.

- Enterprise survey: A panel survey of businesses will be used to evaluate both the PSRP and the IDP.

PSRP

Social Impact proposes five data collection activities for the PSRP evaluation: (1) quantitative indicators from the M&E Plan and MERA key performance indicators, (2) workflow analyses with relevant units, (3) largely qualitative research activities (with some mini-surveys included), (4) a survey of current ESCOM employees, and (5) process evaluation. These activities will occur in three phases: at baseline (to be conducted as soon as possible), at midline, and at the end of the Compact. The evaluation will seek to identify changes over time and then consider the extent to which any observed improvements can be attributed to Compact activities.

EVALUATION METHODOLOGY

Pre-Post

UNITS OF ANALYSIS

Individuals, households and businesses.

TOPICS

Topic	Vocabulary	URI
Energy	MCC Sector	
Gender	MCC Sector	

KEYWORDS

Malawi, Energy, performance evaluation, ESCOM, MERA, Ministry of Energy, tariff reform, corporate governance, private sector, infrastructure, gender, economic conditions and indicators, economic policy, Natural Resources

Coverage

GEOGRAPHIC COVERAGE

Metering - South and Central Transmission backbone investments; North transmission; Lilongwe; New substations

ESCOM survey - national, will target urban employees living near Blantyre, Lilongwe, or Mzuzu.

Enterprise survey - will mainly focus on Lilongwe, will have data for Mzuzu and Blantyre as well.

UNIVERSE

The study population is in the process of being finalized with MCC and MCA-Malawi. The focal points for the evaluation will include ESCOM staff in Lilongwe, Blantyre and Mzuzu, and staff at MERA and MoE.

Producers and Sponsors

PRIMARY INVESTIGATOR(S)

Name	Affiliation
Social Impact	Independent evaluator

FUNDING

Name	Abbreviation	Role
Millennium Challenge Corporation	MCC	

Metadata Production

METADATA PRODUCED BY

Name	Abbreviation	Affiliation	Role
Millennium Challenge Corporation	MCC		Review of Metadata

DATE OF METADATA PRODUCTION

2014-06

DDI DOCUMENT VERSION

Version 2 (June 2014): This version divides the IDP and PSRP evaluations into two metadata catalogues

DDI DOCUMENT ID

DDI-MCC-MWI-ENERGY-PSRP-2014-v02

MCC Compact and Program

COMPACT OR THRESHOLD

Malawi Compact

PROGRAM

On April 7, 2011, The Millennium Challenge Corporation (MCC) signed a five-year, USD 350.7 million Compact with the Government of Malawi (GOM) to address the structural, operational and financial inefficiencies of power subsector institutions, and the generation, transmission and distribution capacity constraints faced by the country's power subsector. The five-year implementation period began on September 20, 2013 and will run through September 19, 2018. The MCC Malawi Compact includes three projects: the Infrastructure Development Project (IDP, allocated \$257.1 million), the Power Sector Reform Project (PSRP, allocated \$25.7 million), and the Environmental and Natural Resource Management Project (ENRM, allocated \$27.9 million). Social Impact's evaluation focuses on the IDP and PSRP. In the forthcoming sections of the Design Report, Social Impact (SI) outlines a methodology for a mixed methods performance evaluation of the PSRP and IDP projects. The Report begins with an overview of the project logic that illustrates how the inputs and outputs contribute to achieving the overall project and program objectives outlined in the first amendment to the Compact. This overview is followed by a literature review which focuses on some of the commonly encountered challenges confronting the power sector in Malawi and Africa more generally, including tariff reform, corporate governance, and private sector involvement. The objective of this review is to explore both the history and best practices for overcoming these challenges in developing countries, with a primary focus on Sub-Saharan Africa. The project logic, key findings from the literature review, and guidance from both MCC and MCA-Malawi, informed the IDP and PSRP evaluation designs. The PSRP design incorporates four data collection activities: (1) quantitative indicators from the M&E Plan and Malawi Energy Regulatory Authority (MERA) key performance indicators, (2) workflow analyses with relevant units, such as billing and procurement, (3) a series of largely qualitative research activities (with some mini-surveys included), and (4) a proposed survey of Electricity Supply Corporation of Malawi (ESCOM) employees. Finally, a panel survey of businesses will be used to evaluate both the PSRP and the IDP. The IDP and PSRP design are structured to answer the evaluation's core questions in addition to the research questions developed in cooperation with MCC and MCA-Malawi. The research questions and data sources for both evaluations can be found in Tables 2 and 3. The later sections of this report include a risk analysis plan, Institutional Review Board (IRB) requirements, an overview of the evaluation team roles and responsibilities, protocols on data access, privacy and documentation, and a dissemination plan. The data collection budget and detailed evaluation Work Plan are attached to this report.

