Millennium Development Authority - Ghana

Monitoring and Evaluation Plan

November 2021

TABLE OF CONTENTS

Preamble ii
LIST OF ACRONYMS iii
1. COMPACT AND OBJECTIVE Overview 1
1.1 Introduction and Background 1
1.2 Problem Analysis: The Power Constraint in Ghana's Economy 2
1.3 Program Logic 6
1.3.1 Compact Background 6
1.3.2 Compact Logic 6
1.3.3 Project Description and Logic 8
1.4 Projected Economic Benefits 21
1.4.1 Economic Analysis of ECG Financial and Operational Turnaround Project 21
1.4.2 Economic Analysis of Regulatory Strengthening and Capacity Building Project 21
1.4.3 Economic Analysis of Access Project 21
1.4.4 Economic Analysis of Energy Efficiency and Demand Side Management Project 22
1.5 Projected Program Beneficiaries 22
1.5.1 Projected Program Beneficiaries 22
1.5.2 Beneficiary Analysis 23
1.6 The Process of developing the first draft of the M&E Plan 23
2. Monitoring Component 26
2.1 Summary of Monitoring Strategy 26
2.1.1 Measurement of Goal, Outcome, Output, and Process Indicators 26
2.1.2 Indicators, Baseline and Year 5 Targets 27
2.2 Data Quality Reviews 28
2.3 Standard Reporting Requirements 29
2.3.1 Reporting to MCC: Quarterly Disbursement Request Package 29
2.3.2 Reporting to MiDA and Local Stakeholders 29
3. Evaluation Component 30
3.1 Summary of Evaluation Strategy 30
3.1.1 Independent Evaluations 30
3.1.2 Mid-Term and End-Term Evaluations 31
3.1.3 Self-Evaluation 31
3.1.4 Special Studies 31
3.2 Specific Evaluation Plans 32
3.2.1 Summary of Specific Evaluation Plans 32
3.2.2 Summary of Activities or Sub-Activities without Evaluations 34
4. Implementation and Management of M&E 35
4.1 Responsibilities 35
4.2 MCA Data Management System for Monitoring and Evaluation 36
4.3 Review and Revision of the M&E Plan 37
5. M&E Budget 38
6. OTHER 39
6.1 Semi-Annual Reviews 39
6.2 Post Compact M&E Plan 39
ANNEX I: Indicator Documentation Table 40
Annex II: Table of Indicator Baselines and Targets 56
ANNEX III: M&E Plan Modifications 76
Additional Annexes: Project Logics 147
Additional Annexes: PROBLEM TREE 150

PREAMBLE

This Monitoring and Evaluation (M&E) Plan:

- is part of the action plan set out in the MILLENNIUM CHALLENGE COMPACT (Compact) signed on 5th day of August, 2014 between the United States of America, acting through the Millennium Challenge Corporation, a United States Government corporation (MCC), and Ghana, acting through its government;
- will support provisions described in the Compact; and
- is governed by and follows the principles stipulated in the *Policy for Monitoring and Evaluation of Compacts and Threshold Programs* (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, and if it is consistent with the requirements of the Compact and any other relevant supplemental legal documents.

LIST OF ACRONYMS

AgDevCo	Africa Agricultural Development Company
BA	Beneficiary Analysis
CCR	Compact Completion Report
DFP	Detailed Financial Plan
DQR	Data Quality Review
DSM	Demand Side Management
EC	Energy Commission
ECG	Electricity Company of Ghana
EE	Energy Efficiency
EFOT	ECG Financial and Operational Turnaround
ERR	Economic Rate of Return
EEDSM	Energy Efficiency and Demand Side Management
GDP	Gross Domestic Product
GOG	Government of Ghana
GRIDCo	Ghana Grid Company
IPP	Independent Power Producer
ITT	Indicator Tracking Table
KWh	Kilowatt Hour
LNG	Liquefied Natural Gas
M&E	Monitoring and Evaluation
MCA	Millennium Challenge Account
MCC	Millennium Challenge Corporation
M&EE	Market and Economic Enclave
MDA	Ministries, Departments and Agencies
MiDA	Millennium Development Authority
MMDA	Metropolitan, Municipal and District Assemblies
MoEn	Ministry of Energy
MSMEs	Micro, Small and Medium Scale Enterprises
MWh	Megawatt Hour
NEDCo	Northern Electricity Distribution Company
NFOT	NEDCo Financial and Operational Turnaround
PIA	Program Implementation Agreement
PGSI	Power Generation Sector Improvement
PMC	Project Management Consultant
PURC	Public Utilities Regulatory Commission
QDRP	Quarterly Disbursement Request Package
RSCB	Regulatory Strengthening and Capacity Building
RCT	Randomized Control Trial
TBD	To be determined
USAID	United States Agency for International Development
USG	United States Government
VRA	Volta River Authority
WSEM	Wholesale Electricity Market

1. COMPACT AND OBJECTIVE OVERVIEW

1.1 Introduction and Background

The Monitoring and Evaluation (M&E) Plan explains in detail how and what MCC and MiDA (the accountable entity for the MCA-Ghana Program) will (a) monitor to determine whether the Projects are on track to achieve their intended results ("***Monitoring Component***"), and (b) evaluate implementation strategies, provide lessons learned, determine cost effectiveness and estimate the impact of Compact interventions ("***Evaluation Component***"). The M&E Plan summarizes all indicators that must be reported to MCC on a regular basis, as well as a description of any complementary data to be collected for evaluation of the Program. The M&E Plan also includes the monitoring and evaluation ("***M&E***") requirements that MiDA must meet in order to receive Disbursements, and serves as a communication tool so that MiDA staff and other stakeholders clearly understand the objectives and targets that MiDA is responsible for achieving.

This Monitoring and Evaluation Plan is a management tool that provides the following functions:

- *Describes the program logic and expected results.* Gives details about what impacts the Compact and each of its components are expected to produce in economic, social, and gender areas and how these effects will be achieved.

- *Sets out data and reporting requirements and quality control procedures*. Defines indicators, identifies data sources, frequency in order to define how performance and results will be measured. Outlines the flow of data and information from the project sites through to the various stakeholders both for public consumption and to inform decision-making. It describes the mechanisms that seek to assure the quality, reliability and accuracy of program performance information and data.

- *Establishes a monitoring framework*. Establishes a process to alert implementers, MiDA management, stakeholders, and MCC to whether or not the program is achieving its major milestones during program implementation and provides a basis for making program adjustments.

- *Describes the evaluation plan*. Explains in detail how MCC and MiDA will evaluate whether or not the interventions achieve their intended results and expected impacts over time.

- *Includes roles and responsibilities*. Describes in detail what the M&E staff are responsible for.

1.2 Problem Analysis: The Power Constraint in Ghana's Economy

The Ghana Power Sector

The institutions operating in Ghana's power sector and their respective functions are summarized in the table below. With the exception of the IPPs, all the companies on the electricity value chain are state-owned.

Ghana Power Sector Institutions and their Functions

Institution	Function
Ministry of Energy (MoEn)	Energy policy formulation
Energy Commission (EC)	Energy policy advisory, planning, technical regulation and monitoring
Public Utilities Regulatory Commission (PURC)	Electricity tariff regulation
Volta River Authority (VRA)	Electricity generation
Bui Power Authority (BPA)	Electricity generation
Ghana Grid Company (GRIDCo)	Electricity transmission
Electricity Company of Ghana (ECG)	Electricity distribution in Southern Ghana, except for the brief period March-September 2019 (during which time PDS took over the operations under a Concession Agreement) when it operated as an asset-holding company.
Power Distribution Services (PDS)	Electricity distribution in Southern Ghana under a Concession Agreement from March 2019. However, the Concession Agreement was cancelled by the Government of Ghana in September 2019
Northern Electricity Distribution Company (NEDCo)	Electricity distribution in Northern Ghana
Enclave Power	Electricity distribution to the Free Zones Enclave in Ghana
Independent Power Producers (IPPs)	Electricity Generation

Power as a Constraint

Ghana was selected as eligible to develop this Compact prior to completion of the First Compact. Based on an analysis of the obstacles to economic growth ("Constraints Analysis"), conducted jointly by the Government of Ghana (GOG) and the USG, three key constraints to economic growth were identified: insufficient and unreliable power, lack of access to credit, and insecure land use rights. The Government selected the power sector as the area of focus for its proposed second compact.

In 2012, the Ministry of Energy estimated that Ghana needed to make a total of $4.7 billion[1] of investments to catch up and/or upgrade the existing power infrastructure. Of this amount, $200-280 million of investment in generation was required annually to cater for load increases[2].

However, investment in infrastructure alone will not produce the desired improvement in reliability of electricity supply, without measures to increase the operational efficiency of the operating entities in the power sector, in particular ECG, to increase the creditworthiness of these entities, and thereby attract private capital to the power sector. Using Compact funds to address only the capital and equipment shortfalls of the public sector operators will provide limited opportunities for private sector development and participation in the power sector. However, using the Compact funds to undertake the necessary reforms and interventions that would result in opening up the power sector and making it attractive to private capital and investments, will have longer term impact in providing investment opportunities for private capital and investors. Clearly the limited availability of public sector capital for infrastructure development necessitates the adoption of strategies that will attract private capital by leveraging public capital, and creating a conducive environment for private capital to flourish (*Source: MCA-Ghana Concept Paper (Project 1) submitted to MCC*).

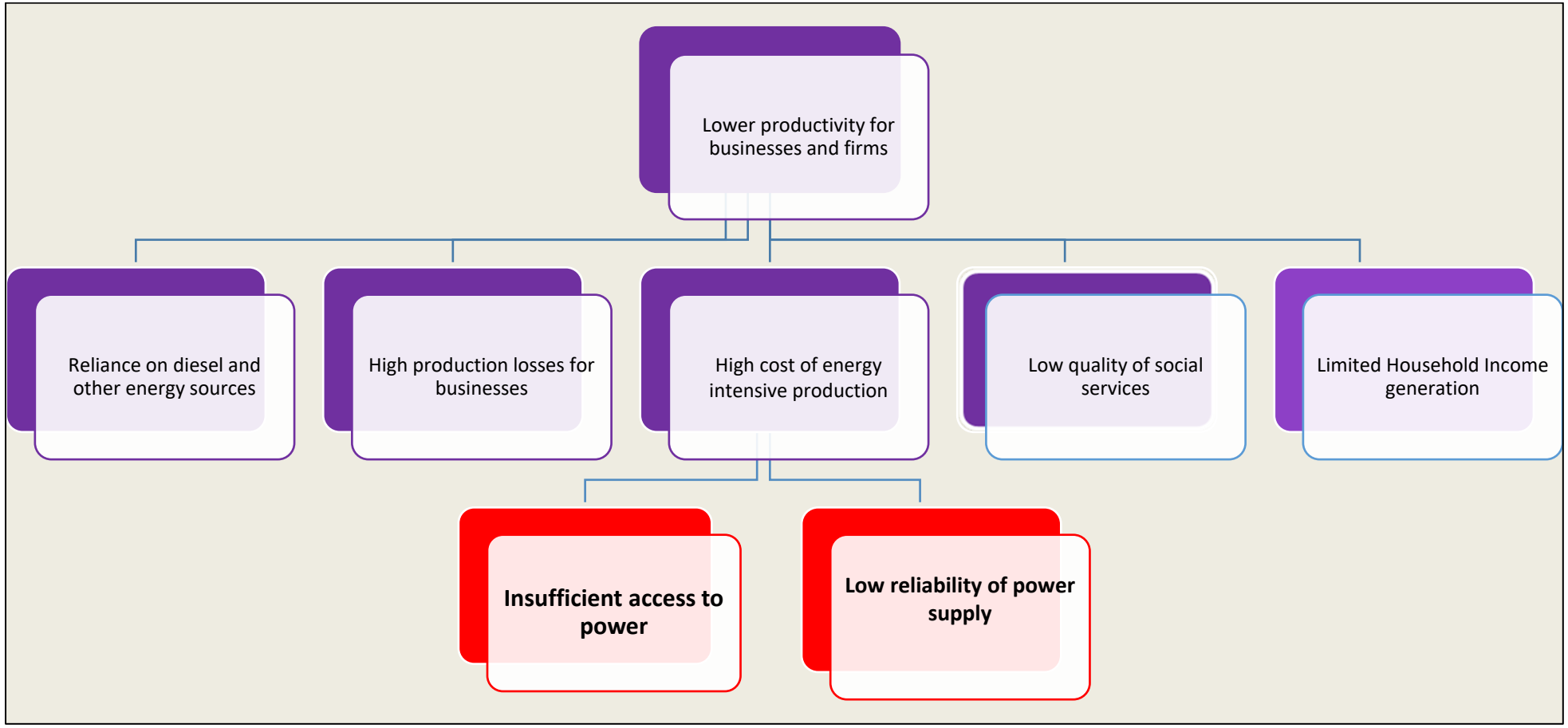
The Structure of the Power Problem Tree

The part of the problem tree that identifies power-related issues accounting for lower productivity for businesses and firms is shown in the figure below, which is a subset of the trees developed in March 2012. The full problem tree is in the Annex.

[1] Presentation on 'Investment Opportunities in the Power Sector', Ghana Ministry of Energy, January 2012 (reported in the MCA-Ghana Concept Paper (Project 1) submitted to MCC)

[2] Based on GRIDCo 10-year load forecasts 2011-2021 and Industry Estimates for Costs of Generation (reported in the MCA-Ghana Concept Paper (Project 1) submitted to MCC)

Ghana Power Compact Problem Tree



The Millennium Challenge Account Compact II: The Ghana Power Sector Problem Tree

Low reliability of power and insufficient access to power have been identified as the problems facing the Ghana power sector. The causes of each of these two problems are:

1. Low reliability of power
    a. Governance and regulatory framework does not meet the needs of all stakeholders
    b. Insufficient power supply to meet economic demand
    c. Transmission capacity is constrained
    d. Distribution system is constrained and inefficient
2. Insufficient access to power
    a. Electrification in rural areas affects balance sheets of Distribution companies negatively
    b. Limited government and private investment in rural electrification
    c. High cost compared to benefits of rural electrification
    d. High costs for off-grid options

The Power Sector Problem Tree was developed by the Ghana Power Compact Development Core Team in consultation with Focal Persons from the power sector agencies, technical advisors, and MCC counterparts. There were also consultations with potential investors, key consumers and the general public.

To make a sustainable impact on reliability and adequacy of electricity supply in Ghana, Compact II seeks to solve the problems that have discouraged private development of generation capacity, as well as addressing the concerns of the power sector agencies and utilities.

The key problems in the area of Governance and Regulation that were identified at the time of developing the Compact are:

- Need for an effective Sector-Specific Legal Framework for IPPs;
- Need for a Full Cost Recovery Tariff;
- Need for increased Transparency of Tariff-Setting Process;
- Absence of Gas Pricing and Allocation Policies and Regulations;
- Distribution Companies not considered Credit Worthy Off-Takers;
- Wholesale Pricing;
- Independence of the Regulatory Bodies;
- Shortfalls in Regulatory Capacities; and
- Insufficient momentum behind the Sector Reform Process.

It is worthy of note that some progress was made in relation to the identified problems, in particular:

- Need for an effective Sector-Specific Legal Framework for IPPs; and
- Absence of Gas Pricing and Allocation Policies and Regulations. These policies and regulations were finalized in August 2016.

At the inception of the Compact, adequate and reliable power generation capacity was identified as key in expanding the Ghanaian economy through industrialization and infrastructure development. Addressing the root causes of the inadequate investment in Ghana's power sector generation was expected to serve as the catalyst for a sustainable

economic and social transformation. In the course of Compact implementation, other interventions outside the Ghana Power Compact Program have resulted in the country achieving sufficient installed generation capacity. However, there is the need to maintain adequate dependable capacity. Ghana currently has over 4,000 MW of installed generation capacity, and the maximum peak demand in 2018 was 2,525 MW[3].

1.3 Program Logic

1.3.1 Compact Background[4]

On August 5 2014, the Millennium Challenge Corporation (MCC), a Federal Corporation created under Title VI of the Foreign Operations, Export Financing, and Related Programs Appropriations Act, 2004 and acting on behalf of the United States Government (USG), signed a Compact with the Government of Ghana (GOG) worth US$535,565,000 (with the Governments of the United States of America and Ghana contributing US$498,200,000 and US$37,365,000 respectively) to reduce poverty in Ghana through sustainable economic growth[5]. The Ghana Compact which entered into force in September 2016 was to be implemented for a five-year period and completed by September 2021 but was extended to June 2022 due to delays caused by the COVID-19 pandemic and pursuant to authorization received from Congress to grant extensions to compacts in implementation affected by COVID-19. The Government of Ghana has established an agency by an Act of Parliamentary (Act 702, Act 709 & 897 as amended), identified as the Millennium Development Authority (MiDA), to serve as the Accountable Entity (AE) for the implementation of the Compact.

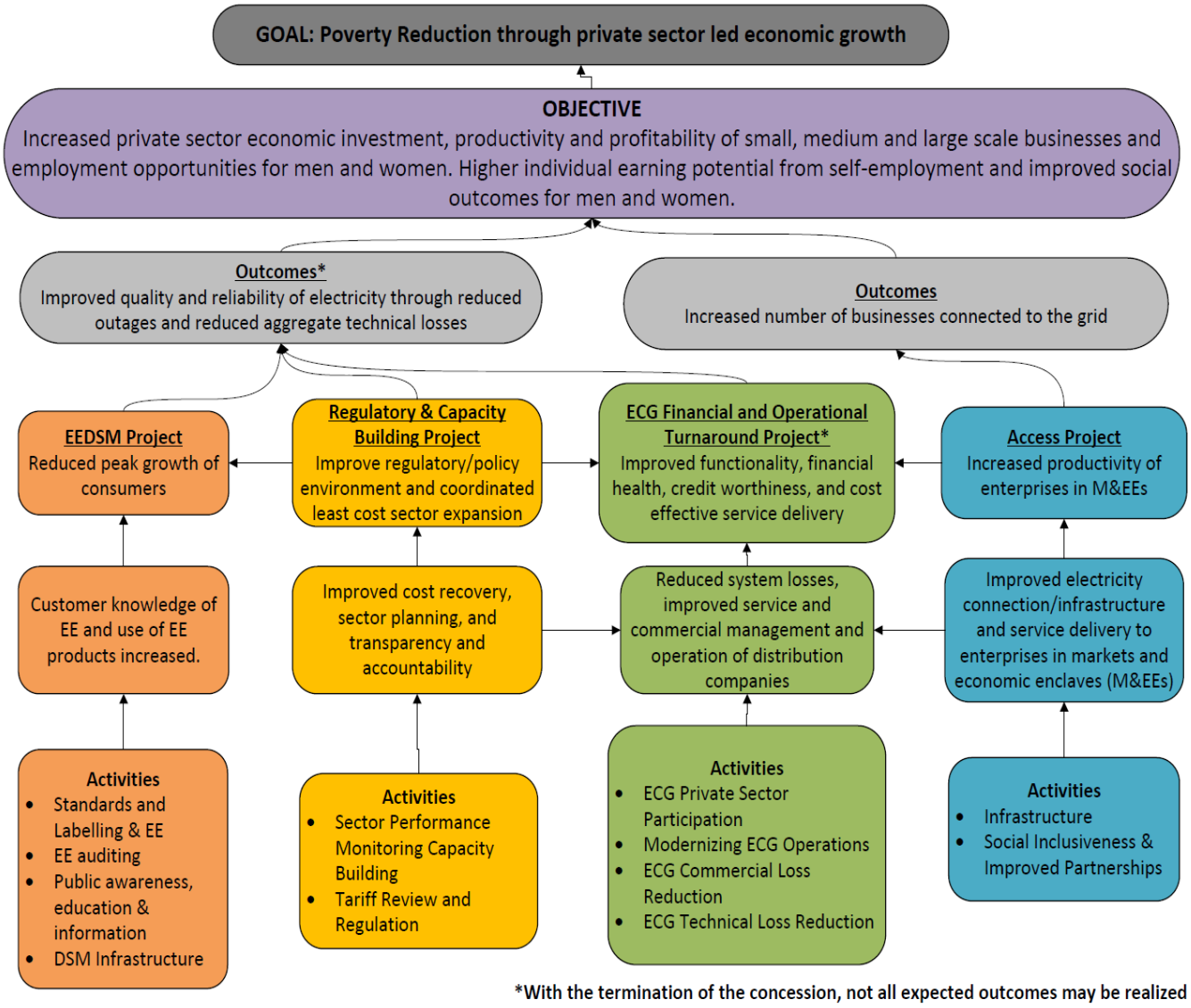
1.3.2 Compact Logic

The Compact-level logic model below illustrates how the Compact Program, Projects and Activities contribute to the Compact Goal, the Program Objectives, and Project Objectives.

The Program Objectives are to: (i) increase private sector investment and the productivity and profitability of micro, small, medium and large scale businesses; (ii) increase employment opportunities for men and women; (iii) raise earning potential from self-employment; and (iv) improve social outcomes for men and women. Prior to the achievement of these high level objectives it is envisaged that a set of hierarchically lower level but interrelated objectives (outcomes) of power generation, distribution and access will be achieved. These outcomes are expected to trigger (cause) the aforementioned program objectives (effects) include (a) increased availability, reliability and expansion of cost-effective generation, and (b) reduced hidden costs and increased (re)investment and expansion in the power sector.

[3] Energy Commission (2019). Electricity Supply Plan for the Ghana Power System.
[4] As of December 2019, MCC terminated $190,000,000 of Compact funding due to the Government's failure to adhere to its responsibilities under the Compact.
[5] Please refer to the Compact Document for a detailed description.

Overall Program Logic



*With the termination of the concession, not all expected outcomes may be realized

1.3.3 Project Descriptions and Logic

The overall program logic illustrated above is complemented by lower level logic models at the Project, and/or Activity levels (as necessary) depending on Compact design and implementation. All logic models clearly summarize the outputs, outcomes, and goal expected to result from the Program. A description of the objectives of each Project is included below.

The project description and the project-specific logic models, each illustrating its theory of change with the underlying assumptions and risks, are presented below. The logic diagrams are included as annexes to the M&E Plan.

ECG Financial and Operational Turnaround (EFOT) Project Description and Logic

Summary of Project and Activities

The *ECG Financial and Operational Turnaround (EFOT) Project's* objective is to improve the quality and reliability of electricity through reduced outages and cost-effective service delivery by ECG, reduce aggregate technical, commercial and collections losses, and to ensure ECG can serve as a creditworthy and credible off-taker under power purchase agreements. The Project Objective will be achieved by reducing implicit subsidies (created by losses, underpricing and under-billing) and ensuring cost-recovery and re-investment in the distribution sub-sector, through introduction of PSP in the governance and management of ECG, and through infrastructure and foundational investments designed to reduce losses and improve service quality. Due to the terminated concession, aspects of this objective will not be realized; however, the objective to improve the quality and reliability of electricity through reduced outages and reduced technical losses still holds.

There were originally five Activities under the Project.

Private Sector Participation Activity: This Activity will provide support for the design and execution of an Acceptable ECG PSP Transaction. Funding for this Activity is intended to cover the following interventions:

- Transaction Advisory services to, among others, advise the Government on the design and implementation of an international tender to select an Acceptable ECG PSP Provider, supporting the Government until Financial Close;
- Consultation with management and employees of ECG to gain support for PSP; and
- Consultancy to design the institutional set-up for the Acceptable ECG PSP Transaction.

MiDA executed the Financial Advisory Services Agreement (FASA) with the International Finance Corporation (IFC) in June 2015. Through the FASA, IFC supported MiDA to procure the services of a private sector entity to operate, maintain, and invest in the electric distribution assets of the Electricity Company of Ghana (ECG) through a twenty (20) year Concession Agreement. In March 2019, the concession went into effect. In October 2019, however, the Government of Ghana and ECG terminated the Concession Agreements, and so the intended deliverable of a viable PSP arrangement was not sustained.

Modernizing Utility Operations Activity: This Activity is designed to introduce modern tools to ECG, build the capacity of ECG's staff to use the tools, and provide a robust communication network for ECG. Specific planned interventions included:

- Installation of a Geographic Information System (GIS) based distribution management system, grid digitization, and customer census to record and store basic data;
- Installation of an Enterprise Resource Planning (ERP) system and integration with existing enterprise applications for the purpose of facilitating the flow of information between business functions within ECG and managing connections to outside stakeholders;
- Provision of technical assistance to strengthen Project implementation through the hiring of qualified advisors as well as technical assistance to ECG;
- Upgrade of data center and communications network (DCCN) to assist ECG in creating a data center compatible with current industry standards and and with the capability of hosting ECG's existing and planned IT systems and business processes to better manage the network;
- Loss characterization study to distinguish between technical and commercial losses in the ECG Target Regions;
- Technical assistance for tariff applications to provide ECG with the support and training needed to develop a rate case filing compliant with the Tariff Plan;
- Institutionalizing gender responsiveness to support gender auditing, development of a gender policy at ECG and support activities for strengthening institutional capacity of ECG to implement a gender policy and enhance the capacity of female employee associations through knowledge sharing, networking, and the development of internships and mentoring to university students in science and technology, particularly women; and
- Assistance to the ECG Training Center in Tema in the form of provision of training tools and development/updating of course curricula.

Following the termination of the PSP contract, MiDA no longer implemented some of the Sub-Activities originally planned under this Activity. Below are the affected Sub-Activities along with the reasons for dropping them out of the scope.

a) *ERP and DCCN*: Was removed from the scope following the de-obligation of the Tranche II Funds.
b) *Loss Characterization Study*: MiDA decided to use the results of ECG's Loss Characterization Study and so the activity was no longer necessary.
c) *Tariff Methodology*: The Tariff Methodology was not approved until the ECG Concession Agreements were executed, eliminating the need for ECG to file a rate case compliant with the Tariff Plan.
d) *ECG Training Center in Tema*: ECG decided to commercialize the Training Center, prompting MiDA to withdraw the funds earmarked for the activity.

Reduction in Commercial Losses and Improvement of Revenue Collection Rates Activity: The Activity addresses commercial and collection losses. Specific interventions to address commercial losses include:

- Creation of service connection standards and normalization of existing services to update existing standards with a new design; train ECG personnel to enforce the new standards; and repair and upgrade non-conforming services.

- Strengthening the loss control program by providing the loss control units at ECG with the means (training, tools, and equipment) to more effectively reduce commercial losses.
- Installation of automated meter readers at special load tariff service locations and on selected non-special load tariff service locations in the ECG Target Regions as well as installation of metering at critical nodes of the distribution system in the ECG Target Regions to provide ECG the ability to identify and monitor where technical and commercial losses are occurring.
- Replacement of legacy credit meters with pre-payment meters in the ECG Target Regions to improve collection efficiency and timely closing of monthly financial statements.

MiDA no longer implemented some of the Sub-Activities originally planned under this Activity. The de-scoped Sub-Activities are Normalization of Service Connection Standards, Installation of Automated Meter Readers at Special Load Tariff (SLT) service locations and on selected non-SLT service locations, Installation of Metering at Regional and District Boundaries, as well as installation of metering at critical nodes of the distribution system in the ECG Target Regions and Replacement of Legacy Meters with Pre-paid Meters.

The reasons for the partial de-scoping of the Activity are threefold:

a) ECG secured US$60 million World Bank Funding soon after the Compact was signed to improve its Commercial Losses and Revenue Collection operations. Most of this funding was allocated to programs similar to those planned under the Compact. MiDA and ECG therefore agreed that MiDA should drop some of the planned Sub-Activities.
b) ECG in 2017 wrote to MiDA to request that MiDA use part of the budget for Replacement of Legacy Meters to implement a Meter Management System (MMS) to integrate the seventeen different prepaid metering systems in ECG at the time. The MMS will transfer control of revenue management from prepaid system vendors to ECG, improve reliability of pre-paid vending, and give customers greater convenience and better experience with prepayment metering.
c) MiDA and MCC agreed to drop a number of the planned sub-Activities as a result of the de-obligation of Tranche II funding.

Technical Loss Reduction Activity: The interventions under this Activity will result in lowering thermal losses for the primary and secondary distribution systems in the ECG Target Regions. Specific interventions include:

- Updated distribution design and construction standards based upon currently accepted best practices to ensure compliance with international best practice for low loss and economical designs.
- Low voltage bifurcation and network improvements to reduce the length of the low voltage circuits to ensure they do not exceed a length that affects the quality of service and a technical loss threshold.
- Introduction of reactive power compensation for primary substations to optimize power levels at 33/11 kV substations.
- Installation of bulk supply points with feeders to existing primary substations to ease overloading based on the current demand forecast and to avoid rolling brownouts.
- Installation of primary substations with interconnecting sub-transmission links and medium voltage offloading circuits to help reduce technical losses and avoid extended outages caused by failures or maximum capacity reached at geographically adjacent substations.

Following the termination of the PSP contract and the de-obligation of Tranche II Funding, MiDA either dropped or scaled down some of the Sub-Activities originally planned under this Activity. Below are the affected Sub-Activities:

- The planned introduction of reactive power compensation for primary substations to optimize power levels at 33/11 kV substations Activity was dropped.
- Of the eight (8) Primary Substations and associated Interconnecting sub-transmission circuits and medium voltage offloading circuits that were planned (i.e. Kotobabi, Korle Gonno, Kanda, University of Ghana Medical Centre-Legon, Oyarifa, Katamanso, Dunkonah and Anyaa), only two (University of Ghana Medical Centre-Legon and Kanda) are being executed.

Outage Reduction Activity: The objective of the Outage Reduction Activity was to improve service and increase sales. The planned interventions under this Activity included:

- Installation of outage management system to identify outage locations and causes and serve to reduce outage frequencies and durations.
- Sectionalizing study of ECG Target Regions and automation of medium voltage networks and system control and data acquisition expansion to locate sectionalizing devices in the 11 kV network to reduce the geographic area affected by outages.
- Provision of specialized vehicles, tools, and equipment required for fault clearance and restoration of outages in the ECG Target Regions.

The only sub-activities carried out and completed under this activity were the consultancy contract for the Definition, Procurement and Supervision of the Implementation of an Outage Management System/Advanced Distribution Management System (ADMS/OMS) for the Electricity Company of Ghana (ECG), and the provision of specialized vehicles, tools, and equipment required for fault clearance and restoration of outages in the ECG Target Regions.

Other planned sub-activities under the consultancy contract for the OMS could not be carried out following the termination and closure of the contract in November 2019 due to the de-obligation of Tranche II Compact Funds.

Project Logic

Unreliable power has been a major constraint to growth of businesses in Ghana. To effectively support the growth requirements of the economy, key challenges in the distribution of power must be addressed. ECG, the leading Distribution Company in Ghana does not operate on commercial basis, incurs high technical and commercial losses, which deters private investment, leads to low quality of service and high cost of electricity service provision.

The EFOT Project is designed to deliver short, medium, and long term goals. In the short term, the Project will improve the financial sustainability of ECG by reducing commercial losses, improving billing and collection, ensuring cost reflective tariffs, regular automatic adjustment of tariffs and improving financial management generally within ECG. Ghanaians are expected to experience improvements in the quality of Power under EFOT through the reduction of unplanned outages and distribution technical losses resulting in an improved voltage profile. Similarly the operational management of ECG was to be transformed by improving outage response time, reducing cost per kWh of electricity generation and reinvestment and

maintenance in capital expenditure. Consequently, ECG will regain the ability to adhere to commercially agreed time limits for payments of bills to IPPs. However, vital institutional capacity building activities must complement the PSP option to achieve planned improvements in short term outcomes. Also sufficient infrastructure investments including private sector participant contributions are needed to achieve loss reduction targets within ECG.

The medium term outcomes include improving the financial viability of ECG, positioning ECG as a credible off-taker, improving satisfaction among ECG customers and enhanced investment capacity within ECG, resulting in sustainable service delivery. Customers' reliance on diesel and petrol generators will be reduced resulting in the increase in electricity consumption. To achieve the above it is critical that Generation and sector-wide master plan is implemented and key policy and regulations from the Compact are sustainably implemented, ECG's credit guarantee provides assurance to power producers of the Company's creditworthiness and customers observe improvements in outage response time and frequency of load shedding.

In the long term, among outcomes, Ghanaian businesses will experience an increase in investment coupled with the ability to churn out value added products and reduction in sales losses, which will invariably lead to increased wage employment. It is also expected that, all things being equal, household expenditure on energy will decrease. It must be noted that achievement of results under the EFOT Project depends on coordinated actions from all other Compact program components, including sector expansion to meet demand. Deterioration in conditions under which businesses operate in Ghana (inflation, interest rates and credit availability, exchange rates) and other factors outside of Compact scope may impact the likelihood of investment and deter private sector investment in Power sector.

The key assumptions and risks that underlie the accomplishment of the theory of change are summarized in the table below. These assumptions and risks are external to the Program[6]

Summary of Key Assumptions and Risks: ECG Financial and Operational Turnaround Project

Project	Assumptions	Risks
ECG Financial and Operational Turnaround Project:	• Sector Government reforms achieved • Customer ability to pay • Payment of bills by GOG • Availability of credit • Customer willingness to pay • Impact can be seen on national level hidden costs • Availability of skilled labor	• Tampering and vandalism of ECG assets • Increased load shedding • ECG staff resistance to change • Political interventions in sector • Consumer resistance to tariff increases

Regulatory Strengthening and Capacity Building Project Description and Logic

Summary of Project and Activities

The *Regulatory Strengthening and Capacity Building Project's* objective is to ensure the sustainability of all power sector investments, promote greater transparency and accountability

[6] The M&E Team will document the trends in risk factors for each Project and how their potential impact on the anticipated results. An assumption and risk status tracking table will be developed to help track and explain how these exogenous factors[6] are impacting on Compact results, especially where deviations from the performance targets exceed the ±10 percent deviation from indicator target.

for results in the sector, and enhance evidence-based decision making among sector institutions. This Project will therefore ensure that the power sector is financially self-sustaining and relies less heavily on cross-subsidies among tariff categories or other direct or implicit subsidies from the Government. This Project will support creation of an enabling environment for private investment in the power sector. The Project Objective will be achieved by strengthening independent monitoring of service quality, and improving capacity for ratemaking and other regulatory processes, including the review and restructuring of tariffs to enable the utilities to recover costs.

The Regulatory Strengthening and Capacity Building Project consists of two Activities – capacity building of the sector performance monitoring capabilities to ensure better reporting and tariff review, focused on the process of ratemaking and the structure of tariffs.

Sector Performance Monitoring Capacity Building Activity: The purpose of the Sector Performance Monitoring Capacity Building Activity is to provide capacity building for the Ministry of Energy (MoEn), National Development Planning Commission (NDPC), Public Utilities Regulatory Commission (PURC), and Energy Commission (EC) staff to strengthen their capacity for performance monitoring and ensuring service quality. The Regulatory Strengthening and Capacity Building Project will focus on regulatory monitoring and independent verification by MoEn, PURC and the EC.

This Activity will include the following interventions:

- Capacity and needs assessments with regards to data quality, monitoring systems (data collection, analysis, reporting, quality control, and communications) on key performance metrics identified for the Compact and Partnership for Growth and listed in the Electricity Supply and Distribution (Technical and Operational) Rules (L.I. 1816, 2005).
- Technical assistance in developing and implementing monitoring and reporting systems, including the development or improvement of MIS systems for MoEn.
- Provision and training for EC and PURC staff on equipment and processes for proper independent monitoring and verification. This will include support in benchmarking and developing more realistic performance targets for licensed and regulated entities, either government owned or privately owned.
- Data quality audits and training in proper monitoring practices for sector stakeholders, including NDPC.
- Support for the publication and analysis of performance data for the sector, including NDPC, in order to enhance transparency.

Tariff Review and Regulation Activity: The proposed interventions under this Activity, designed to strengthen ratemaking and other regulatory processes, are:

- Facilitating one or more partnership arrangements with qualified organizations comprised of state, national or international regulatory practitioners and technical experts.
- Various studies to include an updated cost of service study (at the levels of generation, transmission, and distribution), cost of unserved energy study, system losses study, willingness/ability to pay study, cross subsidization/lifeline study, quality of service performance index study, multiple dwelling study, and street lighting levy review.

Project Logic
Ghana has embarked on reform of its power sector driven by the need for new investment in the sector, optimized power utility performance, and increased security of supply. However, these reforms have focused on implementing isolated reform elements - instead of focusing and striving to build a solid, coherent and sustainable reform agenda. Difficulties in sustaining reforms, and the lack of appropriate legal and regulatory mechanisms have led to low levels of investment and inefficient sector performance in Ghana.

While there are different models for power sector reform (each with its own advantages and disadvantages) a number of broad international best practices can be distilled to form the building blocks of a robust and sustainable power sector. There is therefore the need to take account of Ghana's national institutional environment, and the overall investment climate.

In the long run, it is expected that, an improved tariff model and processes that meet requirements of all sector stakeholders in terms of both cost recovery and an effective and efficient lifeline mechanism would be achieve. This will in turn lead to sustainable expansion of the electricity sector to meet the growing demand. This is premised on the assumption that Generation and sector-wide master plan will be implemented and key policy/regulations supported by Compact will also be sustainably implemented. It is also envisaged that the Sector Performance Monitoring Capacity Building Activity will enhance human and technical capacities for carrying out regulatory mandates, including tariff setting and power quality monitoring.

The key assumptions and risks that underlie the accomplishment of the theory of change are summarized in the table below. These assumptions and risks are external to the Project.

Summary of Key Assumptions and Risks: Regulatory Strengthening and Capacity Building Project

Project	Assumptions	Risks
Regulatory Strengthening and Capacity Building Project	• Continuous GoG support for reforms • Financial re-structuring can be done in 5 years • Generation and Sector wide Master Plan is implemented • Key policy/regulations will be sustained	• Tampering and vandalism of equipment • Stakeholder resistance to changes • Delays in reforms due to political backlash • Customer resistance to tariff increases • Increased load shedding

Access Project Description and Logic

Summary of Project and Activities
The objective of the *Access Project* is to demonstrate how access[7] to reliable electricity can be improved among Micro, Small and Medium Enterprises (MSMEs) in eight selected Markets and Economic Enclaves (M&EEs) in urban and peri-urban areas in Accra and Tamale. The Access Project is expected to increase the number of new formal connections in M&EEs by

[7] For the purpose of this project, access to electricity will be assessed along several dimensions including (1) capacity, (2) duration/availability, (3) reliability, (4) quality, (5) affordability, (6) legality, (7) convenience, and (8) health and safety.

identifying and reducing barriers to obtaining legal connections and reliable supply[8], thereby contributing to increased productivity of enterprises in the selected M&EEs, reduced reliance on petrol/diesel generators, and over time, increased use of electricity-driven technology. This Project will also contribute to the overall objective of the EFOT turnaround project of reducing commercial losses and improving the financial health of ECG, by decreasing the number of consumers who would otherwise seek illegal connections to the network.

The Access Project is expected to provide security lighting in M&EEs, increase the number of new connections for MSMEs in targeted areas by reducing barriers to obtaining legal connections and strengthening partnerships among relevant institutions, thereby contributing to improved socially inclusive service delivery and increased productivity in M&EEs. There are two Activities under the Project.

Infrastructure in M&EEs: The objective of this Activity is to improve access to and reliability of the supply of electricity for MSMEs in targeted M&EEs and to improve safety and security of vendors' including their wares during the night in the M&EEs. To inform the design of this Activity, a power audit was conducted in targeted M&EEs to provide information on the status of existing electricity infrastructure; wiring standards; and potential fire hazards and recommend upgrades and corrective interventions to ensure reliability in electricity supply and safety.

The sub-activities and respective interventions under this Activity are as follows:

- Infrastructure upgrades and corrective actions to provide safe and legal connections and power supply, and to reduce fire hazards. To achieve this, there will be injection of multiple new distribution transformers to shorten low voltage (LV) circuit lengths and improve voltage quality. In addition, there will be replacement of legacy LV circuits with new, aerial-bundled cable (ABC) conductor to reduce safety concerns and improve current-carrying capacity of the circuits. Finally, replacement and expansion of metering and service installations to all shops and stalls in each M&EE.
- Provision of metered public lighting to extend business operating hours, prevent theft and increase public safety, in particular for women. To achieve this, the security lighting intervention will include the installation of new pole and façade-mounted light-emitting diode (LED) lighting units, which will take advantage of and link with the above HVDS investments.

Improving Service Delivery & Strengthening Partnerships Activity: The objective of this Activity is to develop and implement institutional approaches for ensuring sustainability for the public lighting and customer outreach for new power customers and the normalization of existing customers.

The sub-activity and respective interventions under this Activity are as follows:

- Provide customer outreach, facilitation assistance for new connections and normalization of services. Normalization is the process of converting unregistered consumers of electric power to formal, registered customers of the electric distribution utility licensed to provide electricity service in the area where the

[8] Due to the de-scoping of the NEDCo Project, the Access Project and Compact will not be addressing reliable service in the NEDCo region, however this does not apply to the two M&EEs targeted by the Project in Tamale.

consumer is located. A normalization plan will be developed and implemented with the objective of gathering the necessary data and information to document registered and unregistered consumers and to facilitate formal registration of all connected consumers. A census will be carried out in each of the M&EE and use the information generated to work closely with the utilities to develop the normalization plan. The normalization plan will evaluate both the number of new meters and service connections and the time and other resources necessary to support the process. The normalization plan will also (1) provide the framework and processes to be followed as applicable to existing consumer connections, and (2) detail the activities and procedures to be employed to strategically smoothen the normalization of existing metered consumers and increase and accelerate the rate of connections among unauthorized users and nonusers who want a formal registered connection. Facilitation assistance will also be provided to support and accelerate the process of connecting new customers; engage and improve coordination among project stakeholders to jointly identify and resolve institutional challenges and bottlenecks that impede effective and efficient delivery of electricity services.

- Ensure sustainability of security lighting. To achieve a high-impact and sustainable security lighting intervention, an institutional assessment and stakeholder engagement process (involving market women associations, trade associations, Metropolitan, Municipal, and District Assemblies, ECG and NEDCo) will be conducted to establish responsibility for and commitment to the sustained operations and maintenance of project security lighting in the M&EEs. Funding sources and funding structures will be identified for sustaining maintenance requirements.

Project Logic

Lack of access to reliable and quality electricity can be a major constraint on economic growth and improved living standards. Micro, Small, and Medium-sized Enterprises (MSMEs) are economically constrained by inefficiencies (i.e., technical, economic, and institutional) in power distribution in M&EEs, compounded by faulty and overaged wiring, resulting in low profitability, limited investment and expansion opportunities, fire outbreaks and high risk of property damage. Also, illegal and informal electricity connection is common in these M&EEs because of the perception of cumbersome processes for electricity service connection, which sometimes result in commercial losses and transformer overloads and burnouts to the utilities. Poor lighting in M&EEs also exacerbates safety risks causing enterprises to curtail their operating hours before dusk, hence limiting incomes.

In M&EEs found in both urban and peri-urban areas in Ghana, there are clusters of MSMEs engaged in the production of goods and provision of services. These MSMEs are the source of employment for the majority of Ghanaians because only 16% of employment is generated in the formal sector (equally split between formal private sector and public sector jobs), according to the Ghana Statistical Services (GSS). Hence, the Compact activities under the Access Project outlined above will go a long way to trigger short, medium to long term outcomes and reduce poverty levels for both men and women, as described in the theory of change in the subsequent paragraphs. The intent of the Project is to provide targeted M&EEs safe, reliable and legal connection to electricity and install security lighting.

In the short-term, the HDVS interventions together with the interventions on customer outreach, facilitation assistance for new connections and normalization of services are expected to improve quality of service for MSMEs, and reduce commercial losses for the utilities. In addition, the customer outreach campaigns, facilitation assistance, and service normalization interventions will help to normalize existing connections and formalize informal and illegal connections. This will bring in new customers and help reduce commercial loss. Lastly, these interventions will go a long way to minimize the risk of electrical sparks, shocks, burns, and fires in the M&EEs.

The installation of security lighting system in the M&EEs will in the short term reduce security risk for people and minimize damage to property of the MSMEs. It is expected that this outcome will be realized on the basis of putting in place a Security Light Agreement defining the roles and responsibilities of the key stakeholders (market associations, MMDAs, and utilities) to ensure adequate maintenance, safety and security for long-term sustainability of the security lighting.

In the medium term, once the quality of service delivered by the utilities to the MSMEs improves as a result of the HVDS interventions, it is expected that MSMEs will reduce their reliance on diesel/petrol generators and increase productivity whiles the utilities also increase their revenue recovery rate. The increase in formal connections (via minimizing informal and illegal connections) vis-à-vis reduction in commercial losses is also expected to increase revenue recovery of the utilities. Again in the medium term, the maintenance of the security lights in the M&EEs and the reduction in security risk as well as risk of electrical sparks, shocks, burns, fires, etc., which some MSMEs may take advantage of to extend their operating hours is expected to contribute to increased productivity and increased use of technology in their businesses.

The key assumptions and risks that underlie the accomplishment of the theory of change are summarized in the table below. These assumptions and risks are external to the Project.

Summary of Key Assumptions and Risks: Access Project

Project	Assumptions	Risks
Access Project	• Easy identification of customers • Customer ability and willingness to pay • Clear targeting criteria, including pro-poor considerations • Credit availability • Connection fees affordable • Labor availability • Appliance availability	• Tampering and vandalism • Customer resistance to tariff increases • Social acceptance of projects • Increased load shedding • Land ownership and availability • Low poverty levels

Energy Efficiency and Demand Side Management Project Description and Logic

Summary of Project and Activities

The *Constraints Analysis* documents that the demand for electricity is outstripping supply in Ghana, which creates a gap in power availability and also undermines the reliability of the

system.[9] Energy efficiency and demand side management represent cost-effective opportunities to bridge this gap, serving, in effect, as sources of supply.

The objective of the *Energy Efficiency and Demand Side Management (EEDSM) Project* is to reduce electricity demand through improved building and appliance efficiency, to reduce peak load on the network, and to sustain improvements in energy efficiency through the development of technical capacity for energy audits and management as well as public outreach and education. Improved efficiency will in turn make the same amount of electricity generated available to more consumers, and at a lower cost than by developing additional generation capacity. It will also help in moving towards the creation of a reserve margin, in terms of generation capacity relative to peak demand. Interventions like the adoption and enforcement of standards and labels for priority equipment (i.e., items factoring into peak demand), coupled with the installation of test facilities for energy efficient appliances will help reduce peak load while also reducing the energy consumption and therefore costs customers incur with the use of these appliances.

In addition, because government agencies account for a significant portion of electricity demand in Ghana, the Project will relieve some burden on ECG by reducing the demand from government facilities via efficiency retrofits. Installation and/or replacement of streetlights with LED technology will reduce the lighting load and by extension the evening peak load. Finally, this Project will achieve and sustain these results by establishing training centers to train energy auditors to conduct regular audits of public buildings, by developing and disseminating education tools to be incorporated at educational institutions, and by conducting public outreach on energy efficiency. The Energy Efficiency and Demand Side Management Project is organized into four Activities, each described below.

Development and Enforcement of Standards and Labels Activity: Energy efficiency standards and labelling will be developed to provide information on the energy efficiency performance of selected energy consuming appliances and products available on the market, and to ensure minimum efficiency standards for products on the market. In addition, the standards and labelling that do exist could benefit greatly from technical updates and enforcement support. The uptake of more efficient appliances and equipment will reduce consumer utility bills and thereby save them money in the long run. It could also help reduce peak demand, or at least mitigate growth in peak demand.

Improved Energy Auditing Activity: Capacity building for energy auditing will be provided to energy management professionals to ensure that a core of qualified and certified professionals are available in the Ghanaian market who can assist industrial and commercial customers in implementing cost effective energy savings measures such as building retrofits. The capacity building will be complemented by investments in training centers and mobile test labs. This Activity also includes demonstration audits to stimulate the market and strengthen energy service companies that will effectively promote energy efficiency retrofits in Government facilities.

Education and Public Information Activity: Public education and information activities help ensure that consumers are fully informed regarding the benefits and trade-offs of higher

[9] This is from 2014. Currently, as of 2019, Ghana has a surplus of power supply.

efficiency appliances and equipment. This Activity potentially includes direct public education interventions targeting high energy peak load consumers and developing an energy efficiency component to integrate into the school curriculum at the primary and secondary school levels.

Demand Side Management Infrastructure Activity: This Activity will support the conversion of conventional street lights in ECG Target Regions to highly efficient LED street lights.

Project Logic

The expected output from the four EEDSM Project interventions include increased public education, information and awareness about performance and benefits of energy efficient equipment and measures, outreach to educational institutions, importers and retailers of electrical appliances, etc. Other outputs are efficiency ratings, labels, and standards for major energy-using equipment established and enforced through legislative instruments made official; and market monitoring enhanced and product certification process improved. Finally, the EEDSM activities will facilitate national capacity building on energy auditing, institutionalize industrial and commercial energy efficiency audits, expand the training and certification of energy efficiency (EE) auditors and managers, and upgrade government buildings with energy efficient retrofits. The project will also ensure closer collaboration between energy efficiency auditors and energy efficiency manufacturers.

The increase in public education, information and awareness about performance and benefits of energy efficient equipment and measures is expected to make the public better informed on energy efficiency and empowered to reduce energy consumption in the short term. Within the same timeframe, the standards and labels and enforcement of major energy-using equipment will improve the demand profile and reduce the demand growth rate, especially at peak periods. Again, in the short term, the replacement of High Pressure Sodium (HPS) lamps of streetlights with more efficient lamps like LEDs and/or better street lighting technology will also reduce the lighting load of the country, and further shave the peak load.

In the medium term, a more enlightened public on EEDSM will enable the country's generation capacity to transcend meeting demand to ensuring adequate reserve margin. As more private, industrial and government institutions internalize the practice of energy auditing to their buildings, we will experience efficient use of installed capacity and cause reduction of greenhouse gases emission in the medium term. Finally, in the medium term, the reduction in the lighting load will minimize unplanned outages at both transmission and distribution levels, and increase access and consumption of electric power for new customers, thereby reducing customer reliance on diesel generators.

In the long term, the medium term outcomes are expected to contribute in diverse ways to decrease household and business energy basket expenditures and thus business losses, increase value-added production, increase business investments, wage employment and incomes.

The key assumptions and risks that underlie the accomplishment of the theory of change summarized in the program logic are shown in the table below.

Summary of Key Assumptions and Risks: Energy Efficiency and Demand Side Management Project:

Project	Assumptions	Risks
Energy Efficiency and Demand Side Management Project	• Training program can be implemented within 5-years • Consumer behavior changes. • Technology affordable and available on the market • Rate of demand growth is 6% annually • Effective enforcement of standards and labels requirements • Willingness and ability of consumers to purchase efficient appliances • Generation and sector-wide master plan implemented and key policy/regulations from Compact sustainably implemented	• Import restrictions due to inflation and fiscal position • Circulation of inefficient household appliances

1.4 Projected Economic Benefits

The ERR analysis calculates average economic opportunity costs of electricity disruptions by estimating losses in value added due to the costs of own generation of electricity and losses of value added due to the temporary cessation of economic activity. The midpoint ERRs for each project are presented in the table below.

Economic Rate of Return Analysis

Project	Current Economic Rate of Return (ERR)	Date Current Economic Rate of Return (ERR) Established
ECG Financial and Operational Turnaround Project	9%[10]	October 2020
Regulatory Strengthening and Capacity Building Project (costs incorporated in ECG calculations)	Not Applicable (wrapped into the ECG ERR)	Not Applicable
Access Project	Not Applicable[11]	Not Applicable
Energy Efficiency and Demand Side Management Project	27%	August 2014

1.4.1 Economic Analysis of ECG Financial and Operational Turnaround Project[12]

The analysis estimated the benefits of reducing service disruptions attributable to network deficiencies by considering key factors affecting the level of downstream subsystem outages, which vary by substation. If ECG resources for re-investment are limited and therefore focused on routine maintenance and equipment replacement, and spread thinly, then areas with older assets could display higher rates of system failure. Investments in critical equipment replacement (compact-mediated hardware inputs) and higher levels of financial resources applied to system maintenance and re-investment (compact-mediated institutional, 'software' inputs) is expected to lead to downstream incremental benefits.

1.4.2 Economic Analysis of Regulatory Strengthening and Capacity Building Project

The beneficiaries are incorporated in the ECG Financial and Operational Turnaround Projects.

1.4.3 Economic Analysis of Access Project

The Access Project does not have to meet an economic threshold as a requirement for funding.

[10] The ERR was re-estimated in 2020 to reflect the result of the de-scoped investments and the collapse of the PSP concession. The analysis considered the state of the world with and without the Covid-19 pandemic. In the absence of Covid-19, the ERR would have been 12 percent.

[11] The Access Project did not have an ERR at Compact signing and was designed during the first 2 years of Compact implementation.

[12] Information presented are extracts from the *Ghana II Economic Assessment: Guide to the Analysis and Work Files*, which was prepared by MCC. This also applies to the sections on the Power Sector Generation Improvement Project and the Energy Efficiency and Demand Side Management Project.

1.4.4 Economic Analysis of Energy Efficiency and Demand Side Management Project

Changes in the trend in reserve margins due to reductions in expected growth in peak demand were treated in the same way as in the case of the Power Generation Sector Improvement Project. The analysis of EEDSM interventions considered the average of future outcomes in the presence of low and high reserve margins. The energy efficiency interventions realize their economic benefits through the private purchase of appliances over time that conform to standards that are defined for 20 electrical appliances by a technical committee hosted by the Ghana Standards Authority (GSA).

1.5 Projected Program Beneficiaries

According to the MCC "Guidelines for Economic and Beneficiary Analysis", beneficiaries of projects are considered individuals that are expected to experience better standards of living due to Compact activities aimed to increase their real incomes. The economic rate of return analysis for proposed projects gives details on benefit streams through which beneficiaries should experience increased income.

A general overview of the span of program benefits across the population of Ghana, used for Compact justification to MCC's Investment Committee, is presented in the table below.

1.5.1 Projected Program Beneficiaries

Each Project of the Compact is intended to further poverty reduction through economic growth. The expected beneficiaries, and the estimated numbers for each Project are presented in the table below.

Projected Program Beneficiaries

Project	Program Beneficiary Definition	Est. Number of Beneficiaries	Present Value (PV) of Benefits[13]	Net Present Value (NPV)[14]
ECG Financial and Operational Turnaround Project	Consumers of electricity engaged in productive activity in the ECG Target Regions (Accra East and Accra West)	4.8 million	USD 174 million	USD -25 million
Regulatory Strengthening and Capacity Building Project (beneficiaries incorporated in ECG Financial and Operational Turnaround Projects)	The beneficiaries are the customers of ECG.	4.8 million	N/A	N/A
Access Project	MSMEs in the 8 Markets and Economic Enclaves in Accra and Tamale	N/A	N/A	N/A
Energy Efficiency and Demand Side Management Project	All electricity consumers in Ghana	19.6 million	TBD	USD 95.8 million

[13] The PV of benefits are the "estimated discounted increase in income over the life of the project or the "beneficiary income gain."

[14] The NPV illustrates the net benefits, which subtract the discounted costs from the discounted benefits. Cost-benefit analysis produces two main outputs: the ERR and NPV. This provides a more complete picture and allows for comparison at this level across projects.

1.5.2 Beneficiary Analysis

There is a very high level of overlap (in some cases complete overlap) of beneficiaries of the respective projects. The primary beneficiaries of the ECG Financial and Operational Turnaround Project are consumers of electricity engaged in productive activity in the ECG Target Regions. These regions generate over 22 percent of the gross domestic product (GDP) of Ghana and represent more than 23 percent of ECG's total customers. The proposed interventions are expected to reduce losses in added value in terms of lost income to the owners of businesses (or owner-operators as the case may be for informal activities) and wages because of service disruptions. All the beneficiaries of the ECG Financial and Operational Turnaround Project are also captured as beneficiaries of the Regulatory Strengthening and Capacity Building, and the Energy Efficiency and Demand Side Management Projects.

The beneficiaries of the Regulatory Strengthening and Capacity Building Project would be the customers of ECG.

The Access Project will target Markets and Economic Enclaves within ECG Accra East and West Regions and Tamale. Following the design phase six markets and two economic enclaves have been selected and will benefit from this intervention, and two other markets are on standby, but will be considered for implementation based on availability of funding. It is anticipated that over 10,000 people will benefit from the upgraded infrastructure either through reconnection or a new connection. All the beneficiaries are also affected by the ECG Financial and Operational Turnaround Project, except for the ones based in Tamale.

Reducing energy waste will benefit all electricity consumers in Ghana, as it will make more electricity available at a cost far below that of new generation capacity. Individual activities will target retail consumers, industry, and Government agencies:

(i) The Development and Enforcement of Standards and Labels Activity will impact all consumers who use household and other appliances as its implementation occurs at the national level;
(ii) The Improved Energy Auditing Activity is geared toward industrial and commercial customers, but Government agencies may also show interest in participating;
(iii) The Education and Public Information Activity is meant to reach the general public. Target beneficiaries include high energy peak consumers, students and industrial and commercial actors.

All consumers of electricity in Ghana are potential beneficiaries of the Power Generation Sector Improvement Project.

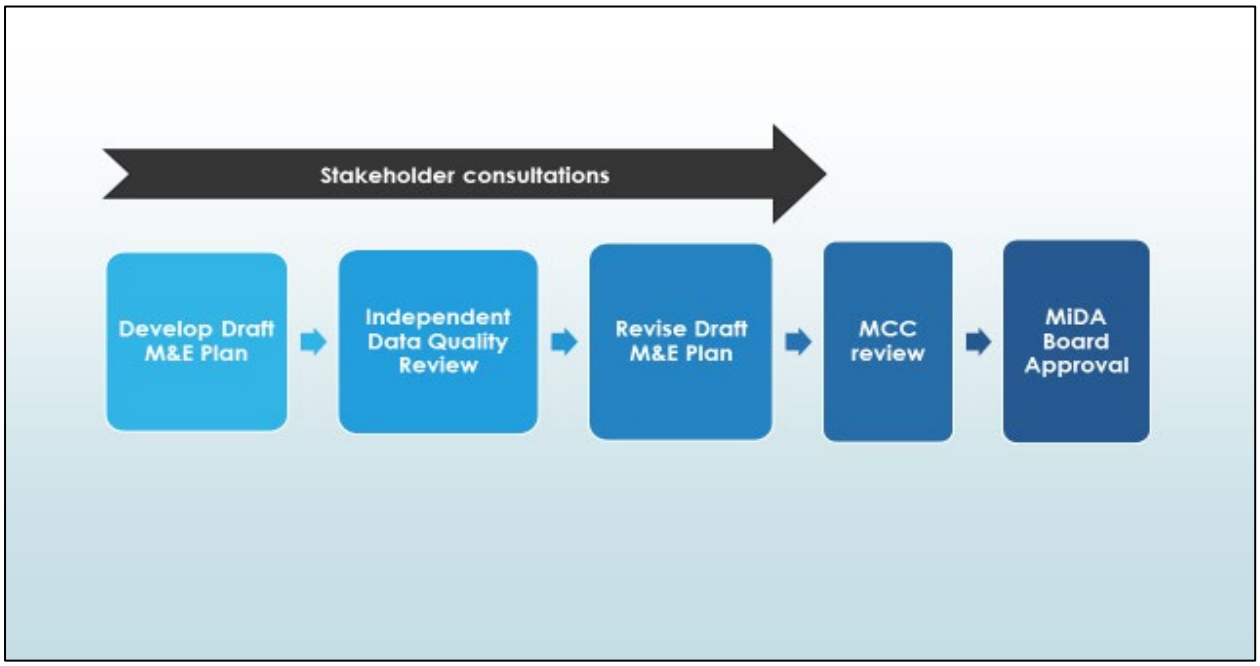
The Demand Side Management Infrastructure Activity will impact a combination of the general public (through LED street lighting) and Government agencies.