MCC SECTOR

Energy (Energy)

PROGRAM LOGIC

The Compact entails a wide array of activities designed to achieve the Compact's stated goal and objectives. The overarching goal of the Compact is to "reduce poverty through economic growth in Malawi." The Compact aims to attain this goal by working towards three primary objectives: 1) Reduce the cost of doing business in Malawi 2) Expand access to electricity for the Malawian people and businesses 3) Increase value-added production in Malawi Figures 1 and 2 present the project logics reflected in the M&E plan linking the Compact activities to these higher-level outcomes. These illustrate how each project's activities are expected to affect outcomes related to each of the three Compact objectives. Understanding the linkages that are built into the theory of change (TOC) is fundamental in the evaluation design process. Clearly defined project logics will enable the evaluation team to consider the contribution of the Compact to observed outcomes, support the learning process, and enhance knowledge of the Compact's successes and possible shortfalls. Power Sector Reform Project Problem: In addition to infrastructure deficiencies, Malawi's power sector suffers from additional financial, operational, and governance challenges. The electrical utility, ESCOM, is financially and operationally unsustainable due to multiple factors including: low billing and collections rates, insufficient or incorrect customer information, and high technical and non-technical losses. Partially as a result, inadequate investments are made in expanding generation, transmission, and distribution infrastructure or maintaining existing infrastructure. In addition, ESCOM suffers from a number of operational and governance challenges related to insufficient management capacity, unresponsive customer service, weak internal controls, political interference, and low transparency. Broader energy sector governance involving the regulator, MERA, and the Ministry of Energy (MoE) also confronts challenges as Malawi's regulators lack adequate operational cost data to inform tariff design and the sector does not effectively allow for meaningful private sector investment. Activities: The PSRP entails a wide array of activities designed to help address these challenges and problems. The PSRP is divided into three activities with several sub-activities. 1. The ESCOM Turnaround Activity includes a Finances Sub-Activity that entails the development of a detailed financial plan and financial model, which will allow for financial planning over the five-year life of the Compact, and a management information systems (MIS), which will integrate existing information flows from diverse aspects of the utility into one comprehensive system. The Turnaround Activity also includes a Corporate Governance Sub-Activity that involves the development of a Corporate Governance Benchmarking Study and an Operations Sub-Activity, entailing a review of ESCOM's organization structure, embedment of a financial and operational turnaround team, planned improvements to procurement processes, and the initiation of performance audits and a social and gender assessment. 2. The Regulatory Strengthening Activity also entails three sub-activities, including a Tariff Reform Sub-Activity that involves deployment of a tariff advisor to ESCOM and a regulatory advisor to MERA. This sub-activity will involve a cost of service study to accurately determine the cost of providing electricity to diverse customers. A second sub-activity aims to build MERA's capacity through trainings, workshops, exchange visits, peer learning, and a benchmarking study. The third sub-activity, the Enabling Environment for Public and Private Sector Investment Sub-Activity involves supporting a high-level energy advisor to the Ministry of Energy to assist the ministry in master planning, developing an integrated resource plan, and developing a legal and political environment that permits private sector investment in the power sector. 3. The Power Sector Reform Agenda Semi-Annual Review (SAR) offers a process for Compact stakeholders to jointly monitor the progress of power sector reform efforts and includes regular meetings to measure progress in achieving targets across 25 indicators. Logic: Through these activities, the PSRP aims to achieve several outcomes. These can roughly be summarized as: (i) improving the financial and operational health of ESCOM and rebuilding ESCOM into a strong, well-governed and well-managed utility, and (ii) developing a regulatory environment that supports private sector investment in generation at an affordable cost. These activities might, for example, result in a revision of the Energy Policy and Electricity Act and the development of a framework for independent power producers (IPPs). As such, the PSRP offers an essential complement to the IDP. While the IDP alone might not be able to yield reductions in the cost of doing business if the assumptions listed above do not hold, it is hoped that reforms fostered by the PSRP will produce an energy sector that is financially and operationally sustainable and that encourages continual investment into the future. Assumptions: and risks: Annex IV to the MCA-M Monitoring and Evaluation Plan lists several assumptions underlying the PSRP. The salient assumptions include: · Political will exists to implement and sustain reforms, particularly in processes such as procurement. · Political will exists to permit an increase in tariffs to cost-reflective levels. · The ESCOM Board commits to new organizational structures and human resources (HR) practices. · Technical staff turnover within ESCOM and MCA is minimized. · Parliament approves necessary reforms that permit an enabling environment.