1.6 The Process of developing the first draft of the M&E Plan

The process of developing the first M&E Plan was guided by the MCC M&E Policy and the MCA M&E Plan template, and it was led by MiDA M&E with support and input from MCC M&E. The Plan was developed in conjunction with key stakeholders, including MiDA and MCC Project Teams and Ghana's power sector agencies.

The process is summarized in the chart below. It started with developing the Draft M&E Plan from the description of the Monitoring and Evaluation Plan in the Compact, (also referred to as the Compact M&E Summary), which represents the negotiated legal agreement between the Republic of Ghana (through GOG) and the United States Government (through MCC) on broad M&E issues.

The M&E Plan Process



An independent Data Quality Review (DQR) Consultant carried out an assessment of the Plan, particularly the monitoring indicators that had been proposed, during the period November 2015 - July 2016. The objective of DQR was to assess the quality of data that will be collected for the M&E Plan, and to improve the quality of future data gathering and reporting efforts.

The Consultant reviewed all the Compact outcome indicators, data and data collection methodologies with a view to provide MiDA and the Implementing Entities (IEs) of the Ghana Power Compact with recommendations on how to improve the quality of data used as part of the M&E Plan framework.

The Consultant carried out the following specific activities.

i) Reviewed the relevancy of the Compact indicators used in the draft M&E Plan; and in particular reviewed indicators to ensure their definitions, calculation and measurement methods accurately measure the intended results of the project and project logic;
ii) Ensured the accuracy and quality of data collected to measure and calculate indicators; and
iii) Made recommendations to strengthen the quality of data used in the draft M&E Plan.

The recommendations were used to revise the draft M&E Plan, including definitions, setting of baselines and targets, and the methodology for measurement.

The revised draft M&E Plan was then submitted to MCC for informal review by the M&E and Project teams, prior to submission to MiDA Board for approval.

There were stakeholder engagements throughout the process of developing the M&E Plan. These consultations focused on the monitoring component of the plan. Apart from MiDA project teams, and MCC M&E and project teams, key stakeholders in the power sector who were expected to implement Compact activities and/or report on the results were also engaged. These were the service providers (ECG, NEDCo and GRIDCo), technical regulator (EC) and policy maker (MoEn)[15].

All of these stakeholders, with the exception of GRIDCo, are also implementing entities for the Compact. Their participation was particularly important since they would be working together with MiDA to implement the Plan.

The roles of stakeholders during each stage of the process are summarized below.

Draft M&E Plan: MiDA M&E and Project Teams initially reviewed the indicators identified in the description of the M&E Plan in the Compact. These were modified to reflect the current state of the Projects. The likely outputs that would inform the setting of targets for indicators were also identified. The power sector stakeholders participated in joint review of proposed indicators with MiDA to finalize the set of indicators, baselines (for outcome indicators) and preliminary targets for outcome and output indicators. MCC worked with MiDA at all the stages of developing the Draft M&E Plan.

Data Quality Review (DQR): The MiDA Project Teams, MCC and power sector agencies provided feedback, through the review of the draft, and participation in a validation workshop on the DQR Report.

Revision of the Draft M&E Plan: In addition to providing feedback on the Draft DQR Report, all the stakeholders participated in target setting exercises with MiDA and MCC.

M&E Plan Revisions[16]

M&E Plan revisions occur as the Compact and Projects evolve and indicators and targets need to be updated. In 2018, the M&E Plan was revised to add indicators to the NFOT Activity (this has now been de-scoped) and to update baselines from 2014 data to 2016 data. These baseline updates were to reflect the fact that the Compact entered into force in 2016. The previous baselines were thought to have been out of date for the Compact. It is important to note, however, that investment decisions were made based on 2014 figures. In 2019, the M&E Plan was further revised to de-scope Projects and update indicators to reflect the current realities. In 2021, the M&E Plan was revised to reflect the 9-month compact extension.

[15] MiDA has still not had the opportunity of engaging with PURC due to a number of factors. Hopefully, the issues preventing MiDA from fully engaging with PURC would be resolved in the first half of 2017 and their views on the indicators, if any, would be incorporated in the first revision of the M&E Plan.

[16] In 2020, the M&E Plan was again revised to take into account the termination of Tranche II funds and the re-scoping of the EFOT Project.

2. MONITORING COMPONENT

2.1 Summary of Monitoring Strategy

As defined in the MCC M&E Policy, monitoring is the continuous, systematic collection of data on specified indicators to provide indications of progress toward objectives and the achievement of intermediate results along the way. The Compact will be monitored and progress reported regularly through the Indicator Tracking Table (ITT). To monitor progress toward the achievement of results of this Compact, the M&E Plan will identify indicators and establish baselines and targets against which to assess implementation and outcomes. It should be noted that some indicators will continue to be tracked after the Compact Term as necessary.

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 program logic and thus allow Project developers and managers to understand to what extent planned activities are likely to achieve their intended objectives. Often most outcome (long-term or distal) and goal indicators are not monitored during the life of the Compact, but rather are reported through evaluations after the Compact is complete. Those levels of results typically take longer to be achieved. But intermediate outcomes are monitored during the compact lifecycle.

Goal indicators measure the economic growth and poverty reduction that occur during or, most likely, after implementation of the program. For MCC Compacts, goal indicators will typically be a direct measure of local income and are typically measured through post compact evaluations. Outcome indicators measure the intermediate effects of an Activity or set of Activities culminating in tangible or intangible outputs, and are directly related through the Program Logic to the output indicators. Output indicators directly measure the deliverables directly from Project Activities. They describe and quantify the "finished" goods and services produced directly by the implementation of an Activity. Process indicators measure progress toward the completion of Project Activities, and at times provide proxy indication of the extent of completion of an output, e.g. "Percent disbursed of power infrastructure construction contracts". They are a precondition for the achievement of Output Indicators and a means to ascertain that the work plan is proceeding on time.[17]

MCC has introduced common indicators for external reporting across all MCC Compacts. The common indicators relevant to the MCA-Ghana Compact are included in this M&E Plan.

The Compact outlines the initial indicators for the Program. The M&E Plan builds on this information with additional indicators developed by MCC, MiDA project managers and implementers in the early stage of project implementation.

2.1.1 Measurement of Goal, Outcome, Output, and Process Indicators

The results of the Program would be measured using quantitative, objective, and reliable metric (i.e. "indicators"). These indicators may be augmented by qualitative data whenever necessary.

(i) The M&E Plan will establish baselines for every Indicator. An Indicator's Baseline should be established prior to the start of the corresponding Project and/or Activity. Baselines demonstrate that the problem can be specified in measurable terms, and are thus a pre-

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

requisite for adequate intervention design. The Government will collect Baselines on the selected Indicators or verify already collected Baselines where applicable.

(ii) The M&E Plan will establish a target for each Indicator that specifies the expected value and the expected time by which the result will be achieved.

(iii) The M&E Plan will indicate which Indicators will be disaggregated by gender, income level, and age, and beneficiary types to the extent practical and applicable.

(iv) MCC's Common Indicators (as described in the MCC M&E Policy) will also be included as relevant.

(v) Subject to prior written approval from MCC and in accordance with the MCC M&E Policy, MiDA may add Indicators or refine the definitions and Targets of existing Indicators.

(vi) MiDA will report to MCC on monitoring indicators in the M&E Plan on a quarterly basis using an Indicator Tracking Table (ITT) in the form provided by MCC. No changes to Indicators, Baselines or Targets may be made in the ITT until the changes have been approved in the M&E Plan. Additional guidance on Indicator reporting is contained in *MCC's Guidance on Quarterly MCA Disbursement Request and Reporting Package*. In the case that MiDA submits a six-month disbursement request, the ITT must still be submitted quarterly.

The Indicator Definition 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) name; (ii) definition; (iii) unit of measurement; (iv) level of disaggregation; (v) data source; (vi) responsible party; and (vii) frequency of reporting. A more detailed documentation on each indicator to encompass the aforementioned descriptions, rationale and management utility of indicator, plans for data management, data quality assessment, and data analysis would be developed into a Performance Indicator Reference Sheet (PIRS) as Annex IV.

2.1.2 Indicators, Baseline and Year 5 Targets

Key Indicators that can be reported on at least an annual basis will be included in quarterly monitoring indicator reports. Annex I to the M&E Plan (i.e. Indicator Documentation Table) has the list of the Indicators, their definitions, level of disaggregation in reporting, source of data and the frequency of reporting. Annex II (i.e. Table of Indicator Baselines and Targets) has details of the baseline results, annual targets throughout the Compact period, and the end of Compact targets, for each of the indicators. The Indicators are aligned with monitoring indicators defined in Power Africa and the Partnership for Growth M&E Addendum.

The Compact will be monitored systematically and progress reported quarterly through the ITT.

Monitoring data will be analyzed regularly to allow managers of MiDA and MCC to make programmatic adjustments as necessary with a view towards improving the overall implementation and results of the Program.

To ensure that the Program is on track to meet its overall goals and objectives, the monitoring indicators will be 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 will likely achieve. Baselines and target levels for each indicator are defined in Annex II.

Indicators may need to be modified in future versions of the M&E Plan. Modification and revisions to the indicators may only be made according to the MCC M&E Policy. Justifications for any significant modifications to the indicators or other content will be summarized in Annex III of the M&E Plan.

MiDA M&E Team shall consult and assist implementing entities in setting up their data collection plan and reporting templates.

2.2 Data Quality Reviews

Data Quality Reviews (DQRs) are a mechanism to review and analyze the utility, objectivity, and integrity of performance information. DQRs are to cover: a) quality of data, b) data collection instruments, c) survey sampling methodology, d) data collection procedures, e) data entry, storage and retrieval processes, f) data manipulation and analyses and g) data dissemination.

Data quality is the primary responsibility of MiDA staff, led by the M&E and Economics Director. The M&E Team, other MiDA staff, as appropriate and implementing entities and the Project Management Consultant (PMC) will regularly check data quality. MiDA M&E team will put in place robust quality assurance mechanisms for both routine performance monitoring data as well as periodic survey data, to minimize the likelihood of potential errors generated in the process of sampling, gathering, processing, analyzing and reporting data. The M&E Team will verify that all reported data has appropriate source documentation and that calculations have been done correctly as per the PIRS and other relevant documents like the ITT Guidance issued by MCC. MiDA M&E will 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.

In addition to regular data quality checks by MiDA staff, independent Data Quality Reviews (DQRs) 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 five standards defined in the MCC M&E Policy in the areas of validity, reliability, timeliness, precision and integrity. DQRs 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 level of data quality is not possible, given the realities of data collection.

The particular objectives for the DQRs include 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 indicator; iv) what are the main reasons behind low quality; and v) what steps can be taken to improve data quality.

Data quality reviews are contracted to independent entities in compliance with MCC Program Procurement Guidelines. The methodology for the reviews will, at the minimum, include a mix of document and record reviews, site visits, and key informant interviews.

The ex-ante review is carried out once, starting before EIF and the results used to finalize the M&E Plan. As indicated in Section 1.6, the ex-ante DQR was undertaken by an Independent Consultant prior to EIF of the Compact to facilitate the preparation of the M&E Plan. It is expected that subsequent data reviews (ex-post) will be undertaken by MiDA staff and any Independent Consultants engaged for that purpose.

2.3 Standard Reporting Requirements

2.3.1 Reporting to MCC: Quarterly Disbursement Request Package

Performance reports serve as a vehicle by which the MiDA Management informs MCC of implementation progress and on-going revisions to Project work plans. Currently, MCC requires that MiDA submit a Quarterly Disbursement Request Package (QDRP) each quarter. The QDRP must contain an updated ITT and a Narrative Report, in addition to a Detailed Financial Plan (DFP). A complete ITT presents the preceding quarters' indicator actuals and current quarter indicator progress against targets set forth in this M&E Plan. The ITT is the source for MCC's internal and external reporting on indicator progress.

Additional guidance on reporting is contained in MCC's *Guidance on Quarterly MCA Disbursement Request and Reporting Package*.

2.3.2 Reporting to MiDA and Local Stakeholders

Even though the QDRP is required to be sent to MCC, MiDA would also use these reports and the data included in them to assess progress and performance internally. The M&E Team will attempt to align MCC and GOG reporting so that data is used to inform decision-making at both levels.

3. EVALUATION COMPONENT

3.1 Summary of Evaluation Strategy

While good program monitoring is necessary for program management, it is not sufficient for assessing ultimate results. MCC therefore advocates the use of different types of evaluations as complementary tools to better understand the effectiveness of its programs. As defined in the MCC M&E Policy, evaluation is the objective, systematic assessment of a program's design, implementation and results. MCC is committed to making its evaluations as rigorous as warranted in order to understand the causal impacts of its programs on the expected outcomes and to assess cost effectiveness. The Evaluation Component of the M&E Plan contains three types of evaluation activities: (i) independent evaluations (impact and/or performance evaluations); (ii) self-evaluation, and (iii) special studies, each of which is further described in the MCC M&E Policy. The results of all evaluations will be made publicly available in accordance with the MCC M&E Policy.

3.1.1 Independent Evaluations

Every Project must undergo a comprehensive, independent evaluation (impact and/or performance) in accordance with the MCC M&E Policy. However, given the interdependent nature of the Projects for many Compact-wide outcomes, each project may not have its own specific evaluation plan. As appropriate, specific evaluations plans will be developed further and outlined in subsequent versions of the M&E Plan. The Evaluation Component of the M&E Plan describes the purpose of the evaluation, methodology, timeline, required MCC approvals, and the process for collection and analysis of data for each evaluation. All independent evaluations must be designed and implemented by independent, third-party evaluators. If the Government wishes to engage an evaluator, the engagement will be subject to the prior written approval of MCC. Contract terms must be acceptable to MCC and ensure non-biased results and the publication of results.

For each independent evaluation, MiDA is expected to review and provide feedback to independent evaluators on the evaluation design reports, evaluation materials (including questionnaires), baseline report (if applicable), and any interim/final reports in order to ensure proposed evaluation activities are feasible, and final evaluation products are technically and factually accurate.

It is expected that evaluations will focus on three main themes: (i) independent reviews and, as warranted, independent specification and estimation of relevant project ERRs; (ii) assessing household-level impacts of the relevant project investments and activities; and (iii) examining the broad benefits of the PSP on utility organization and management.

Evaluation plans and methodologies for each project have not yet been fully developed. However, MCC and MiDA intend to explore the opportunity to develop impact evaluation designs for all the projects.

3.1.2 Mid-Term and End-Term Evaluations

The main purpose of the Mid-Term Evaluation (MTE) is to assess the extent to which the Compact is being implemented as planned, while that of the End-Term Evaluation (ETE) is to assess whether the Compact was implemented as planned. Both Evaluations are expected to assess the progress made by the Projects under the Compact towards achieving intended outputs.

The two evaluations are expected to focus on the following:

- Evolution of the Compact: How has the Compact evolved from its original design to the current one?
- Implementation: How were the project activities and sub-activities of the Compact implemented?
- Key Results of the Compact: What are the key short term and medium term results delivered by the Compact?
- Challenges and Lessons Learned: What are the key challenges and lessons learned during the implementation of the Program activities and sub-activities?

3.1.3 Self-Evaluation

Upon completion of the Compact Term, both MCC and MiDA will comprehensively assess three fundamental questions: (i) did the Program meet the Program and Project Objectives; (ii) why did the Program meet or not meet the Program and Project Objectives; and (iii) what lessons can be learned from the implementation experience (both procedural and substantive). MiDA staff will draft the Compact Completion Report (CCR) in the last year of the Compact Term to evaluate these fundamental questions and other aspects of Program performance. Each MiDA department will be responsible for drafting its own section to the CCR for its own activities, subject to cross-departmental review. The results from the mid and end term evaluations will serve as input in drafting the CCR.

3.1.4 Special Studies

The M&E Plan has provision for special studies, *ad hoc* evaluations, and operations research that may be needed to delve deeper for better understanding into emerging implementation issues as part of the monitoring and evaluating of this Compact.

The M&E studies and surveys are to contribute to the evaluation of specific activities/projects, and will not by themselves constitute evaluations. The studies and surveys that have been planned are presented in this section.

Overall Compact

***Enterprise Survey*:** During Compact development, it was anticipated that The World Bank Enterprise Survey, with its focus on the factors that shape the business environment, would be the source of data for a number of energy related indicators on the enabling environment for business that the Compact seeks to contribute to. The results of the Enterprise Survey are disaggregated for the different firm sizes (small, medium, large), and show the level of specific constraints facing firms. It is now recognized that the frequency and timing of these surveys would not meet the monitoring and evaluation requirements. The Independent Evaluator will collect this data during the baseline and subsequent follow-up.

3.2 Specific Evaluation Plans

All evaluations shall attempt to answer the following core questions:

1) Were the Compact goal, objectives and outcomes achieved?
2) Why were the Compact goal, objectives and outcomes achieved, or not achieved?
3) What are the unintended (positive or negative) results of the project?
4) What is the cost-effectiveness or re-estimated project rate of return based on realized activity benefits and costs?
5) What is the likelihood that results will be sustained over time?
6) How do the project's benefits and/or costs accrue differently to different groups of beneficiaries, such as a) income group (poor and non-poor), b) location (urban and rural communities), and c) gender (men and women)? What is the reason for these differences?

The focus of the Ghana II Compact on power provides an opportunity to learn about the benefits of investments in the country's power sector. It is expected that the information produced by Compact evaluations and monitoring will assist GOG and stakeholders in evidence-based planning and policymaking. Given the objectives of both GOG and MCC to foster sustainable economic growth and poverty reduction, the evaluations shall, to the extent feasible, attempt to assess the income benefits of beneficiaries linked to the Compact. To the extent that income cannot be reliably measured, MCC will seek to learn how the projects affect intermediate outcomes necessary for these investments to improve social welfare and promote long-term economic growth. Some of the key intermediate economic benefits streams included in the ERR calculations, and which will drive the evaluations of the Compact, are reduction in energy costs to consumers. Of particular interest are also variables of expanded investment, firm profits, employment, and increased productivity by firms.

To the greatest extent possible, the Compact analyses will disaggregate results by gender, age, formal / informal sectors and income-quartile. In this way, MCC can assess the program logic and causal linkages underlying the projects.

3.2.1 Summary of Specific Evaluation Plans

3.2.1.1 Overall Program Evaluation Plan

The Program Objectives provide the basis for the evaluation of the overall program impact. The objectives are presented in Section 1.3.2.0

Overall Program Evaluation Questions:

1. What is the estimated economic impact of the Ghana power compact?
2. What were the political economy factors that influenced the process and outcomes of introducing regulatory and utility reform?

3.2.1.2 ECG Financial and Operational Turnaround Projects Evaluation Plan

The evaluation will be on the impacts of investments in infrastructure and reforms, including private sector participation, to improve on the finances and operations. The interventions are expected to improve power supply to customers and reduce outages.

Project objective questions:

1. To what extent did the activities improve operational efficiency and the cost of distributing power? Is it possible to identify which interventions are the most effective?
2. Did technical and commercial losses, power quality, and reliability improve? Do stakeholders perceive that these changes resulted from compact interventions versus other investments or policy changes?

Implementation questions:

3. Were project activities implemented as designed? How did implementation (in terms of objectives, activities, and beneficiaries) deviate from the original logic driving the investment, and why? Where were the implementation successes and challenges? How did changes in implementation affect project performance?
4. How did the new management information systems and the other foundational investments affect the operational efficiency and cost of distributing power for the utility?

Sustainability questions:

5. Were improvements in project outcomes sustained after the end of the compact? What sustainability planning was done during implementation, and why? What are the critical institutional factors that affected their sustainability?
6. Did the financial health of the utility stabilize over the life of the compact and after the compact was finished? Were improvements driven primarily by tariff increases or by other project activities? If there are no improvements or the improvements are minimal, why?

3.2.1.3 Regulatory Strengthening and Capacity Building Project Evaluation Plan

Following from the project objective of supporting the creation of an enabling environment for private investment in the power sector, the evaluation will be concerned with issues that relate to the extent to which the power sector is financially self-sustaining and less dependent on cross-subsidies among tariff categories or other direct or implicit subsidies from the Government.

Project objectives questions:

1. Did the project result in cost-reflect tariffs or tariffs that were on track to be cost-reflective by the end of the compact (cost-reflective means tariffs that tracked inflation, sector costs, macroeconomic performance, and exchange rates)?
2. To what extent were tariff changes driven by reforms to the tariff structure and methodology versus other factors (such as inflation, macroeconomic performance, exchange rates)?
3. Did "hidden costs" drop when project activities were implemented? If so, to what extent can this be attributed to the project activities?
4. Did the project contribute to improve tariff targeting and greater access to power for the poor? How were the benefits distributed among the different stakeholders?

Implementation questions:

5. Were project activities implemented as designed? How did implementation (in terms of objectives, activities, and beneficiaries) deviate from the original logic driving the

investment, and why? Where were the implementation successes and challenges? How did changes in implementation affect project performance?

6. Does the regulator have the data necessary to measure sector performance? If yes, do those data influence their decisions and how they implement the tariff formula?

Sustainability questions:

7. Were improvements in project outcomes sustained after the end of the compact? What sustainability planning was done during implementation, and why? What are the critical institutional factors that affected their sustainability?

3.2.1.5 Energy Efficiency and Demand Side Management Project Evaluation Plan

The initial expectation was that the Energy Efficiency and Demand Side Management Project would offer a potential opportunity to integrate rigorous M&E into initial pilots and to use quantitative results to guide the design of the program. However, given the implementation realities, there won't be a rigorous impact evaluation. The evaluation of the EEDSM project will address the extent to which the project supports the compact's overall objectives of power sector reform, as well as the implementation, outcomes, and sustainability of the project itself.

Project objective questions:

1. Have the EEDSM interventions changed consumption of electricity by individual customers?
2. Did the availability and purchases of more energy-efficient appliances increase when standards were implemented? To what extent can these changes be attributed to the new standards?
3. To what extent has the R2RRs intervention affected electricity use and bill payment rates?

Implementation questions:

4. Were project activities implemented as designed? How did implementation (in terms of objectives, activities, and beneficiaries) deviate from the original logic driving the investment, and why? What were the implementation successes and challenges? How did changes in implementation affect project performance?

Sustainability questions:

5. Were improvements in project outcomes sustained after the end of the compact? What sustainability planning was done during implementation, and why? What are the critical institutional factors that affected their sustainability?

3.2.2 Summary of Activities or Sub-Activities without Evaluations

The Access Project will not be evaluated since MCC is no longer investing in these activities, which were subsequently taken over by GoG.

4. IMPLEMENTATION AND MANAGEMENT OF M&E

4.1 Responsibilities

The MiDA M&E Unit will be composed of an M&E and Economics Director who will have the key responsibility of leading and managing all M&E activities; and the Senior M&E Officer and two M&E Officers who will support the M&E and Economics 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 MiDA;
- As the champion of results based management, the M&E Unit will take steps to foster a results oriented culture throughout MiDA and its implementing partners – this includes making sure that M&E information is used by the MiDA management and project teams to improve Compact performance (feedback loop).
- Ensure that the M&E Plan is modified and updated as improved information becomes available;
- Oversee development and execution of an M&E system (including data-collection, data-analysis and reporting systems) integrated with the MCC Management Information System (MIS);
- Elaborate and document M&E Policies, Procedures and Processes in a guidance document to be used by all MiDA staff and project implementers;
- Communicate the M&E Plan and explain the M&E system to all key stakeholders involved in the Compact, particularly project implementers, to ensure a common understanding by all. This could take the form of orientation and capacity building sessions and could focus on issues such as:
    - Explaining indicator definitions, data collection methods and timing/frequency of data collection and reporting,
    - Data quality controls and verification procedures,
    - Impact evaluation questions and methodology, etc.;
- 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:
    - Indicators and material evidence for reported values
    - M&E Plan versions
    - Reporting manuals and templates
    - Key M&E deliverables including Terms of References (TORs), contracts/agreements, data collection instruments, reports/analyses, etc.;
- Develop (with the Communication Unit, Environmental and Social Performance (ESP) officers, and Gender and Social Inclusion (GSI)/Social and Gender Assessment (SGA) officers) and implement a systematic results dissemination approach that draws on verified ITT data;

- Organize and oversee regular independent data quality reviews to assess the quality of data reported to MCA;
- 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;
- Manage the M&E budget efficiently;
- Contribute to the design of the evaluation strategy;
- Collaborate with the procurement team to prepare and conduct procurement of M&E contracts;
- Ensure that data collection mechanisms are designed to collect data disaggregated by gender and other dimensions, as applicable and practical, and that the findings are presented at the appropriately disaggregated level; and
- Ensure data collection, storage, and dissemination activities maximize protection of confidentiality of survey respondents' personally identifiable information. This may require:
    - Facilitating local Institutional Review Board clearance for data collection
    - Using lock and key cabinets for paper files,
    - Using secure file transfer systems,
    - Encrypting data files,
    - Employing password protection on data systems and data encryption,
    - Requiring signed acknowledgements of roles and responsibilities,
    - Requiring relevant stakeholders to sign non-disclosure agreements, and
    - Incorporating data protection standards into the organization's records management procedures, or if necessary, developing a records management procedures that includes such standards.

The M&E and Economics Director will be a part of MiDA's internal Management Unit, composed from MiDA leadership, Project Directors, and other Directors. Collaboration with the procurement team will be very important to prepare and conduct timely procurement of M&E related contracts as well as ensuring that other implementation contracts contain necessary data reporting provisions.

Seminars, workshops, elaboration and dissemination of M&E materials shall be conducted in close cooperation with the MCA Communications Unit.

In order to prepare for post compact monitoring by the Government, MiDA M&E Unit should identify a post compact point of contact (POC) for MCC early on in the program and work with that POC to build understanding of the MCC program and monitoring process. This POC should be part of the Government entity that will commit to continuing M&E of Compact investments after the Compact End Date. The M&E Unit should also identify the team that will be responsible for reviewing evaluation reports that are delivered post compact (e.g. project leads), to ensure that the relevant project stakeholders review and provide feedback prior to the publication of final reports.

4.2 MCA Data Management System for Monitoring and Evaluation

MiDA will use the MCC MIS for reporting the QDRP (including the ITT) to MCC.

4.3 Review and Revision of the M&E Plan

The M&E Plan is designed to evolve over time, adjusting to changes in program activities and improvements in performance monitoring and measurement. In the fourth quarter of every year of the Compact, or as necessary, the M&E and Economics Director of MiDA and representatives of MCC M&E staff will review how well the M&E Plan has met its objectives. The review is intended to ensure that the M&E Plan measures program performance accurately and provides crucial information on the need for changes in project design. More specifically, the review:

- Ensures that the M&E Plan shows whether the logical sequence of intervention outputs and outcomes is occurring;
- Checks whether indicator definitions are precise and timely;
- Checks whether M&E indicators accurately reflect program performance;
- Updates indicator targets, as allowed by the MCC M&E Policy; and
- Adds indicators, as needed, to track hitherto unmeasured results.

The M&E Plan will be revised by MCA, in agreement with MCC M&E, when the need for change has been identified in the review. The revision and approval process will follow the guidelines outlined in the MCC M&E Policy.

5. M&E BUDGET

The budget for the implementation of the proposed M&E activities for the five-year term of the Compact is US$ USD 7.58 million. The breakdown of the budget allocated for M&E activities is shown in the table below.

M&E Budget (in US Dollars)

Sub-Activities	CIF Total	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Planning	0	0	0	0	730,000	0	730,000
M&E Training	0	170,000	70,000	0	140,000	70,000	450,000
Performance Indicator Monitoring	350,000	5,000	220,000	30,000	45,000	250,000	900,000
M&E Studies and Surveys	0	1,000,000	2,050,000	0	1,000,000	0	4,050,000
Midterm and Final Evaluations	0	50,000	550,000	50,000	50,000	50,000	750,000
Communication	0	40,000	20,000	20,000	20,000	20,000	120,000
Miscellaneous	10,000	520,000	10,000	10,000	10,000	20,000	580,000
Total	**360,000**	**1,785,000**	**2,920,000**	**110,000**	**1,995,000**	**410,000**	**7,580,000**

The M&E budget does not include the M&E staff salaries, which are included in the administrative budget of the Compact. The M&E Budget contains cost estimates for all components of the M&E Plan, including planning, M&E training, performance monitoring and data quality reviews, surveys and ad hoc or special studies, annual, mid-term and final evaluations, communicating results, and indicator measurement equipment where relevant. The budget should not exceed the total amount over the five years. However, the distribution of funding between line items and years may be adjusted according to the results of the M&E Plan's reviews or quarterly if needed.

While the resources for the carrying-out of surveys are allocated by MiDA from the Compact funds, the evaluation design and analysis is to be funded directly by MCC.

6. OTHER

6.1 Semi-Annual Reviews

The Semi-Annual Review (SAR) process under the Compact is to ensure mutual accountability between MCC and the Government of Ghana. The SAR process will create a platform for MiDA and MCC to jointly supervise, through specific milestones, progress on the implementation of the Government's power sector reform agenda in the following areas: private sector participation in the Electricity Company of Ghana (ECG) and, consequently the reforms in the Company's finances, operations and corporate governance;

6.2 Post Compact M&E Plan

As part of the planning process for winding up the Program at the end of the Compact Term, MCC and MiDA will develop a post-Compact M&E Plan designed to observe the persistence of benefits created under this Compact. This plan will describe future monitoring and evaluation activities, identify the individuals and organizations that will undertake these activities, provide a budget framework for future monitoring and evaluation, and include the funding source for each of the activities specified in the plan. The post-Compact M&E Plan should built directly off the Compact M&E Plan.

ANNEX I: INDICATOR DOCUMENTATION TABLE

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
OVERALL OBJECTIVE											
Objective Level Indicators											
Increased access to reliable electricity		Outcome	ECG Customers	Number of ECG customers connected to the national network	Number	Tariff Class (Residential/ Commercial/ Industrial)	ECG Monthly Commercial Operations Report	ECG	Quarterly		To measure growth in grid connections and household access to electricity in ECG service area. An individual customer is equivalent to a household or firm.
	P-25	Outcome	Percentage of households connected to the national grid	Number of households that have access to a legal connection to electricity service from an electrical utility or service provider / Total number of households in the country	Percentage	Gender of head of HH (male, female), Locality type (rural, urban)	Customer satisfaction survey	Survey Consultant	Annual	Data on this may be collected as part of customer satisfaction survey. Awaiting overall Evaluation design to inform the customer satisfaction Survey methodology	Measures growth in proportion of households that have access to electricity in the country. This measurement provides an indication of the growth in electricity access relative to the growth in population.
Load shedding and outages reduced		Outcome	Total System Load Shed	Total megawatt-hours shed in a quarter	Megawatt hours	None	Unserved Load Report	GRIDCo	Quarterly		To measure extent and magnitude of generation shortfalls leading to planned outages. The additional investment in generation at least cost will reduce power outages which will result in reduction in load shedding
		Outcome	Frequency Load Shed	Number of times that load shedding occurred in a quarter	Number	None	Unserved Load Report	GRIDCo	Quarterly		Measures the number of times in a year that load shedding occurred. As the enabling environment is created for IPPs to invest in generation, the amount of power installed plants could improve electricity situation to reduce frequency of load shedding and outages.

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
		Outcome	Duration of Load Shed	Total duration in hours of load shed in a quarter	Hours	None	Unserved Load Report	GRIDCo	Quarterly		Measures the total duration in hours of load shed during the quarter. Assumption is that, the amount of power installed plants could improve electricity situation to reduce load shedding and outages.
	P-17	Outcome	Installed Generation Capacity	Total generation capacity, in megawatts, installed plants can generate within the country	Megawatts	Power generation source (On-grid / Off-grid)	Energy (Supply and Demand) Outlook for Ghana	The Energy Commission and Ministry of Energy	Quarterly		Measures the total installed generation capacity, which relates to the Government's goal to have adequate installed generation capacity to meet demand and reserve margin.
		Outcome	Available generation capacity	Total capacity that is actually available for generation	Megawatts	Power generation source (On-grid / Off-grid)	Energy (Supply and Demand) Outlook for Ghana	The Energy Commission and Ministry of Energy	Quarterly		Measures megawatts actually in operation. This provides a better picture of whether or not actual power supply is improving, thus reduction in load shed and outages.
	P-15	Outcome	Total Electricity Supply	Total electricity, in megawatt hours, produced and/or imported in a year.	Megawatt hours	Domestic/Imports; Independent Power Producer / Government-owned	National Energy Statistics	Energy Commission	Quarterly		This is to gauge the quantity of power available to meet demand
ECG FINANCIAL AND OPERATIONAL TURNAROUND PROJECT											
Distribution system losses reduced	P-19	Outcome	Distribution system losses	1 – [Total megawatt hours billed / Total megawatt hours received from transmission]	Percentage	ECG Service Areas (Accra East, Accra West)	ECG Customer Services Division Performance Report	ECG	Quarterly	Non-existence of boundary metering does not allow disaggregation into Accra East and West	Measures improvements or otherwise of ECG's distribution system losses as a result of Compact interventions
		Outcome	Percentage of pre-payment customers	Number of customers with pre-payment meters divided by Total number of customers with legacy credit meters and with pre-payment meters in the ECG Target Regions	Percentage	1. Tariff Class (Domestic, Commercial);	ECG Customer Services Division Performance Report	ECG	Quarterly		Tracks the percentage of customers with pre-paid meters. Prepaid meters contribute to reducing collection losses and cost of collection, thereby improving ECG's financial health. Prepayment metering system excludes industrial customers
Outage response time improved	P-21	Outcome	System Average Interruption Duration Index (SAIDI)	Sum of durations, in customer-hours, of all customer interruptions in a quarter / Total number of customers connected to network in the same quarter.	Hours	ECG Service Area	Reliability Indices Report	ECG	Quarterly		Measures the average outage duration for each ECG customer. A reduction in SAIDI indicates improvement in ECG's service delivery and increases in reliability of power

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
Unplanned outages and faults reduced	P-22	Outcome	System Average Interruption Frequency Index (SAIFI)	Sum of customer-interruptions in a quarter / Total number of customers connected to network in the same quarter.	Rate	ECG Service Area (Accra East, Accra West)	Reliability Indices Report	ECG	Quarterly		Measures the average number of interruptions in electricity supply that each ECG customer experiences. A reduction in SAIFI indicates improvement in ECG's service delivery and increases in reliability of power
Enhanced investment capacity	P-24	Outcome	Operating cost -recovery ratio	Total revenue collected/Total Operating Cost. Total operating cost is defined as operating expenses plus depreciation.	Percentage		Annual Report & Financial Statement	ECG	Annual		Measures the cash flow available for investment
Utility Financial Health Improved		Outcome	Average Collection Period	365 Days * [(Beginning accounts receivables + ending accounts receivable) / 2) / Total sales]	Days		Annual Report & Financial Statement	ECG	Annual		Measures the financial security of ECG and the efficiency of revenue collection
		Outcome	Debt as a percentage of total sales	Total value of accounts receivables over 30 days/Total accounts receivable	Percentage		Annual Report & Financial Statement	ECG	Annual		Measures the financial losses of ECG due to bad debt
	P-23	Outcome	Total electricity sold	The total megawatt hours of electricity sales to all customer types	Megawatt hours	Tariff class (Residential/Commercial/Industrial)	Annual Report & Financial Statement	ECG	Annual		Provides an indication of total megawatt hours of electricity sales to all customer types, which should translate into the gross revenue.
	P-13	Outcome	Maintenance expenditure-asset value ratio	Actual maintenance expenditures / Total value of fixed assets	Percentage		Annual Report & Financial Statement	ECG	Annual		Provides an indication of whether ECG is able to continue providing services at the same level of performance when assets were acquired, and to maximize returns on investments.
Timely payments made to sector entities		Outcome	Average payment period to power producers	Duration in days of measurement period * [(Beginning accounts payables to power producers + ending accounts payables to power producers) / 2) / Power purchase cost during measurement period]	Days		Annual Report & Financial Statement	ECG	Annual		Gives an indication of the credit worthiness of ECG to the power producers, public and private
		Outcome	Average payment period to Ghana Grid Company	Duration in days of measurement period * [(Beginning accounts payables to GRIDCo + ending accounts payables to GRIDCo) / 2) /Total transmission charge payable to GRIDCO during the measurement period]	Days		Annual Report & Financial Statement	ECG	Annual		Gives an indication of the credit worthiness of ECG to GRIDCO
Modernizing Utility Operations Activity											

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
Enhanced investment capacity		Output	GIS-based distribution management system in place	Geographic Information System (GIS) based distribution management system, grid digitization, and customer census to record and store basic data for planning purposes in place.	Date	None	GIS Consultant's Report	Distribution Project Director	Once		The GIS system is required as a base on which other interventions would be rolled out. As such there is the need to monitor its timely deployment to ensure that other planned activities are implemented within the Compact period.
		Output	Number of females participating in STEM Internship and Mentoring Program	Total number of females to benefit from the STEM internship program each year.	Number	None	Program Records	GSI Director	Annual		
ECG Technical Loss Reduction Activity											
Technical losses reduced	P-10	Output	Kilometers of distribution lines upgraded or built	The sum of linear kilometers of new, reconstructed, rehabilitated, or upgraded distribution lines that have been energized, tested and commissioned with MCC support.	Kilometers	Voltage level (High, Medium, Low)	EFOT Project Report	Distribution Project Director	Quarterly		Measures the length of distribution lines upgraded to reduce distribution system losses
	P-11	Output	Distribution substation capacity added	The total added substation capacity, measured in megavolt amperes that is energized, commissioned and accompanied by a test report and supervising engineer's certification resulting from new construction or refurbishment of existing substations supported by MCC.	Megavolt ampere	ECG Service Areas (Accra East, Accra West)	EFOT Project Report	Distribution Project Director	Quarterly		Measures the capacity of distribution substations added before and after Compact implementation
		Output	Number of Bulk supply points (BSPs)	Number of BSPs installed and commissioned	Number	ECG Service Areas (Accra East, Accra West)	EFOT Project Report	Distribution Project Director	Quarterly		A measure of technical loss reduction. BSPs when installed will improve reliability and quality of power supply
		Output	Kilometers of interconnecting sub-transmission lines (33kV)	Kilometers of interconnecting sub-transmission lines connecting BSPs to primary substations and from one primary substation to another	Kilometers	ECG Service Areas (Accra East, Accra West)	EFOT Project Report	EFOT Project Team	Quarterly		A measure of technical loss reduction and improvement levels of reliability in the network
		Output	Kilometers of medium voltage offloading lines (11kV and/or 33kV)	Total kilometers of offloading lines connecting BSPs and /or primary substations to the distribution network	Kilometers	ECG Service Areas (Accra East, Accra West)	EFOT Project Report	EFOT Project Team	Quarterly		A measure of technical loss reduction . Medium voltage offloading lines will improve reliability and quality of power
ECG Financial and Operational Turnaround Project Process Milestones											

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
Process Milestones Achieved	P-1	Process	Value of signed power infrastructure feasibility and design contracts	The value of all signed feasibility, design, and environmental impact assessment contracts, including resettlement action plans, for power infrastructure investments using 609(g) and compact funds.	US Dollars		Procurement Performance Reports	Distribution Project Director	Quarterly		To provide indication of the value of power infrastructure feasibility and design contracts signed under the Compact
	P-2.1	Process	Value disbursed of power infrastructure feasibility and design contracts	The amount disbursed of all signed feasibility, design, and environmental impact assessment contracts, including resettlement action plans, for power infrastructure using 609(g) and compact funds.	US Dollars	None	Procurement Performance Reports	MiDA Procurement Agent/ Distribution Project Director	Quarterly		To track the value of funds disbursed on power infrastructure contracts, to provide an indication of progress towards completing on target.
	P-2	Process	Percent disbursed of power infrastructure feasibility and design contracts	The total amount of all signed feasibility, design, and environmental impact assessment contracts, including resettlement action plans, for power infrastructure disbursed divided by the total current value of signed contracts.	Percentage	None	Financial Records	Chief Financial Officer	Quarterly		To track percentage of funds disbursed on power infrastructure contracts, to provide an indication of progress towards completing on target.
	P-3	Process	Value of signed power infrastructure construction contracts	The value of all signed construction contracts for power infrastructure investments using compact funds.	US Dollars	None	Procurement Performance Reports	MiDA Procurement Agent/ Distribution Project Director	Quarterly		To provide indication of the value of power infrastructure feasibility and design contracts signed under the Compact
	P-4.1	Process	Value disbursed of power infrastructure construction contracts	The amount disbursed of all signed construction contracts for power infrastructure investments using compact funds.	US Dollars	None	Procurement Performance Reports	MiDA Procurement Agent/ Distribution Project Director	Quarterly		To track value of funds disbursed on power infrastructure contracts, to provide an indication of progress towards completing on target.
	P-4	Process	Percent disbursed of power infrastructure construction contracts	The total amount of all signed construction contracts for power infrastructure investments disbursed divided by the total current value of all signed contracts.	Percentage	None	Financial Records	Chief Financial Officer	Quarterly		To track percentage of funds disbursed on power infrastructure contracts, to provide an indication of progress towards completing on target.
		Process	Value of signed IT contracts	The value of all signed IT related contracts for power infrastructure investments using compact funds.	US Dollars	None	Financial Records	Chief Financial Officer	Quarterly		To provide indication of the value of IT related contracts signed under the Compact
		Process	Value disbursed of IT contracts	The value disbursed of all signed IT related contracts for power infrastructure	US Dollars	None	Financial Records	Chief Financial Officer	Quarterly		To track value of funds disbursed on IT related contracts, to provide an

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
				investments using compact funds.							indication of progress towards completing on target.
		Process	Percent disbursed of IT contracts	The value disbursed of all signed IT related contracts for power infrastructure investments using compact funds.	Percentage	None	Financial Records	Chief Financial Officer	Quarterly		To track percentage of funds disbursed on IT related contracts, to provide an indication of progress towards completing on target.
	P-5	Process	Temporary employment generated in power infrastructure projects	The number of people temporarily employed or contracted by MCA-contracted construction companies to work on construction of new power infrastructure or reconstruction, rehabilitation, or upgrading of existing power infrastructure.	Number	1. Gender (Male/Female); 2. Labor type (Skilled/ Semi-Skilled/Unskilled); 3. Nationality (Ghanaian/Non-Ghanaian)	PMC Quarterly Report	Distribution Project Director	Quarterly		To track the number of temporary employment generated by energy infrastructure contracts under the Compact
		Process	Contract signed with ECG PSP Provider	Date on which Contract signed with PSP Provider for ECG that is acceptable to both GOG and MCC	Date	None	Program Records	Distribution Project Director	Once		To track the date ECG PSP would be signed; a major milestone for tranche II disbursement
REGULATORY STRGTHENING AND CAPACITY BUILDING PROJECT											
Automatic tariff adjustment		Outcome	Tariff adjustment on time	Tariff adjusted on scheduled timeline. *On time* refers to one month following the reporting quarter (calendar quarters).This will be captured whether or not PURC adjusted the tariff in the previous 3 months (or quarter) i.e. whether or not they have been adjusted to be cost-reflective	Number	None	PURC Publication of Electricity Tariffs	Binary indicator – will be reported as 1 or 0. 1 will denote YES and 0 will denote No	Quarterly		Measures ability to revise tariffs and adjust its tariff scheme at any time to offset any financial gains or losses that may occur due to changes in economic fundamentals such as inflation and the exchange rate.
Sector Performance Monitoring Capacity Building Activity											

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
Monitoring capacity of policy, planning and regulatory agencies strengthened		Output	Capacity needs assessment	Date on which a need assessment on needs and opportunities for Power Sector Agencies involved in the Ghana Compact Program is completed. Capacity and needs assessments is in regards to data quality, monitoring systems (data collection, analysis, reporting, quality control, and communications) on key performance metrics identified for the Compact and listed in the Electricity Supply and Distribution (Technical and Operational) Rules (L.I. 1816, 2005).	Date	None	CAPSCAN Activity Report	MiDA	Once		The capacity and needs assessments and its timeliness is important in assessing the success of building the capacity of institutions for Sector Performance Monitoring.
Tariff Review and Regulatory Activity											
		Output	Number of training participants	The number of PURC and Energy Commission Staff who complete MCC-supported training on ratemaking and other regulatory processes as defined in the Regulatory Partnership Program.	Number	Gender (Male, Female)	Training Records	MiDA	Annual	Review training logs maintained through all sources and conduct a count of the total number of persons trained in that quarter. Training topic will also be included in this log.	Measure the number of individuals benefiting directly from the program and allows us to track the inclusion of women in Ghana Power Compact sponsored events.
Cost-reflective tariff	P-14	Output	Cost-reflective tariff regime	Average Tariff per kilowatt-hour / Long-run marginal cost per kilowatt-hour of electricity supplied to customers	Percentage	Inputs (Average Tariff per kilowatt-hour, Long-run cost per kilowatt-hour of electricity supplied to customers)	TBD	PURC	Quarterly		Measures utilities' ability to cover expenditures with revenues
Cost-reflective tariff		Output	Tariff plan adopted	Tariff Plan to guide the setting of tariffs by PURC has been officially adopted	Date	None		MiDA	Once		This is to track the tariff plan, which forms the basis for the measurement of the timeliness and regularity of tariff adjustment.
ACCESS											

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
Increased formal connections in M&EEs		Output	Number of formal connections	Number of shops and stalls/stores in the 8 M&EEs that get disconnected and reconnected, shops and stalls/stores connected that were hitherto either informally or illegally connected.	Number	Connection status (newly connected, reconnected); Gender (Male, Female)	ECG/NEDCo Commercial Data	ECG/NEDCo	Quarterly	SMEC, the Supervision Consultant, to to provide concurrence to ECG/NEDCo reported data..	The replacement and expansion of metering (prepayment only) and service installations targeting all shops and stalls in the targeted M&EEs is a key feature of the HVDS sub-activity of the Infrastructure Activity.
Infrastructure Activity											
		Output	Transformer capacity installed	Sum of the capacities (in kilovolt amperes) of all the transformers installed in the power distribution network in the 8 M&EEs	kVA	None	Supervision consultant's periodic Reports	The Supervision Consultant, SMEC.	Quarterly	SMEC is the Project Management Consultant (PMC).	The HVDS sub-activity of the Infrastructure Activity includes the injection of multiple new distribution transformers, each with 200kVA capacity, to shorten low voltage (LV) circuit lengths to improve voltage quality.
		Output	Length of secondary LV cables installed	Sum total of lengths of LV ABC cables constructed in the power distribution network in all 8 M&EEs	Meter	None	Supervision consultant's periodic Reports	The Supervision Consultant, SMEC.	Quarterly	SMEC is the Project Management Consultant (PMC).	The HVDS sub-activity of the Infrastructure Activity will construct within the targeted M&EEs meters of ABC LV cables in the network.
		Output	Number of pole mounted prepayment meters	Number of prepayment meters installed and functioning/operational	Number	None	Supervision consultant's periodic Reports	The Supervision Consultant, SMEC.	Quarterly	SMEC is the Project Management Consultant (PMC).	As part of the process to normalize and/or formalize electricity connections in the M&EEs, the HVDS sub-activity of the Infrastructure Activity will install prepayment payments for both old customers and new customers (with no or informal or illegal connections).
		Output	Number of security lights installed	Number of new pole and façade-mounted (i.e. wall-mounted) light-emitting diode (LED) lighting units installed and functioning/operational	Number	None	Supervision consultant's periodic Reports	The Supervision Consultant, SMEC.	Quarterly	SMEC is the Project Management Consultant (PMC).	To prevent theft and increase public safety, in particular for women, new pole and façade-mounted light-emitting diode (LED) lighting units will be installed as part of the Infrastructure Activity of the Access Project.
Social Inclusiveness & Improved Partnerships Activity											
Customer outreach activities		Output	Number of customers assisted through outreach for electricity connection	Number of MSMEs assisted in any way by the Customer Outreach, Normalization & Facilitation Assistance (CONFA) consultant to acquire formal electrical connection	Number	Gender (Male, Female); Previous MSME Status (formally connected, informally connected, illegally connected)	CONFA Consultant's periodic Reports	CONFA Consultant	Quarterly		As part of the process to normalize and/or formalize electricity connections in the M&EEs, a customer outreach, normalization and facilitation assistance (CONFA) will be provided to enhance the process of reducing barriers to obtaining legal connections and reliable supply.

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
		Output	Security light agreement (MOU) signed	Date on which a memorandum of understanding is signed amongst the key stakeholders (M&EEs leadership, ECG, NEDCo, MMDAs), spelling out each other's roles & responsibilities regards to O&M and payment of bills for sustainability.	Date	None	Institutional assessment & Engagement Consultant Periodic Reports	Institutional Assessment & Engagement Consultant	Once		An output from the institutional assessment and stakeholder engagement process of the Access Project (involving the M&EEs leadership, Metropolitan, Municipal, and District Assemblies, ECG and NEDCo) is a roadmap with the consent of the aforementioned stakeholders to ensure efficient operations and maintenance (O&M) and reliable bills payment sources to sustain the security lighting in the M&EEs.
Access Project Process Milestones											
	P-1	Process	Value of signed power infrastructure feasibility and design contracts	The value of all signed feasibility, design, and environmental contracts, including resettlement action plans, for power infrastructure investments under the Access Project using 609(g) and compact funds	US Dollars	None	Procurement Performance Report	MiDA Procurement Agent/ Distribution Project Director	Quarterly		To provide an indication of the level of financial commitment made to the M&EEs and social institutions in the design and feasibility studies under the Access Project
	P-2.1	Process	Value disbursed of power infrastructure feasibility and design contracts	The amount disbursed of all signed feasibility, design, and environmental impact assessment contracts, including resettlement action plans, for power infrastructure investment under the Access Project using 609(g) and compact funds.	US Dollars	None	Procurement Performance Reports	MiDA Procurement Agent/ Distribution Project Director	Quarterly		To track the value of funds the Access Project has disbursed in feasibility and design studies.
	P-2	Process	Percent disbursed of power infrastructure feasibility and design contracts	The total amount of all signed feasibility, design, and environmental contracts, including resettlement action plans, for power infrastructure disbursed under the Access Project divided by the total value of all signed contracts.	Percentage	None	MiDA Financial Report	MiDA Fiscal Agent/ Distribution Project Director	Quarterly		To provide an indication of how close the Access Project is to the completion of feasibility and design, and to the commencement of works.
	P-3	Process	Value of signed power infrastructure construction contracts	The value of all signed construction contracts for power infrastructure investments under the Access Project using compact funds.	US Dollars	None	Procurement Performance Reports	MiDA Procurement Agent/ Distribution Project Director	Quarterly		To provide indication of the value of power infrastructure construction contracts signed under the Compact

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
	P-4.1	Process	Value disbursed of power infrastructure construction contracts	The amount disbursed of all signed construction contracts for power infrastructure investments using compact funds.	US Dollars	None	Procurement Performance Reports	MiDA Procurement Agent/ Distribution Project Director	Quarterly		To track the value of funds disbursed on power infrastructure works contracts the Access Project.
	P-4	Process	Percent disbursed of power infrastructure construction contracts	The amount disbursed of all signed construction contracts for power infrastructure investments using compact funds.	US Dollars	None	Procurement Performance Reports	MiDA Procurement Agent/ Distribution Project Director	Quarterly		To track the rate of funds disbursement on power infrastructure contracts under the Access Project and gauge progress towards completion of works prior to delivery of actual project output.
	P-5	Process	Temporary employment generated in Access infrastructure projects	The number of people temporarily employed or contracted by MCA-contracted construction +companies to work on construction of new Access infrastructure or reconstruction, rehabilitation, or upgrading of existing Access infrastructure.	Number	1. Gender (Male, Female); 2. Labor type (Skilled, Semi-Skilled, Unskilled); 3. Nationality (Ghanaian, Non-Ghanaian)	PMC Quarterly Report	Distribution Project Director	Quarterly		To track the number of temporary jobs generated under the Access Project infrastructure contracts
ENERGY EFFICIENCY AND DEMAND SIDE MANAGEMENT											
Increased energy savings		Outcome	Energy savings from upgraded streetlights	Total kilowatt hours of energy saved due to new or upgraded street lighting in ECG Target Regions. Energy saved (kW) = Energy consumption in kW of existing lamps less new lamps over time.	Kilowatt hours	None	EEDSM Project Report	Energy Commission of Ghana	Quarterly	Clamp meters will be used to measure baseline energy use per streetlight, but energy measuring meter box per road segment may be adopted to do the follow up measurements post construction. Computing this indicator requires setting an adjusted energy baseline to provide a reference point.	A key objective of the Project is to reduce energy consumption. The "street lighting" activity will be relying heavily on the use of energy saving street lamps and appropriate infrastructure for adequate illumination. It is expected that the more the replacement of old streetlight infrastructure and lamps with modern infrastructure and energy-efficient lamps like LEDs, the greater the energy savings made.

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
Increased energy savings		Outcome	Energy savings from "race to retrofit	Total kilowatt hours of energy saved by the participating institutions in "race to retrofit"	Kilowatt hours	None	EEDSM Project Report	Energy Commission of Ghana	Quarterly	Computing this indicator requires setting an adjusted energy baseline to provide a reference point. The savings may be computed from the difference between average monthly energy consumption for the 12 months preceding the baseline and the average monthly consumption for the 12 months after the baseline	The "race to retrofit/renewables" activity is targeted at eligible public / government facilities where energy efficiency retrofits will be implemented and result in reduced power consumption.
		Outcome	Energy savings from standards and labels	Total kilowatt hours of energy saved from the use of energy efficient appliances in place of high energy consuming appliances. Energy saved (kWh) = Energy consumption in kWh of existing appliances less new appliances, as measured by improved energy meters (i.e. data loggers)	Kilowatt hours	None	Household Survey	Survey Consultant	Quarterly	Computing this indicator requires setting an adjusted energy baseline to provide a reference point. Improved energy meters (or data loggers) to be connected to targeted appliances in a sub-sample of sample households in a Household “energy use” survey. A	To track over time the energy saved by the different energy efficient appliances with LIs on standards and labels promulgated and enforced.

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
										panel study may be adopted.	
Demand profile improved and growth rate reduced		Outcome	Percentage of appliances compliant with standards	Percentage of targeted electrical appliances tested at the points of entry that demonstrate compliance with newly promulgated standards	Percentage	Type of appliance (cooling, heating, lighting, motor)	EEDSM Project Report	Energy Commission of Ghana	Quarterly	The measure applies to products that are declared at the points of entry.	A metric to track compliance at the points of entry will provide proxy indication of market penetration of the energy efficient appliances
		Outcome	Number of students/auditors trained by the sustainable energy services centers	Number of students and existing energy professionals trained at the two (2) selected Sustainable Energy Services Centers (SESCs)	Number	Gender (Male, Female)	SESCs Training records	SESCs	Quarterly	1. Indicator is a candidate for the Post-Compact M&E Plan, 2. Two (2) SESCs will be established under the Compact	Two (2) sustainable energy services centers (SESCs) will be established to train students in sustainable energy management, sustainable energy audit, and provide short courses to already existing professionals in the energy sector. It is therefore important that good records are kept on the energy auditing and energy management professional that the centers are churning out overtime to assess the effectiveness of the centers established.
Development and Enforcement of Standards and Labels Activity											
Demand profile improved and growth rate reduced		Output	Number of products with standards developed	Number of products with standards for electrical appliances developed by the Technical Committee hosted at Ghana Standards Authority (GSA)	Number	None	EEDSM Project Report	Energy Commission of Ghana	Quarterly		Prior to the drafting of bills and legislating the bills into laws, the standards for the electrical appliances must first be developed and gazetted.
		Output	Number of products with legislative instruments (LIs) drafted	Number of products whose legislative instruments have been drafted and approved by key stakeholders (EC, GSA, AG, MiDA)	Number	None	EEDSM Project Report	Energy Commission of Ghana	Quarterly		Following the development of the standards for the electrical appliances and gazetting is the drafting of bills meant for Parliamentary approval into LIs.

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
		Output	Number of products with LIs on standards passed in Parliament	Number of products whose drafted LIs on standards for electrical appliances are upgraded (for the three existing appliances with standards) or promulgated (for 17 new appliances without standards) by Parliament of Ghana to facilitate mandatory compliance.	Number	None	EEDSM Project Report	Energy Commission	Semi-Annual	The appliances with already existing standards that will receive upgrades are Air conditioners, Refrigerators, CFL bulbs.	The success of this activity will heavily depend on expedited action by Parliamentary Select-Committees on Subsidiary Legislation and Mines & Energy and the Plenary (i.e. House in session) itself, hence very necessary to be proactive with solutions to minimize potential slippages.
		Output	Number of appliance test labs established	Number of appliance test labs constructed and/or test equipment installed and commissioned/ functional	Number	None	EEDSM Project Report	Ghana Standards Authority (GSA)	Quarterly	One "greenfield" test lab for Air-conditioners will be constructed and test facilities installed, but for the other electrical appliances, test facilities would be installed in existing labs at the GSA.	It is imperative to track, over time, how many of the electrical appliances have their test facilities installed and commissioned for operations.
Improved Energy Auditing											
Increased Energy savings		Output	Number of institutions participating in race to retrofits and renewables	Total number of institutions that benefit from Compact funds to implement the "race to retrofit Program	Number	None	EEDSM Project Report	Energy Commission of Ghana	Quarterly	The “Race to retrofit/renewables” Activity will target MDAs and MMDAs.	The number of institutions in the "race to retrofit" will provide an indication of the commitments of the MMDAs to reduce power consumption, in addition to assessing the likely impact of the activity.
		Output	Number of SESCs trainers trained in energy audits	Number of Lecturers/Professors or Instructors/Technicians at the two (2) selected SESCs trained and certified in energy auditing	Number	Gender (Male/Female)	EEDSM Project Report	Energy Commission of Ghana	Quarterly	Between 2-3 tertiary institutions to deliver the energy auditing trainings	The Roadmap for the operations of the SESCs includes a Training of Trainers (TOT) program for Lecturers/Professors who will be training students/auditors in the regular and short causes on sustainable energy management and auditing.