PROGRAM PARTICIPANTS

Please note, selection of program participants is still underway and will be finalized within the next several weeks/months. The team will work with a mix of participants, including ESCOM employees and key informants at MERA and MoE. A brief description of participants is below. ESCOM Survey: The evaluation team proposes to conduct a survey of a sample of ESCOM employees, which currently number 2,570. While it would be possible to conduct a census of the population of ESCOM employees, the evaluation team will be able to make accurate inferences with a sample of employees. Employees will be randomly selected for inclusion in the sample. Selected individuals will be surveyed in person if they are in the urban areas of Blantyre, Lilongwe, or Mzuzu and by phone if they are not. Workflow Studies: The team will meet with a group of male and female individuals in various ESCOM departments, such as the billing department for a group interview/focus group. The team will meet individuals from a range of departments including procurement or customer service, for example. Final selection of workflow studies will occur this Fall, after the team pilots two studies in Malawi towards the end of October.

Sampling

Study Population

The study population is in the process of being finalized with MCC and MCA-Malawi. The focal points for the evaluation will include ESCOM staff in Lilongwe, Blantyre and Mzuzu, and staff at MERA and MoE.

Sampling Procedure

ESCOM SURVEY

The evaluation team proposes to conduct a survey of a sample of ESCOM employees, which currently number 2,570. While it would be possible to conduct a census of the population of ESCOM employees, the evaluation team will be able to make accurate inferences with a sample of employees. Employees will be randomly selected for inclusion in the sample. Selected individuals will be surveyed in person if they are in the urban areas of Blantyre, Lilongwe, or Mzuzu and by phone if they are not. The ESCOM CEO has already expressed interest in the survey, and we hope that the ESCOM leadership will encourage a high response rate from within the ranks of the utility. We calculate that a sample of 829 will be necessary. As shown in Figure 7, at a standard of .80 power, the minimum detectable effect size for a comparison of waves of the survey is estimated at .14 standard deviations. In terms of sample proportions and assuming maximum variation (50%/50%), we would need to observe approximately a 4% difference between baseline and midline to be confident that a change occurred between these two time periods (see Equation 1). For example, if at baseline we observe that 65% of the sampled ESCOM employees evaluated ESCOM customer service well and at midline this percentage rises to 69% of employees surveyed, then we could be confident that satisfaction had increased over time.

(1) Random error at 95% confidence = $.04 = 1.645 \sqrt{(.5 \cdot .5 / 829) \cdot (.5 \cdot .5 / 829)}$

Questionnaires

Overview

Please note the evaluation questionnaires are in the process of being developed, and will be submitted in late September for review.

Workflow Studies

Using a methodology known as “metrics based process mapping,” the evaluation team will explore a set of distinct tasks or processes expected to improve or become more efficient as a result of the Compact. These include tasks related to billing, procurement, finance, electricity outages, applications for new connections, customer service requests, the tariff approval process, and potentially others. This methodology will permit the evaluation to develop and track a series of quantifiable efficiency and effectiveness metrics over the course of the Compact while qualitatively identifying and exploring challenges in carrying out these processes.

ESCOM Survey

This will survey mid and senior level ESCOM employees to inform learning and provide complementary quantitative data to the otherwise largely qualitative PSRP evaluation. The survey would entail in-person and phone surveying. The survey would measure, at a minimum, employees' evaluations of aspects of ESCOM operations and HR policies and benefits. The survey instrument will be developed in consultation with MCC and MCA-M.

Data Collection

Data Collection Dates

Start	End	Cycle
2014-10-20	2014-10-31	Preliminary baseline
2016-06-01	2016-06-22	Midline PSRP
2018-06-01	2018-06-22	Endline PSRP
2015-01-19	2015-02-09	Baseline PSRP

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Data Collectors

Name	Abbreviation	Affiliation
Invest in Knowledge	IKI	

Data Processing

No content available

Data Appraisal

No content available