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
		Output	Number of sustainable energy services centers (SESCs)established	Number of energy SESCs established within the existing selected Tertiary institutions	Number	None	EEDSM Project Report	Energy Commission of Ghana	Quarterly		A key output of the Improved Energy Auditing Activity is the establishment of sustainable energy services centers (SESCs) in 2 selected existing Tertiary Institutions that will provide training to students and existing energy professionals in regular and short courses respectively, in energy management and auditing.
Education and Public Information											
Increased public information, Education and communication on energy use efficiency		Output	Number of unique public education outreach on energy efficiency	Number of public education campaigns organized via different media platforms, e.g. print, TV/Radio, online to disseminate information on energy efficiency	Number	Type of media (print, TV/radio, online)	Project Report	Generation Improvement Project Director	Quarterly	Data to be tracked directly by MiDA (Public Outreach & Comms & EEDSM Teams)	Public education programs on energy use efficiency are expected to incentivize energy consumers to replace high-energy consuming appliances with either upgraded or newly developed standards that are more energy efficient. This activity will complement other EEDSM activities for purposes of sustainability.
		Output	Number of teachers trained on energy efficiency and conservation (EE&C) curriculum	Sum total of teachers trained in each of the 30 selected schools at the Pre-Tertiary level by the National Center for Curriculum and Assessment (NaCCA)	Number	Gender (Male, Female)	Project Report	Associates for Change (AfC)	Quarterly	Associates for Change (AfC)	To facilitate effectiveness in teacher delivery of the upgraded EE&C teaching and learning materials (TLMs), it is imperative that teachers of the targeted classes in each school are adequately trained first.
		Output	Number of students reached through energy efficiency and conservation curriculum	Total number of students in targeted classes/levels (P1/P2, P4/P5, JHS1/JHS2 and SHS1/SHS2) at the pre-tertiary institutions in the pilot schools using the educational materials and programs developed.	Number	Gender (Male/Female)	Project Report	Associates for Change (AfC)	Quarterly	Activities are being piloted in 30 Pre-Tertiary schools selected across the three geographic zones in Ghana – Southern, Middle & Northern.	Integrating energy efficiency in school curricula is a means of providing formal training to contribute to arousing and sustaining interest in energy efficiency by younger generation.
DSM Infrastructure											

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
Increased Energy savings		Output	Number of LED lights installed	Total number of Light Emitting Diode (LED) Lamps installed under newly constructed poles, existing poles with functioning High Pressure Sodium (HPS) Lamps, and existing poles with non-functioning HPS or LED Lamps.	Number	None	Project Report	Supervision Consultant	Quarterly	Jondee & Vision Consult JV	One objective of the Project is to reduce energy consumption, and the "street lighting" activity will be relying heavily on the use of energy saving street lamps and appropriate infrastructure for adequate illumination. It is expected that the more the existing High Pressure Sodium (HPS) Lamps are replaced with Light Emitting Diode (LED) Lamps the greater the energy savings.
			Number of poles constructed	Number of poles with either dual arms or single arm erected and ready for LED lamp(s) to be installed	Number	Arms (single, double)	Project Report	Supervision Consultant	Quarterly	Jondee & Vision Consult JV	Also, since most of the old streetlight infrastructure (including poles, cables and control cubicles) are either worn out or damaged, a complete refurbishment will provide more lights and better illumination along the selected streets.
Energy Efficiency and DSM Project Process Milestones											
Process milestones achieved	P-1	Process	Value of signed power infrastructure feasibility and design contracts	The value of all signed feasibility, design, and environmental impact assessment contracts (consultancies), including resettlement action plans, for power infrastructure investments under EEDSM using 609 (g) and compact funds.	US Dollars	None	Procurement Performance Reports	MiDA Procurement Agent/ Generation Project Director	Quarterly		To provide indication of the value of infrastructure feasibility and design studies contracts signed under the EEDSM Project
	P-2.1	Process	Value disbursed of power infrastructure feasibility and design contracts	The amount disbursed of all signed feasibility, design, and environmental impact assessment contracts, including resettlement action plans, for power infrastructure under EEDSM using 609(g) and compact funds.	US Dollars	None	Financial Records	MiDA Fiscal Agent/ Generation Project Director	Quarterly		To track funds disbursed under the EEDSM infrastructure feasibility and design studies contracts signed.
	P-2	Process	Percent disbursed of power infrastructure feasibility and design contracts	The total amount of all signed feasibility, design, and environmental impact assessment contracts, including resettlement action plans, for power infrastructure disbursed divided by the total current value of signed contracts.	Percentage	None	Financial Records	MiDA Fiscal Agent/ Generation Project Director	Quarterly		To track rate of funds disbursed and gauge progress towards commencement of works to achieve targeted EEDSM Project outputs

Result Statement	CI Code	Indicator Level	Indicator Name	Definition	Unit of Measurement	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information	Rationale or Justification for Measurement
	P-3	Process	Value of signed power infrastructure construction contracts	The value of all signed construction contracts for EEDSM infrastructure investments under EEDSM using compact funds.	US Dollars	None	Procurement Performance Reports	MiDA Procurement Agent/ Generation Project Director	Quarterly		To provide indication of the value of infrastructure construction (works) contracts signed under the EEDSM Project
	P-4.1	Process	Value disbursed of power infrastructure construction contracts	The amount disbursed of all signed construction contracts for power infrastructure investments under EEDSM using compact funds.	US Dollars	None	Procurement Performance Reports	MiDA Procurement Agent/ Generation Project Director	Quarterly		To track funds disbursed under the EEDSM infrastructure construction (works) contract signed.
	P-4	Process	Percent disbursed of power infrastructure construction contracts	The total amount of all signed construction contracts for power infrastructure investments under EEDSM disbursed divided by the total current value of signed contracts.	Percentage	None	Financial Records	MiDA Fiscal Agent/ Generation Project Director	Quarterly		To provide an indication of progress towards commencement of activities to achieve targeted EEDSM Project outputs
	P-5	Process	Temporary employment generated in power infrastructure projects	The number of people temporarily employed or contracted by MCA-contracted construction +companies to work on construction of new power infrastructure or reconstruction, rehabilitation, or upgrading of existing power infrastructure under EEDSM.	Number	1. Gender (Male, Female); 2. Labor type (Skilled, Semi-Skilled, Unskilled); 3. Nationality (Foreign, Local)	PMC Quarterly Report	Generation Project Director	Quarterly		To track the number of temporary jobs generated under the EEDSM infrastructure contracts

ANNEX II: TABLE OF INDICATOR BASELINES AND TARGETS

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
COMPACT WIDE INDICATORS															
Outcome		ECG Customers – Global	Number	Level	2,921,405 (2016)	3,323,708	3,456,850	3,595,336	3,739,387	3,887,481	3,887,481	3,887,481	Yes	Based on the AF-Mercados Due Diligence Report base case forecast for ECG Customer numbers for 2017-2021. Residential projections consist of customer numbers for both lifeline and residential customers	
Outcome		ECG Customers – Residential	Number	Level	2,398,823 (2016)	2,612,598	2,727,962	2,848,226	2,973,599	3,102,548	3,102,548	3,102,548	Yes		
Outcome		ECG Customers – Commercial	Number	Level	521,221 (2016)	707,486	725,173	743,303	761,885	780,933	780,933	780,933	Yes		
Outcome		ECG Customers – Industrial	Number	Level	1,361 (2016)	3,624	3,714	3,804	3,902	4,000	4,000	4,000	Yes		
Outcome	P-25	Percentage of households connected to the national grid	Percentage	Level	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome	P-25	Percentage of households connected to the national grid - ***male***	Percentage	Level	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome	P-25	Percentage of households connected to the national grid - ***female***	Percentage	Level	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome	P-25	Percentage of households connected to the national grid – ***rural***	Percentage	Level	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Outcome	P-25	Percentage of households connected to the national grid - ***urban***	Percentage	Level	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome		Total System Load Shed	Megawatt hours	Level	1,580,789 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome		Frequency Load Shed	Number	Level	763 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome		Duration of Load Shed	Hours	Level	8426 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome	P-17	Installed Generation Capacity	Megawatts	Level	3950 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome	P-17	Installed generation capacity - ***On-Grid***	Megawatts	Level	2831 (2014)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome	P-17	Installed generation capacity - ***Off-Grid***	Megawatts	Level	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome		Available generation capacity	Megawatts	Level	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome	P-15	Total Electricity Supply	Megawatt hours	Cumulative	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome	P-15	Total Electricity Supply - **Domestic**	Megawatt hours	Cumulative	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome	P-15	Total Electricity Supply - **Imports**	Megawatt hours	Cumulative	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome	P-15	Total Electricity Supply - **IPP**	Megawatt hours	Cumulative	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome	P-15	Total Electricity Supply - **GoG**	Megawatt hours	Cumulative	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
	ECG FINANCIAL AND OPERATIONAL TURNAROUND PROJECT														

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Outcome	P-19	Distribution system losses	Percentage	Level	23.74 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		Non-existenc boundary me does not allo disaggregatio Accra East a
Outcome	P-19	Distribution system losses – Accra East &West	Percentage	Level	28.40 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No	This target is based on the ECG feasibility study report which projected system losses to reduce by 19% over a five year period.	ECG propose reduction in losses from 3 2015 to 18.3 end of the Co
Outcome		Percentage of pre-payment customers – ECG Service Area	Percentage	Level	45.62 (2016)	N/A	N/A	N/A	N/A	90	90	90	No		
Outcome		Percentage of pre-payment customers – ECG Residential Tariff Class	Percentage	Level	42.27 (2016)	N/A	N/A	N/A	N/A	90	90	90	No		
Outcome		Percentage of pre-payment customers – ECG Commercial Tariff Class	Percentage	Level	61.05 (2016)	N/A	N/A	N/A	N/A	90	90	90	No		
Outcome		Percentage of pre-payment customers – Accra East	Percentage	Level	53.61 (2016)	65	70	90	90	90	90	90	No	The targets are based on ECG's projections from ongoing activities and MIDA's planned interventions	
Outcome		Percentage of pre-payment customers – Accra West	Percentage	Level	87.44 (2016)	90	90	95	95	95	95	95	No	The targets are based on ECG's projections from ongoing activities and MIDA's planned interventions	
Outcome	P-21	System Average Interruption Duration Index (SAIDI)	Hours	Level	121.66 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes		

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Outcome	P-21	System Average Interruption Duration Index (SAIDI) – Accra East	Hours	Level	144.57 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes		
Outcome	P-21	System Average Interruption Duration Index (SAIDI) – Accra West	Hours	Level	186.46 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes		
Outcome	P-22	System Average Interruption Frequency Index (SAIFI)	Rate	Level	84.04 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes		
Outcome	P-22	System Average Interruption Frequency Index (SAIFI) – Accra East	Rate	Level	50.46 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes		
Outcome	P-22	System Average Interruption Frequency Index (SAIFI) – Accra West	Rate	Level	75.13 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes		
Outcome	P-24	Operating cost - recovery ratio	Percentage	Level	93 (2015)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome		Average Collection Period	Days	Level	244.19 (2015)	N/A	228	171	122	60	60	60	No	In year one ECG will achieve 5% of the target reduction of 60 days..10% reduction in year 2,40% in year 3 and 70% in year 4 and 100% in the year 5	

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Outcome		Debt as a percentage of total sales	Percentage	Level	69.07 (2014)	69.07	58.7	41.1	28.8	17.3	17.3	17.3	No	The assumption for the target is that Newco will not inherit any of ECG's debts. In addition interventions such as the replacement of legacy meters will improve the way revenue is collected. A 15% reduction per annum is assumed from year 1 to 2. 30% per annum in years 3&4 and 40% reduction in year 5	
Outcome	P-23	Total electricity sold	Megawatt hours	Level	6,346,320 (2014)	7,670,880	8,118,746	8,475,397	8,836,311	9,179, 878	9,179, 878	9,179, 878	No	Based on the AF-Mercados Due Diligence Report base case forecast for ECG on Energy sales for 2017-2021	
Outcome	P-23	Total electricity sold- ***Residential***	Megawatt hours	Level	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		Awaiting dat ECG for bas
Outcome	P-23	Total electricity sold - ***Commercial***	Megawatt hours	Level	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		Awaiting dat ECG for bas
Outcome	P-23	Total electricity sold – ***Industrial***	Megawatt hours	Level	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		Awaiting dat ECG for bas
Outcome	P-13	Maintenance expenditure-asset value ratio	Percentage	Level	1.26 (2015)	1.48	1.62	1.77	1.93	2.1	2.1	2.1	No	These targets are based on ECG's own projections. International benchmark is 2.5%	

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Outcome		Average payment period to power producers	Days	Level	381.25 (2015)	N/A	260	191	122	45	45	45	No	15% of the target reduction (of approximately 190 days) will be achieved in year 1, 20% in year 2, a further 20% in year 3, 40% in year 4 and 50 in year 5. 45 days is considered an appropriate value based on international benchmarks. This was also a recommendation by the DQR Consultant	
Outcome		Average payment period to Ghana Grid Company	Days	Level	316.35 (2015)	N/A	228	165	108	45	45	45	No	10% of the target will be achieved in year 1, 20% in year 2, 20% in year 3, 30% in year 4 and 45% in year 5. 46 days is considered an appropriate target as the international benchmark is45%. This was also a recommendation by the DQR Consultant	
		Modernizing Utility Operations Activity													
Output		GIS-based distribution management system in place	Date	Date	N/A				2-Aug-20			2-Aug-20	No	Date indicated shows when with GIS based distribution management system and service normalization is completed in the EFOT work plan	

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Output		Number of females participating in STEM Internship and Mentoring Program	Number	Cumulative	0	N/A	N/A	200	400	600	600	600	No		
		Technical Loss Reduction Activity													
Output	P-10	Kilometers of distribution lines upgraded or built	Kilometers	Cumulative	0 (2016)	N/A	N/A	N/A	717.2	717.2	717.2	717.2	No	Target represents the total kilometers of distribution lines to be upgraded or built in Achimota (336.6), Kaneshie (45.7) Dansoman (100.9), and Mampong (233.9)	Target figure are only indi
Output	P-10	Kilometers of distribution lines upgraded or built – ***high voltage (33kV)***	Kilometers	Cumulative	0 (2016)	N/A	N/A	N/A	1.1	1.1	1.1	1.1	No	Target represents the total kilometers of 33kv lines to be upgraded or built only in Achimota (1.1).	
Output	P-10	Kilometers of distribution lines upgraded or built – ***medium voltage (11kV)***	Kilometers	Cumulative	0 (2016)	N/A	N/A	N/A	68.9	68.9	68.9	68.9	No	Target represents the total kilometers of 11kv distribution lines to be upgraded or built in Achimota (23.1), Kaneshie (6.0) Dansoman (7.4), and Mampong (32.4).	
Output	P-10	Kilometers of distribution lines upgraded or built – ***low voltage***	Kilometers	Cumulative	0 (2016)	N/A	N/A	N/A	647.2	647.2	647.2	647.2	No	Target represents the total kilometers of low voltage distribution lines to be upgraded or built in Achimota (312.4), Kaneshie (39.7) Dansoman (93.5), and Mampong (201.6).	
Output	P-11			Cumulative		N/A	N/A	N/A	34.4	1323.4	1323.4	1323.4	No		

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
		Distribution substation capacity added	Megavolt ampere		0 (2016)									Target represents the total substation capacity added for LV(34.4), PSS(,130) Kasoa BSP(501), and Pokuase BSP (658)	
Output	P-11	Distribution substation capacity added – ***Accra East***	Megavolt ampere	Cumulative	0 (2016)	N/A	N/A	N/A	13.5	143.5	143.5	143.5	No	Target represents the total substation capacity added for LV(13.5), PSS(130) in Accra East	
Output	P-11	Distribution substation capacity added – ***Accra West***	Megavolt ampere	Cumulative	0 (2016)	N/A	N/A	N/A	20.9	1179.9	1179.9	1179.9	No	Target represents the total substation capacity added for LV(20.9), Kasoa BSP(501), and Pokuase BSP (658)	
Output		Number of Bulk supply points (BSPs)	Number	Cumulative	0 (2016)	N/A	N/A	N/A	1	2	2	2	No	Target represents number of BSPs to be installed to improve voltage and reduce technical losses	
Output		Kilometers of interconnecting sub-transmission lines (33kV)	Number	Cumulative	0 (2016)	N/A	N/A	N/A	0	27	27	27	No	Target represents the total length of interconnecting sub-transmission lines for 2 Primary substations (18.2) and the Kasoa(0.28) and Pokuase BSP(8.52)	
Output		Kilometers of interconnecting sub-transmission lines (33kV) – ***Accra East***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	0	18.2	18.2	18.2	No	Target represents the total length of interconnecting sub-transmission lines for 2 Primary substations in Accra East (18.2)	

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Output		Kilometers of interconnecting sub-transmission lines (33kV) – ***Accra West***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	0	8.8	8.8	8.8	No	Target represents the total length of interconnecting sub-transmission lines for the Kasoa(0.28) and Pokuase BSPs(8.52) in Accra West	
Output		Kilometers of medium voltage offloading lines (11kV and/or 33kV)	Number	Cumulative	0 (2016)	N/A	N/A	N/A	0	22.45	22.45	22.45	No	Target represents the total kilomete3rs of offloading lines for 2 Primary substations{18.8}, Kasoa(1. 53) and Pokuase BSPs(2.12) in Accra	
Output		Kilometers of medium voltage offloading lines (11kV and/or 33kV) – ***Accra East***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	0	18.8	18.8	18.8	No	Target represents the total kilometers of offloading lines for 2 Primary substations in Accra East(Kanda 8.5, UG 10.3)	
Output		Kilometers of medium voltage offloading lines (11kV and/or 33kV) – ***Accra West***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	0	3.7	3.7	3.7	No	Target represents the total kilometers of offloading lines for the Kasoa(1.53) and Pokuase BSPs(2.12)	
		EFOT Process Milestones													
Process	P-1	Value of signed power infrastructure feasibility and design contracts	US Dollar	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	TBD	No		
Process	P-2.1	Value disbursed of power infrastructure feasibility and design contracts	US Dollar	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	TBD	No		
Process	P-2	Percent disbursed of power infrastructure feasibility and design contracts	Percentage	Level	0 (2016)	N/A	N/A	N/A	N/A	100	100	100	No		

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Process	P-3	Value of signed power infrastructure construction contracts	US Dollar	Cumulative	0 (2016)	N/A	N/A	N/A	TBD	TBD	TBD	TBD	No		
Process	P-4.1	Value disbursed of power infrastructure construction contracts	US Dollar	Cumulative	0 (2016)	N/A	N/A	N/A	TBD	TBD	TBD	TBD	No		
Process	P-4	Percent disbursed of power infrastructure construction contracts	Percentage	Level	0 (2016)	N/A	N/A	N/A	TBD	100	100	100	No		
Process		Value of signed IT contracts	US Dollar	Cumulative	0	N/A	N/A	N/A	TBD	TBD	TBD	TBD			
Process		Value disbursed of IT contracts	US Dollar	Cumulative	0	N/A	N/A	N/A	TBD	TBD	TBD	TBD			
Process		Percent disbursed of IT contracts	Percentage	Level	0	N/A	N/A	N/A	N/A	100	100	100			
Process	P-5	Temporary employment generated in power infrastructure projects	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in power infrastructure projects (***Male***)	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in power infrastructure projects (***Female***)	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in power infrastructure projects (***Skilled***)	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in power infrastructure projects (***Semi-skilled***)	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in power infrastructure projects (***Unskilled***)	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Process	P-5	Temporary employment generated in power infrastructure projects (***Ghanaian***)	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in power infrastructure projects (***Non-Ghanaian***)	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process		Contract signed with ECG PSP Provider	Date	Date	N/A	31-Jul-17						31-Jul-17	No	Date for commencement of PSP a key milestone for second disbursement	
		REGULATORY STRENGTHENING AND CAPACITY BUILDING PROJECT													
Outcome		Tariff adjustment on time	Number	Level	N/A	N/A	N/A	1	1	1	1	1	No		Baseline and be set after s IEA with PU
		Sector Performance Monitoring Capacity Building Activity													
Output		Capacity Needs Assessment	Date	Date	N/A	23-Aug-17						23-Aug-17	No		Baseline and be set after s IEA with PU
		Tariff Review and Regulatory Activity													
Output		Number of Training Participants	Number	Cumulative	0	N/A	N/A	N/A	N/A	TBD	TBD	TBD	No		
Output	P-14	Cost-reflective tariff regime	US Dollar	Level	TBD	N/A	N/A	N/A	TBD	TBD	TBD	TBD	No		Baseline and be set after tl has been sig PURC
Output		Cost-reflective tariff regime - ***Average Tariff per kilowatt-hour***	US Dollar	Level	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Output		Cost-reflective tariff regime - ***Long-run marginal cost per kilowatt-hour of electricity supplied to customers***	US Dollar	Level	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Output		Tariff plan adopted	Date	Date	5-Sep-17	N/A						5-Sep-17	No		Baseline and be set after tl has been sigr PURC
		ACCESS PROJECT INDICATORS													
Outcome		Number of formal connections	Number	Cumulative	TBD	N/A	N/A	N/A	N/A	10,360	10,360	10,360	No		
Outcome		Number of formal connections ***- newly connected***	Number	Cumulative	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome		Number of formal connections ***- reconnected***	Number	Cumulative	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome		Number of formal connections ***- male***	Number	Cumulative	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Outcome		Number of formal connections ***- female***	Number	Cumulative	TBD	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
		Infrastructure Activity													
Output		Transformer capacity installed	KVA	Cumulative	0	N/A	N/A	N/A	N/A	7,200	7,200	7,200	No	Total of 36 transformers, each with capacity of 200KVA	
Output		Length of secondary LV ABC cables installed	Meter	Cumulative	0	N/A	N/A	N/A	N/A	17,887	17,887	17,887	No		
Output		Number of pole mounted prepayment meters	Number	Cumulative	0	N/A	N/A	N/A	N/A	10,360	10,360	10,360	No		
Output		Number of security lights installed	Number	Cumulative	0	N/A	N/A	N/A	N/A	924	924	924	No		
		Social Inclusiveness & Improved Partnerships Activity													
Output		Number of customers assisted through outreach for electricity connection	Number	Cumulative	0	N/A	N/A	N/A	N/A	N/A	N/A	TBD	No		Will be deter upon comple Customer Ce the CONFA
Output		Number of customers assisted through outreach for electricity connection - ***male***	Number	Cumulative	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		Will be deter upon comple Customer Ce the CONFA

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Output		Number of customers assisted with connections through outreach - ***female***	Number	Cumulative	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		Will be deter upon comple Customer Ce the CONFA
Output		Number of customers assisted through outreach for electricity connection - ***MSME formerly connected***	Number	Cumulative	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		Will be deter upon comple Customer Ce the CONFA
Output		Number of customers assisted with connections through outreach - ***MSME informally connected***	Number	Cumulative	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		Will be deter upon comple Customer Ce the CONFA
Output		Number of customers assisted with connections through outreach - ***MSME never connected***	Number	Cumulative	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		Will be deter upon comple Customer Ce the CONFA
Output		Security light agreement (MOU) signed	Date	Date	N/A				9-Jul-20			9-Jul-20	No		
		Access Project Process Milestones													
Process	P-1	Value of signed power infrastructure feasibility and design contracts	US Dollar	Cumulative	0 (2016)	N/A	N/A	1,000,000	1,300,000	1,300,000	1,300,000	1,300,000	No		
Process	P-2.1	Value disbursed of Power infrastructure feasibility and design contracts	US Dollar	Cumulative	0 (2016)	N/A	N/A	N/A	TBD	TBD	TBD	TBD	Yes		
Process	P-2	Percent disbursed of Power infrastructure feasibility and design contracts	Percentage	Level	0 (2016)	N/A	N/A	N/A	TBD	100	100	100	No		
Process	P-3	Value of signed Power infrastructure construction contracts	US Dollar	Cumulative	0 (2016)	N/A	N/A	N/A	5,577,952	5,577,952	5,577,952	5,577,952	No		

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Process	P-4.1	Value disbursed of Power infrastructure construction contracts	US Dollar	Cumulative	0 (2016)	N/A	N/A	N/A	TBD	TBD	TBD	TBD	Yes		
Process	P-4	Percent disbursed of Power infrastructure construction contracts	Percentage	Level	0 (2016)	N/A	N/A	N/A	TBD	100	100	100	No		
Process	P-5	Temporary employment generated in Power infrastructure projects	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in Power infrastructure projects - ***male***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in Power infrastructure projects - ***female***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in power infrastructure projects - ***skilled***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in Power infrastructure projects – ***semi-skilled***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in Power infrastructure projects - ***unskilled***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in Power infrastructure projects - ***Ghanaian***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Process	P-5	Temporary employment generated in Power infrastructure projects – ***Non-Ghanaian***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
		ENERGY EFFICIENCY AND DEMAND SIDE MANAGEMENT													
Outcome		Energy savings from upgraded streetlights	Kilowatt Hours	Cumulative	0 (2016)	0	0	0	0	30,000,000	30,000,000	30,000,000	Yes	Street lighting project will account for 50% of total reduction in energy demand estimated at 60 million kWh by year 5 (refer DSM ERR model).	
Outcome		Energy savings from "race to retrofit"	Kilowatt Hours	Cumulative	0 (2016)	0	0	0	0	6,000,000	6,000,000	6,000,000	Yes		
Outcome		Energy savings from standards and labels	Kilowatt Hours	Cumulative	0 (2016)	0	0	0	0	24,000,000	24,000,000	24,000,000	Yes		
Outcome		Percentage of appliances compliant with standards	Percentage	Level	0 (2016)	0	N/A	N/A	N/A	TBD	TBD	TBD	Yes	TBD following Training of the Customers division of the Ghana Revenue Authority (GRA) planned for 1st Quarter 2020.	Indicator is a for the Post-(M&E Plan
Outcome		Percentage of appliances compliant with standards - ***cooling***	Percentage	Level	0 (2016)	0	N/A	N/A	N/A	N/A	N/A	N/A	Yes		
Outcome		Percentage of appliances compliant with standards - ***heating***	Percentage	Level	0 (2016)	0	N/A	N/A	N/A	N/A	N/A	N/A	Yes		
Outcome		Percentage of appliances compliant with standards – ***lighting***	Percentage	Level	0 (2016)	0	N/A	N/A	N/A	N/A	N/A	N/A	Yes		
Outcome		Percentage of appliances compliant with standards - ***motor***	Percentage	Level	0 (2016)	0	N/A	N/A	N/A	N/A	N/A	N/A	Yes		

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Outcome		Number of students/auditors trained by the sustainable energy services centers	Number	Cumulative	0	N/A	N/A	N/A	N/A	TBD	TBD	TBD	No	TBD after consultation with the two (2) Tertiary Institutions to be selected to host the SESCs in 1st quarter 2020.	Indicator is a for the Post-(M&E Plan
Outcome		Number of students/auditors trained by the sustainable energy services centers- ***male***	Number	Cumulative	0	N/A	N/A	N/A	N/A	N/A	N/A	TBD	No		
Outcome		Number of students/auditors trained by the sustainable energy services centers - ***female***	Number	Cumulative	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
	Development and Enforcement of Standards and Labels Activity														
Output		Number of products with standards developed	Number	Cumulative	0	0	5	10	15	20	20	20	No		
Output		Number of products with legislative instruments drafted	Number	Cumulative	0	0	0	0	15	20	20	20	No		
Output		Number of products with LIs on standards passed in Parliament	Number	Cumulative	0 (2016)	0	0	0	0	20	20	20	Yes	Every product must have standards backed by a LI for effective implementation and compliance. Therefore 20 products will require 20 LIs.	Legislations Standards of products (ele appliances) a passed and in prior to Com These would amended to r upgraded sta
Output		Number of appliance test labs established	Number	Cumulative	0 (2016)	TBD	TBD	TBD	TBD	1	1	1	No	One AC Test Lab (Building plus test Equipment) and Sets of Equipment for other Electrical Appliances to be installed in an existing Lab at GSA.	A new test la constructed a equipped for conditioners, existing labs equipped for electrical pro
	Improved Energy Auditing														

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Output		Number of institutions participating in race to retrofits and renewables	Number	Cumulative	0 (2016)	TBD	TBD	6	7	7	7	7	No		
Output		Number of SESCs trainers trained in energy auditing	Number	Cumulative	0 (2016)	TBD	TBD	TBD	18	18	18	18	No	Three (3) Trainers per each of the three (3) course in each of the two (2) SESCs	
Output		Number of SESCs trainers trained in energy auditing – ***male***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Output		Number of SESCs trainers trained in energy auditing - ***female***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Output		Number of sustainable energy services centers (SESCs) established	Number	Cumulative	0	0	0	0	0	2	2	2	No		
		Education and Public Information Activity													
Output		Number of unique public education outreach on energy efficiency	Number	Cumulative	0 (2016)	N/A	N/A	N/A	TBD	TBD	TBD	TBD	No		TBD in cons with the EC' Affairs Depa 1st quarter 20
Output		Number of unique public education outreach on energy efficiency - ***print***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Output		Number of unique public education outreach on energy efficiency - ***TV/Radio***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Output		Number of unique public education outreach on energy efficiency - ***online***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Output		Number of teachers trained on energy efficiency and	Number	Cumulative	0	N/A	N/A	N/A	48	84	84	84	No	Four (4) Teachers per Primary level x 12 schools, two	These are est be confirmed Needs Asses

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
		conservation curriculum												(2) Teachers per JHS level x 12 schools, and two (2) Teachers per SHS level x 6 schools	Pre-Tertiary Curriculum u consultant.
Output		Number of teachers trained on energy efficiency and conservation curriculum - ***male***	Number	Cumulative	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Output		Number of teachers trained on energy efficiency and conservation curriculum - ***female***	Number	Cumulative	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Output		Number of students reached through energy efficiency and conservation curriculum	Number	Cumulative	0 (2016)	N/A	N/A	N/A	5,000	9,575	9,575	9,575	No	Target based on current (2018/2019) enrollment in P1, P4, JHS1 and SHS1 of 30 Pilot Pre-Tertiary schools.	Intervention 30 Pre-Tertia schools selec National Cou Curriculum a Assessment (
Output		Number of students reached through energy efficiency and conservation curriculum – ***male***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	2,700	5,167	5,167	5,167	No	Target based on current (2018/2019) boys enrollment in P1, P4, JHS1 and SHS1 of 30 Pilot Pre-Tertiary schools.	Intervention 30 Pre-Tertia schools selec National Cou Curriculum a Assessment (
Output		Number of students reached through energy efficiency and conservation curriculum - ***female***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	2,300	4,408	4,408	4,408	No	Target based on current (2018/2019) girls enrollment in P1, P4, JHS1 and SHS1 of 30 Pilot Pre-Tertiary schools.	Intervention 30 Pre-Tertia schools selec National Cou Curriculum a Assessment (
		DSM Infrastructure Activity													
Output		Number of LED lights installed	Number	Cumulative	0	0	6,000	TBD	14,558	14,558	14,558	14,558	Yes		

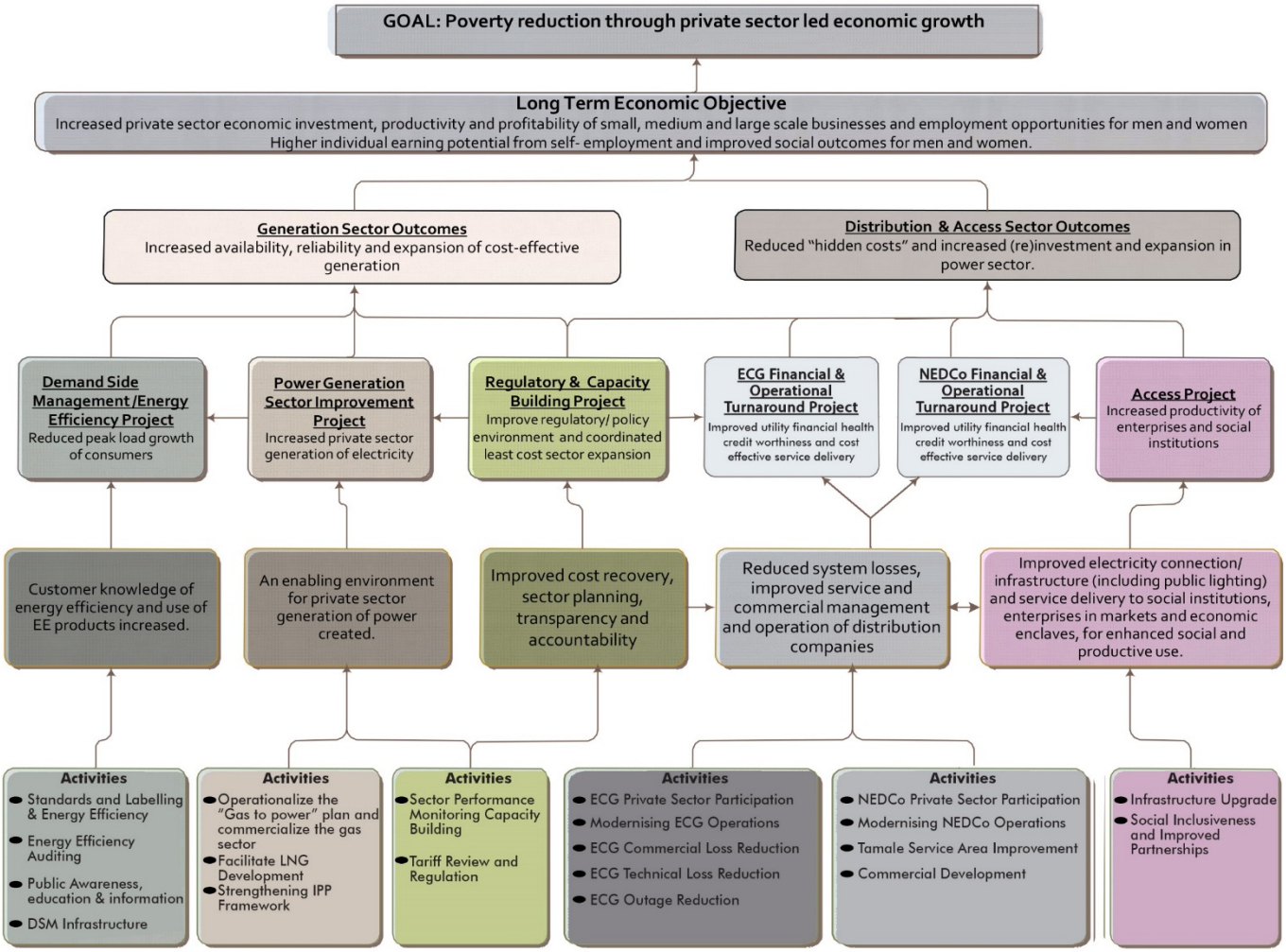
Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
Output		Number of poles constructed	Number	Cumulative	0 (2016)	0	0	0	11,305	11,305	11,305	11,305	No		
Output		Number of poles constructed - double arm	Number	Cumulative	0 (2016)	0	0	0	3,253	3,253	3,253	3,253	No		
Output		Number of poles constructed - single arm	Number	Cumulative	0 (2016)	0	0	0	8,052	8,052	8,052	8,052	No		
		Energy Efficiency and Demand Side Management Project Process Milestones													
Process	P-1	Value of signed power infrastructure feasibility and design contracts	US Dollars	Cumulative	0 (2016)	N/A	N/A	N/A	TBD	TBD	TBD	TBD	No		
Process	P-2.1	Value disbursed of power infrastructure feasibility and design contracts	US Dollars	Cumulative	0 (2016)	N/A	N/A	N/A	TBD	TBD	TBD	TBD	No		
Process	P-2	Percent disbursed of power infrastructure feasibility and design contracts	Percentage	Level	0 (2016)	N/A	N/A	N/A	N/A	100	100	100	No		
Process	P-3	Value of signed power infrastructure construction contracts	US Dollars	Cumulative	0 (2016)	N/A	N/A	N/A	TBD	TBD	TBD	TBD	No		
Process	P-4.1	Value disbursed of power infrastructure construction contracts	US Dollars	Cumulative	0 (2016)	N/A	N/A	N/A	TBD	TBD	TBD	TBD	No		
Process	P-4	Percent disbursed of power infrastructure construction contracts	Percentage	Level	0 (2016)	N/A	N/A	N/A	N/A	100	100	100	No		
Process	P-5	Temporary employment generated in power infrastructure projects	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in power	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		

Indicator Level	CI Code	Indicator Name	Unit of Measure	Indicator Classifi-cation	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of Compact Target	ERR Linked	Justification and Assumptions for Targets	Notes
						2017	**2018**	**2019**	**2020**	**2021**	**2022**				
		infrastructure projects - ***male***													
Process	P-5	Temporary employment generated in power infrastructure projects - ***female***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in power infrastructure projects - ***skilled***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in power infrastructure projects – ***semi-skilled***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in power infrastructure projects - ***unskilled***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in power infrastructure projects - ***Ghanaian***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		
Process	P-5	Temporary employment generated in power infrastructure projects – ***Non-Ghanaian***	Number	Cumulative	0 (2016)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No		

ANNEX III: M&E PLAN MODIFICATIONS

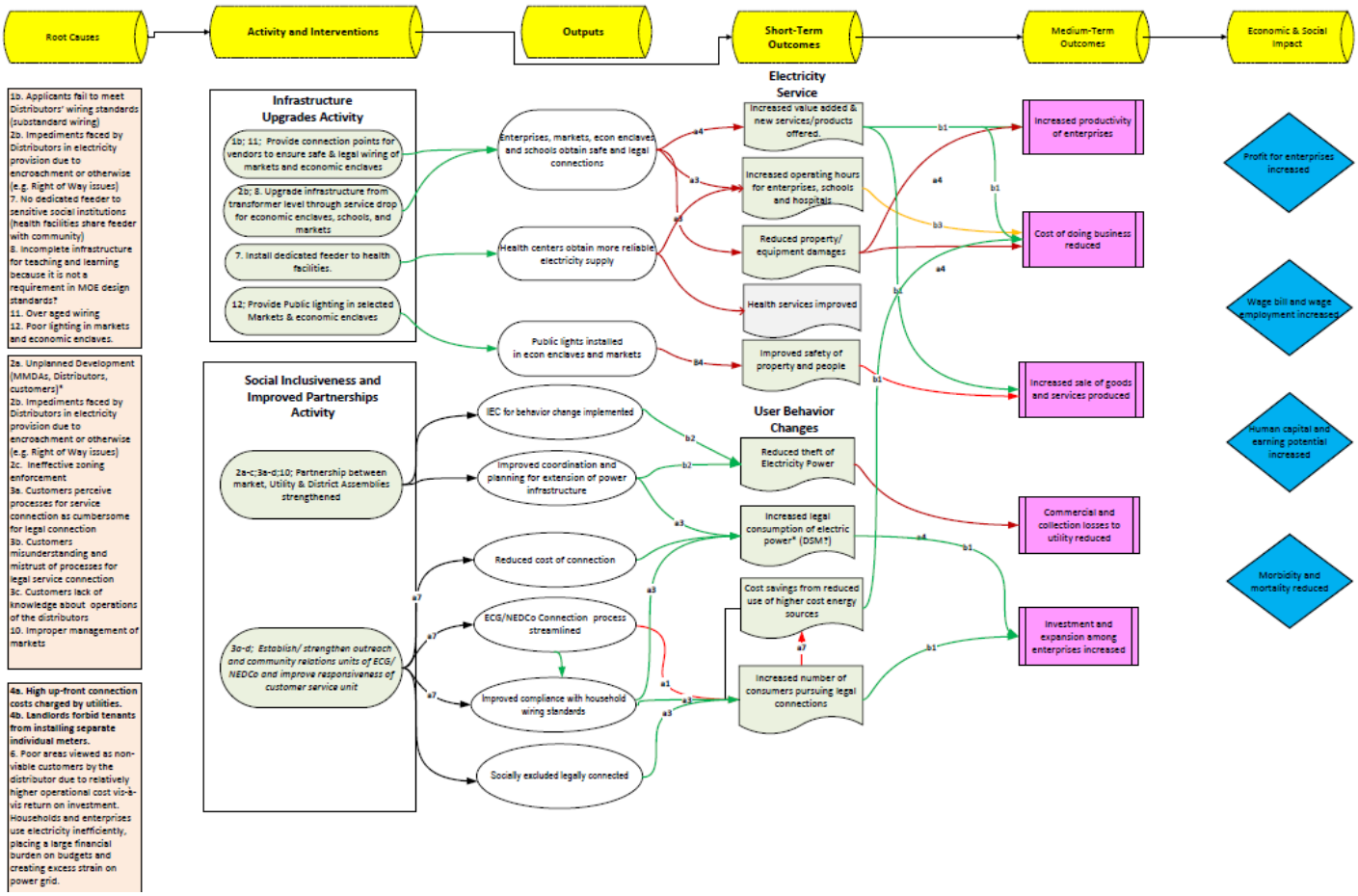
I. MODIFICATIONS TO THE M&E PLAN TEXT:

Modifications – August 2019
Changes to reflect compact descopings:
Removal of NFOT project and PGSI project description and logic, ERR, and beneficiary analysis
Removal of Program Logic (see below) that references de-scoped projects and inclusion of new logic on page 7



Changes to reflect Access project design:

- Updates to Access project description and logic
- Removal of outdated Access logic (see below) and inclusion of new logic on page



1. Changes to Evaluation Section which now delineates updates to the evaluation strategy

Modifications – September 2020

Program logic revision		
September 2020	Change Description:	Revised Program Logic
	Justification:	Change in Program Scope
	Justification Description:	The Compact scope of activities was revised as a result of the removal of Tranche II funds from the ECG Financial and Operational Turnaround (EFOT) Project. Consequently, the ECG Outage Reduction Activity has been de-scoped. Hence the overall Program logic is revised because not all expected outcomes in the logic may be realized. See Diagram 1 and Diagram 2 below for the revised and previous Program logics.

Diagram 1: Revised Program Logic

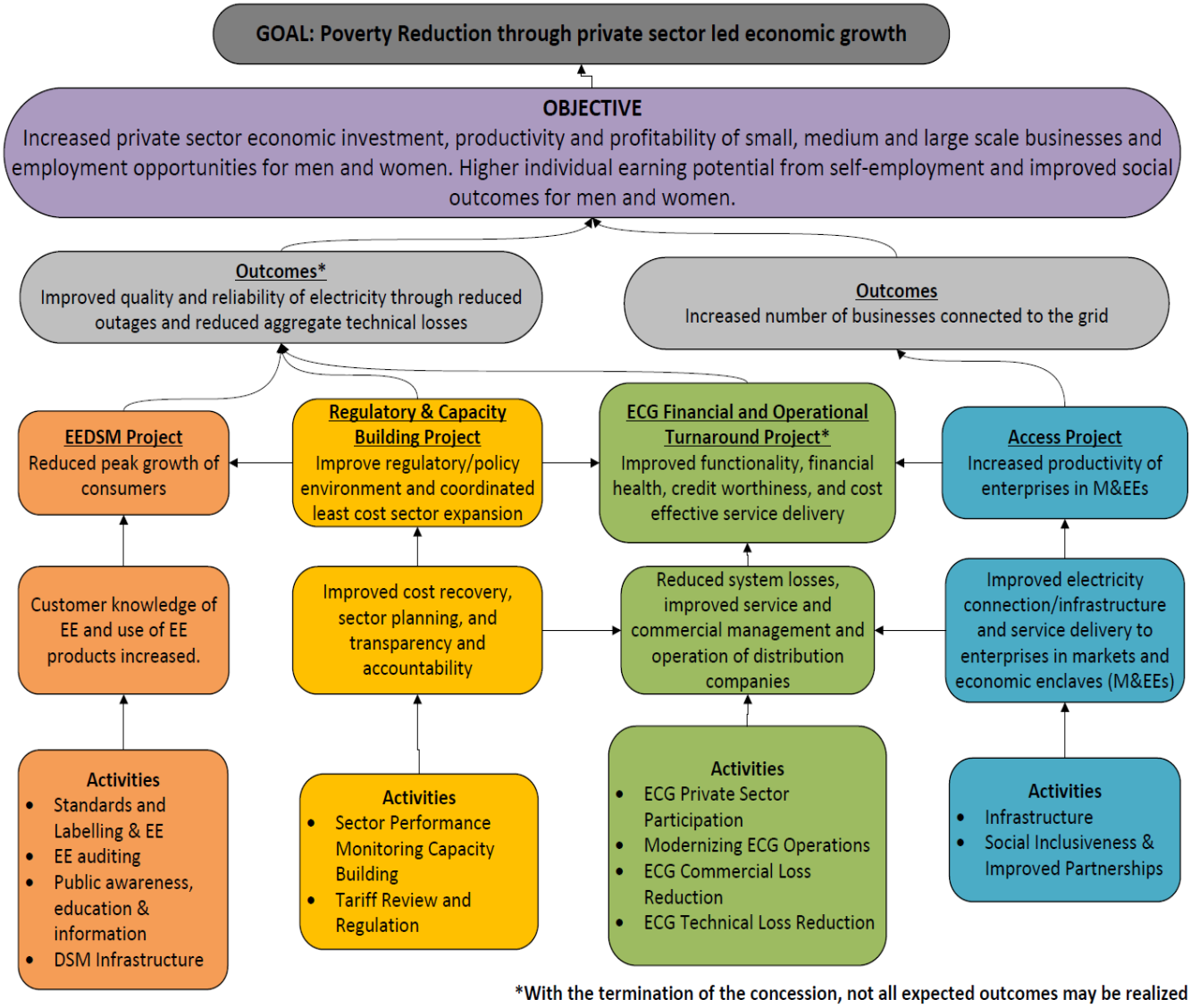


Diagram 2: Previous Program Logic

II. MODIFICATIONS TO INDICATORS:

OBJECTIVE-LEVEL INDICATORS

ECG Customers – Global			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		2,953,975 (2014)	2,921,405 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
ECG Customers – Residential			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		2,554,580 (2014)	2,398,823 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
ECG Customers – Commercial			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		397,428 (2014)	521,221 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
ECG Customers – Industrial			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		1,967 (2014)	1,361 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
NEDCo Customers			
Aug-2018	Change Description:	Baseline Modification (NEDCo-wide)	
	Change	Previous	Revised
		698,353 (2015)	741,882 (2016)
	Justification	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	

NEDCo Customers - Residential			
Aug-2018	Change Description:	Baseline Modification	
	Change	Previous	Revised
		567,628 (2015)	618,279 (2016)
	Justification Description	New Baseline information obtained	
	Change Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
NEDCo Customers - Commercial			
Aug-2018	Change Description:	Baseline Modification	
	Change	Previous	Revised
		130,676 (2015)	123,546 (2016)
	Justification	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
NEDCo Customers - Industrial			
Aug-2018	Change Description:	Baseline Modification	
	Change	Previous	Revised
		49 (2015)	57 (2016)
	Justification	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
Aug - 2019	Change Description:	Retired Indicator	
	Justification	Irrelevant due to change in Program Project or Activity scope	
	Justification Description:	NFOT descoped, NEDCo Customer indicator and its disaggregations are no longer relevant	

Total System Load Shed		
Aug - 2019	Change Description:	New Indicator
	Justification:	Relevant due to change in Program Scope
	Justification Description:	Descoped Power Generation Sector Improvement Project and moved indicators to Compact wide since PSP activity is expected to improve the financial position of ECG to enable it to settle financial obligations to IPPs. This should improve IPPs ability to generate power to meet demand.

Frequency of Load Shed		
Aug - 2019	Change Description:	New Indicator
	Justification:	Relevant due to change in Program Scope
	Justification Description:	Descoped Power Generation Sector Improvement Project and moved indicators to Compact wide since PSP activity is expected to improve the financial position of ECG to enable it to settle financial obligations to IPPs. This should improve IPPs ability to generate power to meet demand.

Duration of Load Shed		
Aug - 2019	Change Description:	New Indicator
	Justification:	Relevant due to change in Program Scope
	Justification Description:	Descoped Power Generation Sector Improvement Project and moved indicators to Compact wide since PSP activity is expected to improve the financial position of ECG to enable it to settle financial obligations to IPPs. This should improve IPPs ability to generate power to meet demand.

Installed Generation Capacity		
Aug - 2019	Change Description:	New Indicator
	Justification:	Relevant due to change in Program Scope
	Justification Description:	Descoped Power Generation Sector Improvement Project and moved indicators to Compact wide since PSP activity is expected to improve the financial position of ECG to enable it to settle financial obligations to IPPs. This should improve IPPs ability to generate power to meet demand.

Total Electricity Supply		
Aug - 2019	Change Description:	New Indicator
	Justification:	Relevant due to change in Program Scope
	Justification Description:	Descoped Power Generation Sector Improvement Project and moved indicators to Compact wide since PSP activity is expected to improve the financial position of ECG to enable it to settle financial obligations to IPPs. This should improve IPPs ability to generate power to meet demand.

Power Plant Availability		
Aug – 2019	Change Description:	New Indicator
	Justification:	Relevant due to change in Program Scope
	Justification Description:	Descoped Power Generation Sector Improvement Project and moved indicators to Compact wide since PSP activity is expected to improve the financial position of ECG to enable it to settle financial obligations to IPPs. This should improve IPPs ability to generate power to meet demand.

Percent of firms citing electricity as a major obstacle to doing business		
September 2020	Change Description:	Retired Indicator
	Justification:	The cost of collecting the data for the indicator outweighs its usefulness (cost in terms of time and/or money).
	Justification Description:	This is a monitoring indicator to be reported at least biennially, but the data source is a Household and Enterprise Survey (for the overall evaluation of the Compact); with baseline finishing in March 2021 and subsequent surveys to measure any change finishing after the Compact Closeout period. Also, the overall Compact Evaluation is better placed to capture challenges businesses face with electricity. Besides, this outcome is not central to the theory of change nor for conducting the evaluation-based ERR.

Sales losses due to power outages		
September 2020	Change Description:	Retired Indicator
	Justification:	The cost of collecting the data for the indicator outweighs its usefulness (cost in terms of time and/or money).
	Justification Description:	This is a monitoring indicator to be reported at least biennially, but the data source is a Household and Enterprise Survey (for the overall evaluation of the Compact); with baseline finishing in March 2021 and subsequent surveys to measure any change finishing after the Compact Closeout period. Also, the overall Compact Evaluation is better placed to capture challenges businesses face with electricity. Besides, this outcome is not central to the theory of change nor for conducting the evaluation-based ERR.

Diesel fuel consumption by firms		
September 2020	Change Description:	Retired Indicator
	Justification:	The cost of collecting the data for the indicator outweighs its usefulness (cost in terms of time and/or money).
	Justification Description:	This is a monitoring indicator to be reported at least biennially, but the data source is a Household and Enterprise Survey (for the overall evaluation of the Compact); with baseline finishing in March 2021 and subsequent surveys to measure any change finishing after the Compact Closeout period. Also, the overall Compact Evaluation is better placed to capture challenges businesses face with electricity. Besides, this outcome is not central to the theory of change nor for conducting the evaluation-based ERR.

Percentage of households connected to the national grid				
September 2020	Change Description:	Target Modification		
		Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A
	Previous Targets	TBD	TBD	TBD
	Justification:	Changes to the Program Scope		
	Justification Description:	None of the Compact interventions directly targets increasing household access to electricity from the national grid.		

Total Electricity Supply				
September 2020	Change Description:	Target Modification		
		Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A
	Previous Targets	TBD	TBD	TBD
	Justification:	Changes to the Program Scope		
	Justification Description:	Re-scoped Compact excludes direct support to electricity generation.		

Installed Generation Capacity				
September 2020	Change Description:	Target Modification		
		Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A
	Previous Targets	TBD	TBD	TBD
	Justification:	Change in Scope		
	Justification Description:	Re-scoped Compact excludes direct support to electricity generation.		
Total System Load Shed				
September 2020	Change Description:	Target Modification		
		Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A
	Previous Targets	TBD	TBD	TBD
	Justification:	Changes to the Program Scope		
	Justification Description:	Re-scoped Compact excludes direct support to power generation.		
Frequency of Load Shed				
September 2020	Change Description:	Target Modification		
		Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A
	Previous Targets	TBD	TBD	TBD
	Justification:	Changes to the Program Scope		
	Justification Description:	Re-scoped Compact excludes direct support to power generation.		
Duration of Load Shed				
September 2020	Change Description:	Target Modification		
		Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A
	Previous Targets	TBD	TBD	TBD
	Justification:	Changes to the Program Scope		
	Justification Description:	Re-scoped Compact excludes direct support to power generation.		
Power Plant Availability				
September 2020	Change Description:	Retired Indicator		
	Justification:	Changes to the Program Scope		
	Justification Description:	The objective of this indicator is to gauge the quality of maintenance being carried out at the plant. This indicator has been dropped due to reduced relevance of Generation-specific outcomes.		

Distribution System Losses			
Aug-2018	Change Description:	Frequency of Reporting	
		Previous	Revised
		Annual	Quarterly
	Justification:	Change of reporting frequency from "Annual to "Quarterly"	
	Justification Description:	Data on the Indicator can be obtained from ECG on quarterly basis	
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		22.27 (2015)	23.74 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline using year 2015 data has been revised to data for year 2016, closer to Entry-into-Force (EIF)	

Distribution System Losses –Accra East & West			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		33.76 (2015)	28.40 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	

Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets		27.6	26.4	25.1	23.0	23.0
	Previous Targets	33.76	32.75	31.44	29.87	27.34	27.34
	Justification:	Change in Baseline					
	Justification Description:	The Baseline year has been revised from Year 2015 to Year 2016 and this required corresponding modifications to Targets. The revised Targets are based on the same proportion of reduction used for the previous Targets.					

Percentage of pre-payment customers –ECG Service Area			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		TBD	45.62 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The TBD has been revised to show results for Year 2016.	

Percentage of pre-payment customers –ECG Residential Tariff Class			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		TBD	42.27 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The TBD has been revised to show results for Year 2016.	

Percentage of pre-payment customers –ECG Commercial Tariff Class			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		TBD	61.05 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The TBD has been revised to show results for Year 2016.	
Percentage of pre-payment customers –Accra East			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		62.29 (2014)	53.61 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
Percentage of pre-payment customers –Accra West			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		89.49 (2014)	87.44 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	

System Average Interruption Duration Index (SAIDI)			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		185.48 (2015)	121.66 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline using Year 2015 data has been revised to data for year 2016, to reflect the situation at Entry-into-Force (EIF)	
System Average Interruption Duration Index (SAIDI) – Accra East			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		129.16 (2015)	144.57 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline using Year 2015 data has been revised to data for year 2016, to reflect the situation at Entry-into-Force (EIF)	

Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets		145	130	116	116	116
	Previous Targets	129.16	129.16	116.24	103.33	103.33	103.33
	Justification:	Change in Baseline					
	Justification Description:	Assumes a 10% reduction over the Baseline in Year 3 and a 20% reduction over the Baseline in Years 4&5. This was applied to the new Baseline.					

System Average Interruption Duration Index (SAIDI) – Accra West							
Aug-2018	Change Description:	Baseline Modification					
		Previous			Revised		
		256.25 (2015)			186.46 (2016)		
	Justification:	New Baseline information obtained					
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).					
Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets		186.46	167.81	149.15	149.15	149.15
	Previous Targets	256.25	256.25	230.62	205.00	205.00	205.00
	Justification:	Change in Baseline					
	Justification Description:	Assumes a 10% reduction over the Baseline in Year 3 and a 20% reduction over the Baseline in Year 4& Year 5. This was applied to the new Baseline.					

System Average Interruption Frequency Index (SAIFI)							
Aug-2018	Change Description:	Baseline Modification					
		Previous			Revised		
		84.54 (2015)			84.04 (2016)		
	Justification:	New Baseline information obtained					
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).					
System Average Interruption Frequency Index (SAIFI) – Accra East							
Aug-2018	Change Description:	Baseline Modification					
		Previous			Revised		
		42.09 (2015)			50.46 (2016)		
	Justification:	New Baseline information obtained					
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).					
Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets		51	45	40	40	40
	Previous Targets	42.09	42.09	37.88	33.67	33.67	33.67
	Justification:	Change in Baseline					
	Justification Description:	The ERR model assumes a 10% reduction over the Baseline in Year 3 and a 20% reduction over the Baseline in Years 4&5. This was applied to the new Baseline.					

System Average Interruption Frequency Index (SAIFI) – Accra West			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		104.91 (2015)	75.13 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	

Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets		75	68	60	60	60
	Previous Targets	104.91	104.91	98.91	93.92	93.92	93.92
	Justification:	Change of Baseline					
	Justification Description:	The ERR model assumes a 10% reduction over the Baseline in Year 3 and a 20% reduction over the Baseline in Years 4&5. This was applied to the new Baseline.					

Operating Cost - Recovery Ratio			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		81% (2014)	93% (2015)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline using Year 2014 data has been revised to data for Year 2015	

Average Collection Period			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		168.71 (2014)	244.19 (2015)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline using Year 2014 data has been revised to data for Year 2015.	

Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets		228	171	122	60	60
	Previous Targets	163.27	157.84	125.23	92.00	60.00	60.00
	Justification:	Change of Baseline					
	Justification Description:	ECG will achieve 6% reduction over the Baseline in year 2; 30% reduction over the Baseline in Year 3; 50% reduction over the Baseline in Year 4; and 75% reduction over the Baseline in the Year 5.					

Maintenance expenditure – asset value ratio			
Aug-2018	Change Description:	Baseline Modification	
		Previous	Revised
		1.3 (2014)	1.26 (2015)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline using Year 2014 data has been revised to show data for Year 2015	

Average Payment Period to Power Producers							
Aug-2018	Change Description:	Baseline Modification					
		Previous			Revised		
		276.59 (2014)			381.82 (2015)		
	Justification:	New Baseline information obtained					
	Justification Description:	The original Baseline using Year 2014 data has been revised to data for Year 2015					
Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets		260	191	122	45	45
	Previous Targets	235.1	188.08	150.46	90.28	45.14	45.14
	Justification:	Change of Baseline					
	Justification Description:	The original Targets have been revised to reflect changes in Baseline values from 2014 to 2015.					

Average Payment Period to Ghana Grid Company							
Aug-2018	Change Description:	Baseline Modification					
		Previous			Revised		
		208.53 (2014)			316.35 (2015)		
	Justification:	New Baseline information obtained					
	Justification Description:	The original Baseline using year 2014 data has been revised to data for year 2015.					
Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets		228	165	108	45	45
	Previous Targets	187.68	150.14	120.11	84.08	46.24	46.24
	Justification:	Change of Baseline					
	Justification Description:	The original Targets have been revised to reflect changes in Baseline values from 2014 to 2015.					

GIS-based distribution management system in place							
Aug – 2019	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets				08/02/2020		08/02/2020
	Previous Targets	04/24/2018					04/24/2018
	Justification:	Occurrence of exogenous factors					
	Justification Description:	Target changed to reflect current Project implementation timelines for this activity.					

Enterprise Resource Planning System in place							
Aug - 2019	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets					07/05/2021	07/05/2021
	Previous Targets				02/20/2020		02/20/2020
	Justification:	Occurrence of exogenous factors					
	Justification Description:	Target changed to reflect current Project implementation timelines for this activity.					

Kilometers of distribution lines upgraded or built							
Aug - 2019	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	1102.52	2001.71	2001.75
	Previous Targets	50	2050	4050	6050	6500	6500
	Justification:	Change in Activity Scope					
	Justification Description:	Target reduced as a result of the de-scoping of LV works under EFOT Project.					
Kilometers of distribution lines upgraded or built – high voltage (33kV)							
Aug - 2019	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	12.64	39.66	39.66
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Occurrence of exogenous factors					
	Justification Description:	Target added now that activity design is complete					
Kilometers of distribution lines upgraded or built – medium voltage (11kV)							
Aug - 2019	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	91.46	144.11	144.11
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Occurrence of exogenous factors					
	Justification Description:	Target added now that activity design is complete					
Kilometers of distribution lines upgraded or built – low voltage							
Aug - 2019	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	998.42	1817.94	1817.94
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Occurrence of exogenous factors					
	Justification Description:	Target added now that activity design is complete					
Distribution substation capacity added							
Aug - 2019	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	***N/A***	***N/A***	***N/A***	56.04	1785.5	1785.5
	Previous Targets	0	750	1500	2250	3000	3000
	Justification:	Occurrence of exogenous factors					
	Justification Description:	Target reduced to reflect Distribution Capacity to be added to the Electricity Network under the Compact.					
Distribution substation capacity added – Accra East							
Aug - 2019	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	35.16	85.62	85.62
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Occurrence of exogenous factors					
	Justification Description:	Target added now that activity design is complete					

Distribution substation capacity added – Accra West							
Aug - 2019	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	20.88	1699.88	1699.88
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Occurrence of exogenous factors					
	Justification Description:	Target added now that activity design is complete					

Number of females participating in STEM internship and mentoring program		
Aug - 2019	Change Description:	New Indicator
	Justification:	Existing indicators do not sufficiently meet adequacy criteria
	Justification Description:	Indicator shows the number of females to benefit from the STEM internship program each year.

Number of capacitor banks installed at primary substations/lines		
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Indicator has been added which is superior in measuring same variable
	Justification Description:	This activity will not take place under the EFOT project.

Number of Interconnecting sub-transmission links		
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Indicator has been added which is superior in measuring same variable
	Justification Description:	Indicator and its dis-aggregations do not supply worthwhile monitoring data. The new indicator added is Kilometers of interconnecting sub-transmission lines.

Kilometers of interconnecting sub-transmission lines (33kV)		
Aug - 2019	Change Description:	New Indicator
	Justification:	Existing indicators do not sufficiently meet adequacy criteria
	Justification Description:	This represents kilometers of sub-transmission lines connecting BSPs to primary substations and from one primary substation to another.

Number of medium voltage offloading circuits		
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Indicator has been added which is superior in measuring same variable
	Justification Description:	Indicator and its dis-aggregations do not supply worthwhile monitoring data. The new indicator added is Kilometers of offloading lines.

Kilometers of offloading lines (11kV and/or 33kV)		
Aug - 2019	Change Description:	New Indicator
	Justification:	Existing indicators do not sufficiently meet adequacy criteria
	Justification Description:	This represents kilometers of offloading lines connecting BSPs and /or primary substations to the distribution network.

Number of Bulk Supply Points							
Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets				1	1	1
	Previous Targets				2	2	2
	Justification:	Provision of Targets					
	Justification Description:	Scope was reduced due to the need to cover both the distribution and transmission end of supply; as a result there are not enough funds for a second bulk supply point.					
Aug-2019	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets				2	2	2
	Previous Targets				1	1	1
	Justification:	Program, Project or Activity scope change					
	Justification Description:	Scope was increased due to reallocation of funds under the Compact during mid-term review in February 2019.					

Medium voltage networks automation completed		
Aug – 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	This activity will not take place under the EFOT project

Value disbursed of power infrastructure feasibility and design contracts			
Aug - 2019	Change Description:	Revised Indicator	
		Previous	Revised
		Percentage (2018)	US Dollars (2019)
	Justification:	Unit of Measure Modification	
	Justification Description:	Erroneously had reporting of value of disbursed contracts as a percentage instead of dollar value.	
Aug – 2019	Change Description:	Revised Indicator	
		Previous	Revised
		100 (2018)	TBD (2019)
	Justification:	End of Compact Target Modification	
	Justification Description:	Due to an error in the unit of measure the indicator now is measured in US dollars and the previous target is no longer relevant.	

Value of signed IT contracts		
Aug - 2019	Change Description:	New Indicator
	Justification:	New issues emerged, suggesting importance of a new indicator
	Justification Description:	This represents value of IT contracts under the Compact which does not fit into the category of power infrastructure feasibility and design and works contracts

Value disbursed of signed IT contracts		
Aug - 2019	Change Description:	New Indicator
	Justification:	New issues emerged, suggesting importance of a new indicator
	Justification Description:	This represents value of IT contracts under the Compact which does not fit into the category of power infrastructure feasibility and design and works contracts
Percent disbursed of signed IT contracts		
Aug - 2019	Change Description:	New Indicator
	Justification:	New issues emerged, suggesting importance of a new indicator
	Justification Description:	This represents value of IT contracts under the Compact which does not fit into the category of power infrastructure feasibility and design and works contracts

Distribution system losses – Accra East &West							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	N/A	N/A	N/A
	Previous Targets	N/A	27.6	26.4	25.1	23	23
	Justification:	Change in Activity Scope					
	Justification Description:	A number of activities initially planned under EFOT's Technical Loss Reduction Outage Reduction and Commercial Loss Activity to reduce Distribution System Losses at ECG have been de-scoped. Thus, Compact interventions may not have a significant impact on this indicator.					

Technical losses		
Sep - 2020	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity Scope.
	Justification Description:	The loss characterization study under the EFOT Project has been de-scoped. There are no planned for technical loss studies to be undertaken during the life time of the Compact to effectively measure ECG's technical losses.

Technical losses – Accra East &West		
Sep - 2020	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity Scope.
	Justification Description:	The loss characterization study under the EFOT Project has been de-scoped. There are no planned for technical loss studies to be undertaken during the life time of the Compact to effectively measure ECG's technical losses.

Commercial losses		
Sep - 2020	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity Scope.
	Justification Description:	Commercial losses is calculated by subtracting technical losses from distribution system losses. Since data on technical losses is currently unavailable commercial losses of ECG cannot be computed accurately.

Commercial losses – Accra East &West		
Sep - 2020	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity Scope.
	Justification Description:	Commercial losses is calculated by subtracting technical losses from distribution system losses. Since data on technical losses is currently unavailable commercial losses of ECG cannot be computed accurately.

System Average Interruption Duration Index (SAIDI) – Accra East							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	N/A	N/A	N/A
	Previous Targets	N/A	N/A	145	130	116	116
	Justification:	Change in Activity Scope					
	Justification Description:	A number of activities initially planned under EFOT's Technical Loss Reduction and Outage Reduction Activity to reduce unplanned outages and faults at ECG have been de-scoped. Thus, the impact of Compact interventions may not be observed Accra-wide.					

System Average Interruption Duration Index (SAIDI) – Accra West							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	N/A	N/A	N/A
	Previous Targets	N/A	186.46	167.81	149.15	149.15	149.15
	Justification:	Change in Activity Scope					
	Justification Description:	A number of activities initially planned under EFOT's Technical Loss Reduction and Outage Reduction Activity to reduce unplanned outages and faults at ECG have been de-scoped. Thus, the impact of Compact interventions may not be observed Accra-wide.					

System Average Interruption Frequency Index (SAIFI) – Accra East							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	N/A	N/A	N/A
	Previous Targets	N/A	51	45	40	40	40
	Justification:	Change in Activity Scope					
	Justification Description:	A number of activities initially planned under EFOT's Technical Loss Reduction and Outage Reduction Activity to reduce unplanned outages and faults at ECG have been de-scoped. Thus, the impact of Compact interventions may not be observed Accra-wide.					

System Average Interruption Frequency Index (SAIFI) – Accra West							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	N/A	N/A	N/A
	Previous Targets	N/A	75	68	60	60	60
	Justification:	Change in Activity Scope					
	Justification Description:	A number of activities initially planned under EFOT's Technical Loss Reduction and Outage Reduction Activity to reduce unplanned outages and faults at ECG have been de-scoped. Thus, the impact of Compact interventions may not be observed Accra-wide.					

Enterprise Resource Planning System in place		
Sep - 2020	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity Scope.
	Justification Description:	This activity has been discontinued as a result of the re-scoping of the EFOT Project

Number of females participating in STEM internship and mentoring program							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compac t
	Revised Targets	N/A	N/A	200	400	600	600
	Previous Targets	N/A	N/A	N/A	250	450	450
	Justification:	Change in Activity Scope					
	Justification Description:	Target reflects the number of females to benefit from the STEM internship program under the Compact					

Kilometers of distribution lines upgraded or built							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	717.2	717.2	717.2
	Previous Targets	N/A	N/A	N/A	1102.52	2001.71	2001.71
	Justification:	Change in Activity Scope					
	Justification Description:	Target reduced to reflect Kilometers of distribution lines to be upgraded or built under the Compact.					

Kilometers of distribution lines upgraded or built – high voltage (33kV)							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	1.1	1.1	1.1
	Previous Targets	N/A	N/A	N/A	12.64	39.66	39.66
	Justification:	Change in Activity Scope					
	Justification Description:	Target reduced to reflect Kilometers of 33kv distribution lines to be upgraded or built under the Compact.					

Kilometers of distribution lines upgraded or built – medium voltage (11kV)							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	68.9	68.9	68.9
	Previous Targets	N/A	N/A	N/A	91.46	144.11	144.11
	Justification:	Change in Activity Scope					
	Justification Description:	Target reduced to reflect Kilometers of 11kv distribution lines to be upgraded or built under the Compact.					

Kilometers of distribution lines upgraded or built – low voltage							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	647.2	647.2	647.2
	Previous Targets	N/A	N/A	N/A	998.42	1817.94	1817.94
	Justification:	Change in Activity Scope					
	Justification Description:	Target reduced to reflect Kilometers of low voltage distribution lines to be upgraded or built under the Compact.					

Distribution substation capacity added							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	34.4	1323.4	1323.4
	Previous Targets	N/A	N/A	N/A	56	1786	1786
	Justification:	Change in Activity Scope					
	Justification Description:	Target reduced to reflect Distribution Capacity to be added to the Electricity Company of Ghana Network under the Compact.					

Distribution substation capacity added – Accra East							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	13.5	143.5	143.5
	Previous Targets	N/A	N/A	N/A	35	86	86
	Justification:	Change in Activity Scope					
	Justification Description:	Target revised to reflect Distribution Capacity to be added to the Electricity Company of Ghana Network under the Compact in Accra East.					

Distribution substation capacity added – Accra West							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	20.9	1179.9	1179.9
	Previous Targets	N/A	N/A	N/A	21	1700	1700
	Justification:	Change in Activity Scope					
	Justification Description:	Target reduced to reflect Distribution Capacity to be added to the Electricity Company of Ghana Network under the Compact in Accra West.					

Kilometers of interconnecting sub-transmission lines (33kV)							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	0	27	27
	Previous Targets	N/A	N/A	N/A	0	57.01	57.01
	Justification:	Change in Activity Scope					
	Justification Description:	Target reduced to reflect Kilometers of Interconnecting Sub-Transmission Lines to be constructed under the Compact.					

Kilometers of interconnecting sub-transmission lines (33kV)– Accra East							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	0	18.2	18.2
	Previous Targets	N/A	N/A	N/A	0	30.56	30.56
	Justification:	Change in Activity Scope					
	Justification Description:	Target reduced to reflect the change in kilometers of interconnecting sub-transmission lines to be constructed under the Compact in Accra East as a result of the re-scoping of the EFOT Project.					

Kilometers of interconnecting sub-transmission lines (33kV)– Accra West							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	0	8.8	8.8
	Previous Targets	N/A	N/A	N/A	0	26.45	26.45
	Justification:	Change in Activity Scope					
	Justification Description:	Target reduced to reflect the change in kilometers of interconnecting sub-transmission lines to be constructed under the Compact in Accra West as a result of the re-scoping of the EFOT Project.					

Kilometers of offloading lines (11kV and/or 33kV)							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	0	22.45	22.45
	Previous Targets	N/A	N/A	N/A	0	50.25	50.25
	Justification:	Change in Activity Scope					
	Justification Description:	Target reduced to reflect the change in kilometers of offloading lines to be constructed under the Compact as a result of the re-scoping of the EFOT Project.					

Kilometers of offloading lines (11kV and/or 33kV)– Accra East							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	0	18.8	18.8
	Previous Targets	N/A	N/A	N/A	0	35.37	35.37
	Justification:	Change in Activity Scope					
	Justification Description:	Target reduced to reflect the change in kilometers of interconnecting sub-transmission lines to be constructed under the Compact in Accra East as a result of the re-scoping of the EFOT Project.					

Kilometers of offloading lines (11kV and/or 33kV) – Accra West							
Sep - 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	0	3.65	3.65
	Previous Targets	N/A	N/A	N/A	0	14.8	14.8
	Justification:	Change in Activity Scope					
	Justification Description:	Target reduced to reflect the change in kilometers of interconnecting sub-transmission lines to be constructed under the Compact in Accra West.					

Number of Automated Reading Meters		
Sep - 2020	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	This activity will not take place as a result of the re-scoping of the EFOT Project

Outage management system in place		
Sep - 2020	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	This activity will not take place as a result of the re-scoping of the EFOT Project

Distribution System Losses			
Aug-2018	Change Description:	Baseline Modification	
	Change:	Previous	Revised
		23.1% (2015)	25.2% (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	

Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	-	TBD	TBD	TBD	23.2%	23.2%
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Provision of Targets					
	Justification Description:	The Year 5 / End of Compact Target has been changed from TBD to 23.2 %. The Year 5 Target is a 7.83 % reduction over the Baseline figure of 25.2%. This reduction is based on what was in the Investment Memo (which had Baseline and Year 5 figures of 23.0% and 21.2 % respectively).					

Distribution Losses – Tamale Station			
Aug-2018	Change Description:	Baseline Modification	
	Change:	Previous	Revised
		29.7% (2015)	35.1% (2016)
	Justification	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to show the results for the 12-month period ending September 2016, to reflect the situation at Compact EIF.	

Aug-2018	Change Description	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets		TBD	TBD	TBD	33.1%	33.1%
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Provision of Targets					
	Justification Description:	The Year 5 / End of Compact Target has been changed from TBD to the 2021 result of 33.1%. The revised Target is based on 5.6% reduction on the revised Baseline (of 35.1%, for 2016). This rate of reduction is based on the NEDCo Final Feasibility Study Report (FSR) rather than the Investment Memo (which estimates a reduction of 25%) because there is a large difference between the results in the Investment Memo, which was prepared on the basis of the results reported in the Draft FSR, and what was reported in the Final FSR. This suggests that the Feasibility Study Consultant made a very significant revision to this particular result. It is assumed that the Final Report will provides a more accurate assessment than the Draft Report.					

Aug-2018	Change Description:	Frequency of Reporting	
	Change	Previous	Revised
		Annual	Quarterly
	Justification	Change of reporting frequency from “Annual to “Quarterly”	
	Justification Description:	It was initially anticipated that data could only be obtained on annual basis. However, it was discovered during implementation that data could be obtained from the NEDCo on a more frequent basis, i.e. quarterly.	

Aug - 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	NFOT descoped, indicator and its disaggregation no longer relevant

Technical Losses							
Aug-2018	Change Description:	Baseline Modification					
	Change	Previous			Revised		
		12.1% (2015)			13.23% (2016)		
	Justification	New Baseline information obtained					
	Justification Description:	The original Baseline has been revised to show the results for the 12-month period ending September 2016, to reflect the situation at Compact EIF.					
Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	-	TBD	TBD	TBD	12.68%	12.68%
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Provision of Targets					
	Justification Description:	The Year 5 / End of Compact Target has been changed from TBD to 12.68%). This is a 4.13 % reduction over the Baseline figure of 13.23%. This reduction is based on what was in the Investment Memo (which had Baseline and Year 5 figures of 12.1% and 11.6% respectively).					
Technical Losses – Tamale Station							
Aug-2018	Change Description:	Baseline Modification					
	Change:	Previous			Revised		
		15.6% (2015)			18.43% (2016)		
	Justification:	New Baseline information obtained					
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).					
Aug-2018	Change Description:	Target Modification (Tamale Station)					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets:		TBD	TBD	TBD	17.9%	17.9 %
	Previous Targets:	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Provision of Targets					
	Justification Descriptions:	The Year 5 / End of Compact Target has been changed from TBD to 17.9% for Year 2016, closer to Entry-into-Force (EIF). The Year 5 Target is a 3.1% reduction over the Baseline figure of 18.43%. This reduction is based on what was in the NEDCo Final Feasibility Report.					
Aug – 2019	Change Description	Retired Indicator					
	Justification:	Irrelevant due to change in Program Project or Activity scope					
	Justification Description:	NFOT descoped, indicator and its disaggregation no longer relevant					

Percentage of Prepayment Customers			
Aug-2018	Change Description:	Baseline Modification	
	Change	Previous	Revised
		5.83% (2015)	35.12% (2016)
	Justification	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
Percentage of Prepayment Customers – Residential			
Aug-2018	Change Description:	Baseline Modification	
	Change	Previous	Revised
		5.61% (2015)	32.17% (2016)
	Justification	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to show the results for the 12-month period ending September 2016, to reflect the situation at Compact EIF.	
Percentage of Prepayment Customers – Commercial			
Aug-2018	Change Description:	Baseline Modification	
	Change	Previous	Revised
		6.78% (2015)	49.85% (2016)
	Justification	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
Percentage of Prepayment Customers – Industrial			
Aug-2018	Change Description:	Baseline Modification	
	Change	Previous	Revised
		0% (2015)	52.63% (2016)
	Justification	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
Aug - 2019	Change Description:	Retired Indicator	
	Justification:	Irrelevant due to change in Program Project or Activity scope	
	Justification Description:	NFOT descoped, indicator and its disaggregation are no longer relevant	

Voltage Quality							
Aug-2018	Change Description	New Indicator					
	Justification:	Relevant due to change in Project scope					
	Justification Description:	It measures the percentage of the customer base that is affected by unstable voltage more than 10% within a month.					
Aug - 2018	Change Description:	Provision of Targets					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets					25%	25%
	Previous Targets	N/A	N/A	N/A	N/A	N/A	N/A
	Justification:	Project Scope Change					
	Justification Description	To provide Targets to be achieved. The End of Compact Target is based on the IMC Memo.					

Aug - 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	NFOT descoped, indicator is no longer relevant

System Average Interruption Duration Index (SAIDI)			
Aug-2018	Change Description:	Baseline Modification	
	Change:	Previous	Revised
		278.9 (2015)	105.40 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	

Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	-	TBD	TBD	TBD	79	79
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Provision of Targets					
	Justification Description:	To provide Targets to be achieved. The Year 5/End of Compact Target is based on 25% reduction on the revised Baseline value, as in the NEDCo Feasibility Report.					

System Average Interruption Duration Index (SAIDI) – Tamale Station			
Aug-2018	Change Description:	Baseline Modification	
	Change:	Previous	Revised
		335.6 (2015)	93.70 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	

Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	-	TBD	TBD	TBD	70	70
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Provision of Targets					
	Justification Description:	To provide Targets to be achieved. The Year 5/End of Compact Target is based on 25% reduction on the revised Baseline, as in the NEDCo Feasibility Report.					

Aug-2018	Change Description:	Indicator Classification	
	Change:	Previous	Revised
		Level	Level Cumulative
	Justification:	Change Indicator classification from “Cumulative” to “Level Cumulative”.	
	Justification Description:	This allows for tracking the cumulative value over the Compact year, while resetting it at the beginning of each year.	

Aug-2018	Change Description:	Frequency of Reporting	
	Change	Previous	Revised
		Annual	Quarterly

	Justification:	Change of reporting frequency from "Annual to "Quarterly"
	Justification Description:	It was initially anticipated that data could only be obtained on annual basis. However, it was discovered during implementation that data could be obtained from the NEDCo on a more frequent basis, i.e. quarterly.
Aug – 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	NFOT descoped, indicator is no longer relevant

System Average Interruption Frequency Index (SAIFI)							
Aug-2018	Change Description:	Baseline Modification					
	Change:	Previous			Revised		
		161.4 (2015)			130.46 (2016)		
	Justification:	New Baseline information obtained					
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).					
Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	TBD	TBD	TBD	TBD	98	98
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Provision of Targets					
	Justification Description:	To set out Targets to be achieved. The Year 5/End of Compact Target is based on 25% reduction on the revised Baseline value.					
System Average Interruption Frequency Index (SAIFI) – Tamale Station							
Aug-2018	Change Description	Baseline Modification					
	Change	Previous		Revised			
		147.1 (2015)		101.92 (2016)			
	Justification	New Baseline information obtained					
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).					
Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	TBD	TBD	TBD	TBD	76	76
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Provision of Targets					
	Justification Description:	To set out Targets to be achieved. The Year5/ End of Compact Target is based on 25% reduction on the revised Baseline value.					
Aug-2018	Change Description	Indicator Classification					
	Change	Previous			Revised		
		Level			Level Cumulative		
	Justification:	Change Indicator classification from "Level" to "Level Cumulative".					
	Justification Description:	This Indicator tracks a cumulative value over the Compact period. It resets at the beginning of each year.					

Commercial Losses							
Aug-2018	Change Description:	Baseline Modification (NEDCo-wide)					
	Change	Previous			Revised		
		11.0% (2015)			12.0% (2016)		
	Justification:	New Baseline information obtained					
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).					
Aug-2018	Change Description	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	-	TBD	TBD	TBD	10.57 %	10.57 %
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification	Provision of Targets					
	Justification Description:	The Year 5 / End of Compact Target has been changed from TBD to 10.57 %. This is an 11.93 % reduction over the Baseline figure of 12.0%. This reduction is based on what was in the Investment Memo (which had Baseline and Year 5 figures of 10.9 % and 9.6 % respectively).					
Commercial Losses – Tamale Station							
Aug-2018	Change Description:	Baseline Modification					
	Change	Previous			Revised		
		14.1% (2015)			16.67% (2016)		
	Justification:	New Baseline information obtained					
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).					
Aug-2018	Change Description	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	-	TBD	TBD	TBD	16.3%	16.3%
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification	Provision of Targets					
	Justification Description	The Year 5 / End of Compact Target has been changed from TBD to 16.3%. The revised Target is based on a 2.5% reduction, as recommended in the NEDCo Final Feasibility Study Report, on the revised Baseline value.					
Aug - 2019	Change Description:	Retired Indicator					
	Justification:	Irrelevant due to change in Program Project or Activity scope					
	Justification Description:	NFOT descoped, indicator and its disaggregation no longer relevant					

Operating Cost-recovery Ratio							
Aug-2018	Change Description:	Baseline Modification					
	Change	Previous				Revised	
		78% (2015)				60% (2016)	
	Justification Description:	New Baseline information obtained					
	Change Description:	The original Baseline has been revised to show the results for the 12-month period ending September 2016, to reflect the situation at Compact EIF.					
Aug-2018	Change Description	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets:	-	TBD	TBD	TBD	69 %	69 %
	Previous Targets:	-	TBD	TBD	TBD	TBD	TBD
	Justification:	Provision of Targets					
	Justification Description:	The Year 5 / End of Compact Target has been changed from TBD to 70%. This is a 15% increase over the Baseline figure of 60 %. This rate of reduction is based on what was in the NEDCo Feasibility Study Report (which had Baseline and Year 5 figures of 74.6% and 85.8% respectively).					
Aug - 2019	Change Description:	Retired Indicator					
	Justification:	Irrelevant due to change in Program Project or Activity scope					
	Justification Description:	NFOT descoped, indicator is no longer relevant					

Average Collection Period							
Aug-2018	Change Description:	Baseline Modification					
	Change	Previous				Revised	
		538 days (2015)				281 days (2016)	
	Justification:	New Baseline information obtained					
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).					
Aug-2018	Change Description:	Target Modification:					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	TBD	TBD	TBD	TBD	192 days	192 days
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Provision of Targets					
	Justification Description:	The Year 5 and End of Compact Target has been change from TBD to 192 days, which is a 31.8 % reduction over the Baseline figure of 281 days. This rate of reduction is based on what was in the NEDCo Feasibility Study Report (which had Baseline and Year 5 figures of 299 and 204 days respectively.					
Aug - 2019	Change Description:	Retired Indicator					
	Justification:	Irrelevant due to change in Program Project or Activity scope					
	Justification Description:	NFOT descoped, indicator is no longer relevant					

Ratio of actual maintenance expenditures to planned maintenance budget			
Aug-2018	Change Description:	Baseline Modification	
	Change:	Previous	Revised
		82% (2015)	98% (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to show the results for the 12-month period ending September 2016, to reflect the situation at Compact EIF.	
Aug – 2019	Change Description:	Retired Indicator	
	Justification:	Irrelevant due to change in Program Project or Activity scope	
	Justification Description:	NFOT descoped, indicator is no longer relevant	

Maintenance expenditure-asset value ratio							
Aug-2018	Change Description:	Baseline Modification					
	Change	Previous			Revised		
		3% (2015)			1% (2016)		
	Justification:	Baseline Change					
	Justification Description:	The original Baseline has been revised to show the results for the 12-month period ending September 2016, to reflect the situation at Compact EIF.					
Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	-	TBD	TBD	TBD	2.5%	2.5%
	Previous Target	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Provision of Targets					
	Justification Descriptions:	The Year 5 / End of Compact Target has been set to reflect good industry practice.					
Aug - 2019	Change Description:	Retired Indicator					
	Justification:	Irrelevant due to change in Program Project or Activity scope					
	Justification Description:	NFOT descoped, indicator is no longer relevant					

Aged Receivables (Debt) as a Percentage of Total Sales							
Aug-2018	Change Description:	Baseline Modification					
	Change	Previous			Revised		
		98% (2015)			91% (2016)		
	Justification :	New Baseline information obtained					
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).					
Aug-2018	Change Description:	Target Modification:					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	TBD	TBD	TBD	TBD	62%	62%
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Provision of Targets					

	Justification Description:	The Year 5 / End of Compact Target has been changed from TBD to 62%, which is a 31.7 % reduction over the Baseline figure of 91%. This rate of reduction is based on what was in the NEDCo Feasibility Report (which had Baseline and Year 5 figures of 82% and 56% respectively.
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	NFOT descoped, indicator is no longer relevant

Average Payment Period to Power Producer (VRA)							
Aug-2018	Change Description:	Baseline Modification					
	Change	Previous				Revised	
		TBD				333 days (2016)	
	Justification	Provision of Baseline Values					
	Justification Description:	To reflect the "starting point" against which progress will be measured.					
Aug-2018	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	TBD	TBD	TBD	TBD	30 days	30 days
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	Provision of Targets					
	Justification Description:	The Year 5 / End of Compact Target has been changed from TBD to 30 days, in conformance with the provision in the Power Purchase Agreement (PPA).					
Aug - 2019	Change Description:	Retired Indicator					
	Justification:	Irrelevant due to change in Program Project or Activity scope					
	Justification Description:	NFOT descoped, indicator is no longer relevant					

Average Payment Period to Ghana Grid Company (GRIDCo)			
Aug-2018	Change Description:	Baseline Modification	
	Change	Previous	Revised
		TBD	327 (2016)
	Justification:	Provision of Baseline Values	
	Justification Description:	To reflect the "starting point" against which progress will be measured.	
Aug – 2019	Change Description:	Removed	
	Justification:	Irrelevant due to change in Program Project or Activity scope	
	Justification Description:	NFOT descoped, indicator is no longer relevant	

Total electricity Sold			
Aug-2018	Change Description:	Baseline Modification	
	Change	Previous	Revised
		688,000 (2015)	694,000 (2016)
	Justification	Baseline Change	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
Total electricity Sold - Residential			
Aug-2018	Change Description:	Baseline Modification (Residential)	
	Change	Previous	Revised
		TBD	433,000 (2016)
	Justification	New Baseline information obtained	
	Justification Description:	The Baseline has been from TBD to show the results for the 12-month period ending September 2016, i.e. the situation at Compact EIF.	
Total electricity Sold - Commercial			
Aug-2018	Change Description:	Baseline Modification (Commercial)	
	Change	Previous	Revised
		TBD	202,000 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
Total electricity Sold - Industrial			
Aug-2018	Change Description:	Baseline Modification (Industrial)	
	Change	Previous	Revised
		TBD	59,000 (2016)
	Justification:	New Baseline information obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
Aug – 2019	Change Description:	Retired Indicator	
	Justification:	Irrelevant due to change in Program Project or Activity scope	
	Justification Description:	NFOT descoped, indicator is no longer relevant	

Kilometers of distribution lines upgraded or built		
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	NFOT descoped, indicator is no longer relevant

Distribution Substation Capacity Added		
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	NFOT descoped, indicator is no longer relevant

Value of signed power infrastructure feasibility and design contracts		
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	NFOT descoped, indicator is no longer relevant

Value disbursed of power infrastructure feasibility and design contracts		
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	NFOT descoped, indicator is no longer relevant

Percent disbursed of power infrastructure feasibility and design contracts		
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	NFOT descoped, indicator is no longer relevant
Value of signed power infrastructure construction contracts		
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	NFOT descoped, indicator is no longer relevant

Value of signed power infrastructure construction contracts		
Aug – 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	NFOT descoped, indicator is no longer relevant

Percent disbursed of power infrastructure construction contracts		
Aug – 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	NFOT descoped, indicator is no longer relevant

Temporary employment generated in energy infrastructure projects		
Aug – 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	NFOT descoped, indicator is no longer relevant

Number of Automated Reading Meters		
Aug-2018	Change Description:	New Indicator
	Justification:	Relevant due to change in project scope
	Justification Description:	The Indicator is included to track the number of automated reading meter Bulk Supply Point (BSP), feeders and other strategically important locati NEDCo Systems.
Aug-2018	Change Description:	Provision of Targets

	Year 1	Year 2	Year 3	Year 4	Year 5
Revised Targets		TBD	TBD	TBD	410
Previous Targets	N/A	N/A	N/A	N/A	N/A

	Justification:	Project scope change
	Justification Description:	To lay out Targets to be achieved. The Targets are based on expert inpu in the deliverable "NEDCo Project Redesign Feasibility Study Report" (version) under the CH2M Services consultancy), following a review of his and future expectations. The interim Targets will be set following the s NEDCo IEA and approval of work plan.
Aug – 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	NFOT descoped, indicator is no longer relevant

NEDCo Management Contract signed		
Aug-2018	Change Description:	New Indicator
	Justification:	The NEDCo Management Contract is a major milestone.
	Justification Description:	To track the date the NEDCo Management Contract, which is a major milestone for The NEDCo Financial and Operational Turnaround Project (NFOT), would be signed.
Aug-2018	Change Description:	Provision of Targets

	Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
Revised Targets			25-Jul-2019			25-Jul-2019
Previous Targets	N/A	N/A	N/A	N/A	N/A	N/A

	Justification:	New Indicator
	Justification Description:	To provide Targets to be achieved for a new Indicator. The Target is based on the Work Plan for the Private Sector Participation Activity of the NFOT Project.
Aug – 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	NFOT descoped, indicator is no longer relevant

Total Systems Load Shed			
Aug-2018	Change Description:	Baseline modification	
	Change	Previous	Revised
		373,895 MWh (2015)	1,580,789 MWh (2016)
	Justification	New and more recent information with date closer to EIF obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
Aug - 2019	Change Description:	Retired Indicator	
	Justification:	Irrelevant due to change in Program Project or Activity scope	
	Justification Description:	PGSI descoped, indicator moved to compact-wide indicator section	

Frequency of Load Shed			
Aug-2018	Change Description:	Baseline modification	
	Change	Previous	Revised
		211 (2013)	763 (2016)
	Justification	New and more recent information with date closer to EIF obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period prior to the start of Project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
Aug - 2019	Change Description:	Retired Indicator	
	Justification:	Irrelevant due to change in Program Project or Activity scope	
	Justification Description:	PGSI descoped, indicator moved to compact-wide indicator section	

Duration of Load Shed			
Aug-2018	Change Description:	Baseline modification	
	Change	Previous	Revised
		4,255 (2013)	8,426 (2016)
	Justification	New and more recent information with date closer to EIF obtained	
	Justification Description:	The original Baseline has been revised to reflect the status of the Indicator during the 12-month period immediately prior to the start of project implementation in September 2016 (i.e. the time of Entry-into-Force of the Compact).	
Aug - 2019	Change Description:	Retired Indicator	
	Justification:	Irrelevant due to change in Program Project or Activity scope	
	Justification Description:	PGSI descoped, indicator moved to compact-wide indicator section	

Installed Generation Capacity			
Aug-2018	Change Description:	Baseline modification	
	Change	Previous	Revised
		2,831 MW (2014)	3,950 MW (2016)
	Justification	New, complete and more recent information with date closer to EIF obtained	
	Justification Description:	The Compact entered into force in September 2016, hence the need to change the Baseline year from 2014 to 2016, to reflect the situation at Compact EIF. Secondly, the 2014 Baseline data was based on only *on-grid* because of unavailability of *off-grid* data at the time of finalizing the original Compact M&E Plan. Now, *mini-grid, micro-grid and off-grid* data are available, hence added to the *on-grid data* for completeness.	
Aug-2018	Change Description:	Data source/Entity responsible modification	
	Change	Previous	Revised
		The Energy Commission (EC)	The EC and Ministry of Energy (MoEn)
	Justification	The EC could provide *on-grid data* only. *Mini-grid and off-grid* data has been outstanding since EIF, but now available from the MoEn.	
	Justification Description:	It was anticipated that the EC could provide both on-grid and off-grid data but could only provide on-grid. It was later discovered that the Ministry of Energy collects and houses data on *public* mini-grid and off-grid standalone renewable systems funded under GEDAP, Elecnor and JICA in Ghana.	
Aug - 2019	Change Description:	Retired Indicator	
	Justification:	Irrelevant due to change in Program Project or Activity scope	
	Justification Description:	PGSI descoped, indicator and disaggregations are no longer relevant	

Available Generation Capacity			
Aug-2018	Change Description:	Baseline modification	
	Change	Previous	Revised
		1,482 MW (2014)	3,539 MW (2016)
	Justification	New, complete and more recent information with date closer to EIF obtained	
	Justification Description:	The Compact entered into force in September 2016, hence the need to change the Baseline year from 2014 to 2016, to reflect the situation at Compact EIF. Secondly, the 2014 Baseline data was based on only *on-grid* because of unavailability of off-grid data at the time of finalizing the original Compact M&E Plan. Now, *mini-grid, micro-grid and off-grid* data are available, hence added to the *on-grid data* for completeness.	
Aug-2018	Change Description:	Data source/Entity responsible modification	
	Change	Previous	Revised
		The Energy Commission (EC)	The EC and Ministry of Energy (MoEn)
	Justification	The EC could provide *on-grid data* only. *Mini-grid and off-grid* data has been outstanding since EIF, but now available from the MoEn.	
	Justification Description:	It was anticipated that the EC could provide both on-grid and off-grid data but could only provide on-grid. It was later discovered that the Ministry of Energy collects and houses data on *public mini-grid, micro-grid and off-grid* standalone renewable systems funded under GEDAP, Elecnor and JICA in Ghana.	
Aug-2018	Change Description:	Frequency of Reporting	
	Change	Previous	Revised
		Annual	Quarterly
	Justification	Data is available quarterly from the two reporting IEs – EC and MoEn.	

	Justification Description:	It was anticipated at Compact start up that data could only be obtained on annual basis. However, it was discovered during implementation that data could be obtained from the EC and the MoEn on a more frequent basis, i.e. quarterly.
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	PGSI descoped, indicator and disaggregations are no longer relevant

Value of private investment in the energy sector		
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	PGSI descoped, indicator is no longer relevant

IPP Generation Committed		
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	PGSI descoped, indicator is no longer relevant

Number of IPPs that achieve financial close		
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	PGSI descoped, indicator is no longer relevant

Total electricity supply		
Aug -2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	PGSI descoped, indicator and disaggregations are no longer relevant

Power Plant Availability		
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	PGSI descoped, indicator is no longer relevant

Number of advisory days provided		
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	PGSI descoped, indicator is no longer relevant

Number of training participants		
Aug – 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	PGSI descoped, indicator and disaggregations are no longer relevant

ACCESS PROJECT

Number of formal connections		
Aug -2019	Change Description:	New Indicator
	Justification:	Relevant due to change in Project Scope
	Justification Description:	The replacement and expansion of metering (prepayment only) and service installations targeting all shops and stalls in the targeted M&EEs is a key feature of the HVDS sub-activity of the Infrastructure Activity.

Transformer Capacity Installed		
Aug - 2019	Change Description:	New Indicator
	Justification:	Relevant due to change in Program, Project, or Activity scope
	Justification Description:	The HVDS sub-activity of the Infrastructure Activity includes the injection of multiple new distribution transformers, each with 200kVA capacity, to shorten low voltage (LV) circuit lengths to improve voltage quality.

Length of secondary LV cables installed		
Aug - 2019	Change Description:	New Indicator
	Justification:	Relevant due to change in Program, Project, or Activity scope
	Justification Description:	The HVDS sub-activity of the Infrastructure Activity will construct within the targeted M&EEs meters of ABC LV cables in the network.

Number of pole mounted prepayment meters		
Aug - 2019	Change Description:	New Indicator
	Justification:	Relevant due to change in Program, Project, or Activity scope
	Justification Description:	As part of the process to normalize and/or formalize electricity connections in the M&EEs, the HVDS sub-activity of the Infrastructure Activity will install prepayment payments for both old customers and new customers (with no or informal or illegal connections).

Number of security lights installed		
Aug - 2019	Change Description:	New Indicator
	Justification:	Relevant due to change in Program, Project, or Activity scope
	Justification Description:	To prevent theft and increase public safety, in particular for women, new pole and façade-mounted light-emitting diode (LED) lighting units will be installed as part of the Infrastructure Activity of the Access Project.

Number of customers assisted through outreach for electricity connection		
Aug - 2019	Change Description:	New Indicator
	Justification:	Relevant due to change in Project Scope
	Justification Description:	As part of the process to normalize and/or formalize electricity connections in the M&EEs, a customer outreach, normalization and facilitation assistance (CONFA) will be provided to catalyze the reducing barriers to obtaining legal connections and reliable supply.

Security light agreement (MOU) signed		
Aug - 2019	Change Description:	New Indicator
	Justification:	Relevant due to change in Project Scope
	Justification Description:	An output from the institutional assessment and stakeholder engagement process of the Access Project (involving the M&EEs leadership, Metropolitan, Municipal, and District Assemblies, ECG and NEDCo) is a roadmap with the consent of the aforementioned stakeholders to ensure efficient operations and maintenance (O&M) and reliable bills payment sources to sustain the security lighting in the M&EEs.

Value of signed Power infrastructure feasibility and design contracts							
Aug – 2019	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	1,300,000	1,300,000	1,300,000
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	TBD replaced with target					
	Justification Description:	Feasibility and design consultancy now completed so target available.					

Value of signed Power infrastructure construction contracts							
Aug – 2019	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	5,577,952	5,577,952	5,577,952
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	TBD replaced with target					
	Justification Description:	Feasibility and design consultancy now completed so target available.					

REGULATORY STRENGTHENING AND CAPACITY BUILDING PROJECT

Tariff adjustment on time		
Aug - 2019	Change Description:	Updated Indicator
	Justification:	Unit of measure of an indicator changed
	Justification Description:	Changed from a date indicator to a binary (yes/no) indicator

Tariff adjustment formula applied		
Aug - 2019	Change Description:	Retired Indicator
	Justification:	Indicator quality is determined poorer than initially thought when included in plan
	Justification Description:	Indicator no longer relevant as getting data to report on this it is extremely difficult.

EEDSM Outcome Indicator

Number of students/auditors trained by the sustainable energy services centers		
Aug – 2019	Change Description:	New Indicator
	Justification:	Existing indicators do not sufficiently meet adequacy criteria
	Justification Description:	Two (2) sustainable energy services centers (SESCs) will be established to train students in sustainable energy management, sustainable energy audit, and provide short courses to already existing professionals in the energy sector. It is therefore important to measure the number of energy auditing and energy management professional that the centers are churning out.

Development and Enforcement of Standards and Labels Activity

Number of products with legislative instruments drafted		
Aug – 2019	Change Description:	New Indicator
	Justification:	Existing indicators do not sufficiently meet adequacy criteria
	Justification Description:	The previous indicator "*Number of products with standards developed and passed*" has been changed to *"Number of products with standards developed"*. This indicator previously combined phases of a process that are within the full control of the project and other phases outside the control of the project, e.g. the passing of bills into LIs by Parliament of Ghana. Therefore, indicator has been split in into three to capture progress made at each phases of the process separately.

Number of products with LIs on standards passed in Parliament		
Aug – 2019	Change Description:	New Indicator
	Justification:	Existing indicators do not sufficiently meet adequacy criteria
	Justification Description:	The previous indicator "*Number of products with standards developed and passed*" has been changed to *"Number of products with standards developed"*. This indicator previously combined phases of a process that are within the full control of the project and other phases outside the control of the project, e.g. the passing of bills into LIs by Parliament of Ghana. Therefore, indicator has been split in into three to capture progress made at each phases of the process separately.

Number of appliance test labs established							
Aug-2019	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	0	2	2
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	TBD replaced with target					
	Justification Description:	Feasibility and design consultancy now completed so target available.					

Improved Energy Auditing Activity

Number of institutions participating in "race to retrofit"							
Aug-2019	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	6	7	7
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	TBD replaced with target					
	Justification Description:	Feasibility and design consultancy now completed so target available.					

Number of energy audits		
Aug – 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	Timeline for the conduct of energy audits by students trained by the two SESCs falls outside the 5-year Compact implementation period. However, this indicator is a potential candidate for the Post-Compact M&E Plan.

Number of buildings retrofitted		
Aug – 2019	Change Description:	Retired Indicator
	Justification:	Irrelevant due to change in Program Project or Activity scope
	Justification Description:	The number of buildings retrofitted does not give the true picture of work and energy savings one should expect because of certain confounding factors like differences in the building structures, designs, electrical installations, etc. An institution may have just one building but the retrofitting requirements because of its design, etc. may be much more than another institution with multiple buildings.

Number of SESCs trainers trained in energy auditing							
Aug-2019	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	18	18	18
	Previous Targets	TBD	TBD	TBD	TBD	TBD	TBD
	Justification:	TBD replaced with target					
	Justification Description:	A key output of the Improved Energy Auditing Activity is the establishment of sustainable energy services centers (SESCs).					

Number of energy auditing centers established		
Aug – 2019	Change Description:	New Indicator
	Justification:	Existing indicators do not sufficiently meet adequacy criteria
	Justification Description:	A key output of the Improved Energy Auditing Activity is the establishment of sustainable energy services centers (SESCs).

Education and Public Information Activity

Number of students reached		
Aug – 2019	Change Description:	Retired Indicator
	Justification:	Indicator has been added which is superior in measuring same variable
	Justification Description:	The indicator added is more specific on a result of the Pre-Tertiary Energy Efficiency and Conservation Curriculum update sub-activity. The new indicator added is "Number of students reached with energy efficiency and conservation curriculum".

Number of students reached through energy efficiency and conservation curriculum		
Aug – 2019	Change Description:	New Indicator
	Justification:	Existing indicators do not sufficiently meet adequacy criteria
	Justification Description:	This new indicator is more specific on a result of the Pre-Tertiary Energy Efficiency and Conservation Curriculum update sub-activity.

Number of teachers trained on energy efficiency and conservation curriculum		
Aug – 2019	Change Description:	New Indicator
	Justification:	Existing indicators do not sufficiently meet adequacy criteria
	Justification Description:	Current design of the Pre-Tertiary Energy Efficiency and Conservation Curriculum update sub-activity includes the training of Teachers in selected classes at the lower and upper primary and junior and senior high levels of

		education, which hitherto was not the case. To measure effectiveness in teacher delivery of the upgraded EE&C teaching and learning materials (TLMs), it is imperative that teachers of the targeted classes in each school are adequately trained first.

DSM Infrastructure

Number of energy saving streetlights		
Aug – 2019	Change Description:	Retired Indicator
	Justification:	Indicator has been added which is superior in measuring same variable
	Justification Description:	The indicators added brings more clarity in measurement in order to explicitly capture the variations in two key components streetlight, e.g. poles with dual arms and poles with single arm, and the light emitting diode (LED).

Number of poles constructed		
Aug – 2019	Change Description:	New Indicator
	Justification:	Existing indicators do not sufficiently meet adequacy criteria
	Justification Description:	The indicator added brings more clarity in measurement in order to easily track the variations in the design of streetlight poles to be constructed via disaggregation (dual arms and poles with single arm) depending on the type of road corridor.

Number of LED lights installed		
Aug – 2019	Change Description:	New Indicator
	Justification:	Existing indicators do not sufficiently meet adequacy criteria
	Justification Description:	The indicators added brings more clarity in measurement in order to explicitly easily track the installation of the light emitting diodes (LEDs).

Number of appliance test labs established							
September 2020	Change Description:	Target Modification					
		Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact
	Revised Targets	N/A	N/A	N/A	N/A	1	1
	Previous Targets	N/A	N/A	N/A	N/A	2	2
	Justification:	Change in Activity Scope					
	Justification Description:	Target reduced to reflect revised scope of the appliance test laboratory sub-activity.					

Indicator Name Changes as of August 2019

Previous Indicator Name	New Indicator Name
Tariff plan in place	Tariff plan adopted
Number of products with standards developed and passed	Number of products with standards developed
Number of institutions participating in "race to retrofit"	Number of institutions participating in race to retrofits and renewables
Number of people trained in energy auditing	Number of SESCs trainers trained in energy audits
Number of public education campaigns	Number of unique public education outreach on energy efficiency

M&E Plan Modifications – DECEMBER 2016 APPROVAL

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
Compact-Wide Indicators								
Reduced cost of doing business	No	Outcome	Percent of firms citing electricity as a major obstacle to doing business	Percentage	Percentage of firms identifying electricity as a major constraint	(1) Change the data source from WB Enterprise Survey or PFG Survey to Enterprise Survey (2) Change the indicator baseline from 86.2 (2007) to TBD	The reduction in the percentage of firms citing electricity as a major obstacle to doing business will provide an indication of the extent to which the business environment has improved.	Uncertainty with the timing of the recommended Surveys (1) While the 2014 WB Enterprise Survey can provide baseline data, we cannot be certain that the World Bank will carry out another survey at the close to the end of the Compact. (2) Change in data source
Reduced cost of doing business	No	Outcome	Sales losses due to power outages	Percentage	Average value of sales losses due to electricity outages as a percentage of revenue	(1) Change the data source from WB Enterprise Survey or PFG Survey to Enterprise Survey (2) Change the indicator baseline from 6 (2007) to TBD	The reduction in the percentage of firms citing electricity as a major obstacle to doing business will provide an indication of the extent to which the business environment has improved.	Uncertainty with the timing of the recommended Surveys (1) While the 2014 WB Enterprise Survey can provide baseline data, we cannot be certain that the World Bank will carry out another survey at the close to the end of the Compact. (2) Change in data source
Reduced cost of doing business	No	Outcome	Diesel fuel consumption by firms	Percentage	Average annual kWh of diesel generation consumed by registered firms as a percentage of total kWh of electricity consumed	(1) Change the data source from WB Enterprise Survey or PFG Survey to Enterprise Survey (2) Change the indicator baseline from 29.5 (2007) to TBD	This indicator is a proxy for economic, environmental and business impacts. The use of diesel fuel for power generation by firms is an indication of the unreliable supply and quality of power. Reduction in the use will provide an indication of the improved business environment in relation to power availability.	Uncertainty with the timing of the recommended Surveys (1) While the 2014 WB Enterprise Survey can provide baseline data, we cannot be certain that the World Bank will carry out another survey at the close to the end of the Compact. (2) Change in data source
Improved reliability of electricity system	Yes	Outcome	System Average Interruption Duration Index (SAIDI)	Hours	Sum of durations, in customer-hours, of all customer interruption s in a	(1) Indicator deleted	Provides a measure for the duration of outages. Also, there are regulations that limit the duration of outages, which when exceeded	(1) Indicator appears also under ECG Financial and Technical Turnover Project. It is more appropriate to

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					quarter / Total number of customers connected to network in the same quarter.		could trigger penalty for the service provider.	keep it under the ECG Financial and Technical Turnover Project since, by the definition, it seeks to measure the performance of this Project
Improved reliability of electricity system	Yes	Outcome	System Average Interruption Frequency Index (SAIFI)	Number	Sum of customer-interruptions in a quarter / Total number of customers connected to network in the same quarter.	(1) Indicator deleted	Provides a measure for the extent of outages. Also, there are regulations that limit the extent of outages, which when exceeded could trigger penalty for the service provider.	(1) Indicator appears also under ECG Financial and Technical Turnover Project. It is more appropriate to keep it under the ECG Financial and Technical Turnover Project since, by the definition, it seeks to measure the performance of this Project (2)
Customers	Yes	Outcome	Number of customers connected to the national network	Number (ECG)		(1) Indicator modified as follows: Number of ECG customers connected to the national network	To measure growth in grid connections and household access to electricity in ECG service area. An individual customer is equivalent to a household or firm.	(1) To make the indicator specific and remove ambiguity
Customers	Yes	Outcome	Number of customers connected to the national network	Number (NEDCo)		(1) Indicator modified as follows: **Number of NEDCo customers connected to the national network**	To measure growth in grid connections and household access to electricity in NEDCo service area. An individual customer is equivalent to a household or firm.	(1) To make the indicator specific and remove ambiguity
ECG Financial and Operational Turnaround Project								
Reinvestment and maintenance in capital expenditure	No	Outcome	Capital Expenditure (CAPEX)	US Dollars	Total value of new equipment installed in the distribution network	Indicator dropped	To provide an indication of how much investment in new equipment is made in ECG to improve service quality.	It may be difficult to obtain reliable data on this indicator
Reinvestment and maintenance in capital	No	Outcome	Ratio of actual Maintenance expenditure to the dollar	Percentage	Actual maintenance expenditures / Total	(1) Indicator name changed to: Maintenance expenditure-	A measure of whether ECG is able to continue providing services at the same level	Definition altered to conform with "Common indicator" name and definition Baseline value was

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
expenditure			value of total distribution assets		value of distribution assets	asset value ratio (2) Indicator definition changed to the following: Actual maintenance expenditures / Total value of fixed assets (3) Indicator baseline value changed from 0.98% in 2012 to 1.30% in 2014	of performance when assets were acquired, and to maximize returns on investments.	updated as 2014 data become available
Distribution system losses reduced	No	Outcome	Distribution system losses (ATC&C)	Percentage	Cash Recovery Index= (1-system losses)* collection rate ATC&C = 1- Cash Recovery Index	Indicator Dropped	Measure of distribution system losses by ECG	Other indicators in the M&E Plan will be provided the needed information
Distribution system losses reduced	No	Outcome	Distribution system losses	Percentage	1 – [Total megawatt hours billed / Total megawatt hours received from transmission]	New indicator added	Measure of distribution system losses by ECG	New indicator included to track Distribution System Losses incurred by ECG
Enhanced investment capacity	No	Outcome	Asset Turnover	Ratio	Gross sales / total assets	Indicator Dropped	To measure the efficiency of ECG's use of its assets in generating revenue	New indicators have been included in the M&E Plan that adequately tracks ECG's financial health
Utility Financial Health improved	No	Outcome	Operating Profit (loss)	US Dollars	Operating revenue minus operating expenses	Indicator Dropped	To provide an indication of the profit ECG is making through its operations. This is an indication of ECG's financial health.	New indicators have been included in the M&E Plan that adequately tracks ECGs financial health
Distribution system losses reduced	No	Outcome	Technical losses	Percentage	Estimated MWh of power dissipated in electricity system components such as distribution lines, transformers	Indicator baseline value changed from 14% in 2012 for Accra East and West to 10.07% in 2015	To measure improvements or otherwise in ECG's technical losses, which constitute a loss of revenue and impacts on its financial performance	Baseline value was updated with data from ECG for 2015
Distribution system losses reduced	No	Outcome	Commercial Losses	Percentage	Total distribution system losses minus distribution	Indicator baseline value changed from 19.5% in 2012 for Accra East	To measure improvements or otherwise in ECG's commercial losses, which	Baseline value was updated with data from ECG for 2015

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					technical losses	and West to 23.69% in 2015	constitute a loss of revenue and impacts on its financial performance	
Distribution system losses reduced	No	Outcome	Percentage of pre-payment customers	Percentage	Number of customers with pre-payment meters divided by Total number of customers with legacy credit meters and with pre-payment meters in the ECG Target Regions	New indicator added	A measure of the percentage of pre-payment customers	To track the percentage of customers with pre-paid meters. The prepaid meters contributes to reducing collection losses and the cost of collection, and thereby improving ECG's financial health
Outage response time improved	Yes	Outcome	System Average Interruption Duration Index (SAIDI)	Hours	Sum of durations, in customer-hours, of all customer interruptions in a quarter / Total number of customers connected to network in the same quarter in Accra East and Accra West.	Indicator baseline value changed from TBD in 2012 to: Accra East 129.16, Accra West 256.25, Global 185.48 (in 2015)	To measure the average outage duration for each ECG customer. A reduction in SAIDI will improve ECG's service delivery and increase sales	Baseline value was updated with data from ECG for 2015
Unplanned outages and faults reduced	Yes	Outcome	System Average Interruption Frequency Index (SAIFI)	Rate	Sum of customer-interruptions in a quarter / Total number of customers connected to network in the same quarter in Accra East and Accra West.	Indicator baseline value changed from TBD in 2012 Accra East = 42.09 Accra West = 104.91, Global = 84.54 in 2015	To measure the average number of interruptions in electricity supply that each ECG customers experiences. A reduction in SAIFI will improve ECG's service delivery and increase sales	Baseline value was updated with data from ECG for 2016
Enhanced investment capacity	No	Outcome	Operating Cost recovery ratio	Percentage	Total revenue collected/Total Operation Cost	New indicator added	A measure of the cash flow available for investment	New indicator recommended by DQR consultant and included to track ECG's investment capacity and financial health
Utility Financial Health Improved	No	Outcome	Average Collection Period	Days	365 Days * [(Beginning accounts receivables + ending accounts	New indicator added	A measure of the liquidity or financial security of ECG and the efficiency of revenue collection	New indicator included to track ECG's revenue collection efficiency

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					receivable) / 2) / Total sales]			
	No	Outcome	Debt as a percentage of total sales	Percentage	Total value of accounts receivables over 60 days / Total accounts receivable	New indicator added	Measure of ECG's financial losses due to bad debt	New indicator included to track the percentage of ECG's total sales that becomes bad debt
	No	Outcome	Total Electricity Sold	Mega Watts	The total megawatt hours of electricity sales to all customer types	New indicator added	Measure total electricity sold to customers by ECG	New indicator recommended by DQR consultant and included to track megawatts of Electricity sold by ECG
	No	Outcome	Maintenance expenditure-asset value ratio	Percentage	Actual maintenance expenditures / Total value of fixed assets	New indicator added	To provide an indication of ECG's ability to continue providing services at the same level of performance when assets were acquired, and to maximize returns on investments.	New Indicator included to track ECG'S financial health
Timely payments made to sector entities	No	Outcome	Average payment period to power producers	Days	Duration in days of measurement period * [(Beginning accounts payables to power producers + ending accounts payables to power producers) / 2) /Power purchase cost during measurement period]	Indicator definition changed to the following: Duration in days of measurement period * [(Beginning accounts payables to power producers + ending accounts payables to power producers) / 2) /Power purchase cost during measurement period]	To measure the time it takes to pay power producers	Definition altered to include suggestions made by DQR consultant
	No	Outcome	Average payment period to Ghana Grid Company	Days	Duration in days of measurement period * [(Beginning accounts payables to GRIDCo + ending accounts payables to GRIDCo) / 2) /Total transmission charge payable to GRIDCO during the measurement period]	Indicator definition changed to the following: Duration in days of measurement period * [(Beginning accounts payables to GRIDCo + ending accounts payables to GRIDCo) / 2) /Total transmission charge payable to GRIDCO during the measurement period]	To measure the time it takes to pay GRIDCo	Definition altered to include suggestions made by DQR consultant

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
Enhanced investment capacity	No	Output	GIS-based distribution management system in place	Date	Geographic Information System (GIS) based distribution manageme nt system, grid digitization , and customer census to record and store basic data for planning purposes in place.	New indicator added	The GIS system is considered a base investment under EFOT as such there is the need to monitor its timely deployment to ensure other planned activities are implemented within the Compact period	Indicator introduced to track the date the GIS system is put in place which is a key milestone
	No	Output	Enterprise Resource Planning System in place	Date	Date when Enterprise Resource Planning (ERP) system a business process manageme nt software which will be integrated with existing application s for the purpose of facilitating the flow of information within ECG and managing connections to outside stakeholder s will be in place	New indicator added	The ERPS is one of the base investments under EFOT as a result it is useful to track the date it is put in place as well as ensure that timelines for this activity does not slip	Indicator introduced to track the date the ERP system is put in place. This is a key milestone
Technical losses reduced	No	Output	Kilometers of distribution lines upgraded or built	Kilometers	The sum of linear kilometers of new, reconstruct ed, rehabilitate d, or upgraded distribution lines that have been energized, tested and commissio ned with MCC support.	New indicator added	To measure of the sum of linear kilometers of lines upgraded or built under the Compact to improve network reliability in Accra East and West	New indicator included to track the sum of linear kilometers of lines upgraded or built under the Compact
	No	Output	Distribution substation added	Number	The total number of newly constructed distribution substations	New indicator added	Measure of Distribution substations added to improve network reliability	New indicator included to track Distribution substation capacity added

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					supported by MCC		in Accra East and West	
Technical losses reduced	No	Output	Number of capacitor banks installed at primary substations/lines	Number	Total number of capacitor banks installed at primary substations/ lines for Reactive Power Compensation	New indicator added	Reactive power compensation installed at primary substation will improve the network, reducing technical losses and avoiding extended outages.	To track activities intended to reduce technical losses in Accra East and West
	No	Output	Number of Bulk supply points	Number	Number of BSPs installed and commissioned	New indicator added	A measure of technical loss reduction	To track activities intended to reduce technical losses in Accra East and West
	No	Output	Number of Interconnecting sub-transmission links	Number	Interconnecting sub-transmission links installed	New indicator added	A measure of technical loss reduction and improved levels of reliability in the network	New indicator included to track the Project's ability to improve technical losses and levels of reliability in the network in Accra East and West
	No	Output	Number of medium voltage offloading circuits	Number	Total number of medium voltage offloading circuits installed	New indicator added	A measure of technical loss reduction and improved levels of reliability in the network	New indicator included to track the Project's ability to improve technical losses and levels of reliability in the network in Accra East and West
Distribution system losses reduced	No	Output	Number of automated reading meters	Number	Installation of automated reading meters at special load tariff (SLT) service locations, selected non-SLT service locations in the ECG Target Regions, and at critical nodes of the distribution system in the Target ECG Regions	New indicator added	A measure of the number of automated reading meters installed as part of the Compact	To track the number of automated reading meters installed to provide ECG with the ability to monitor where technical and commercial losses are occurring
Date Milestones Achieved	No	Date	Medium voltage networks automation completed	Date	Date when Medium voltage networks automation is completed	New indicator added	To track when the Medium voltage networks automation is completed. A key activity under EFOT	To track date when Medium voltage networks automation is completed

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
	No	Date	Outage management system in place	Date	Date when system for identifying and resolving outages is commissioned for use	New indicator added	To track when the outage management system is in place	To track date when Outage Management system, a key activity under EFOT is commissioned
Process Milestones Achieved	No	Process	Value of signed power infrastructure feasibility and design contracts	US Dollars	The value of all signed feasibility, design, and environmental impact assessment contracts, including resettlement action plans, for power infrastructure investments using 609(g) and compact funds.	New indicator added	Measures the value of power infrastructure contracts signed in US dollars	To provide an indication of the value of power infrastructure feasibility and design contracts signed under the Compact
	No	Process	Value disbursed of power infrastructure feasibility and design contracts	US Dollars	The amount disbursed of all signed feasibility, design, and environmental impact assessment contracts, including resettlement action plans, for power infrastructure using 609(g) and compact funds.	New indicator added		To track funds disbursed under the Access project infrastructure feasibility and design studies contracts signed.
	No	Process	Percent disbursed of power infrastructure feasibility and design contracts	Percentage	The total amount of all signed feasibility, design, and environmental impact assessment contracts, including resettlement action plans, for power infrastructure disbursed divided by the total current value of	New indicator added	Measures the percent disbursed of power infrastructure feasibility and design contracts	To track percentage of funds disbursed on power infrastructure contracts, to provide an indication of progress towards completing on target.

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					signed contracts.			
	No	Process	Value of signed power infrastructure construction contracts	US Dollars	The value of all signed construction contracts for power infrastructure investments using compact funds.	New indicator added	Measure the value of signed power infrastructure construction contracts	To provide indication of the value of power infrastructure feasibility and design contracts signed under the Compact
	No	Process	Value disbursed of power infrastructure construction contracts	US Dollars	The amount disbursed of all signed construction contracts for power infrastructure investments using compact funds.	New indicator added		To track funds disbursed under the Access project infrastructure feasibility and design studies contracts signed.
	No	Process	Percent disbursed of power infrastructure construction contracts	Percentage	The total amount of all signed construction contracts for power infrastructure investments disbursed divided by the total current value of all signed contracts.	New indicator added		To track funds disbursed under the power infrastructure construction contracts signed
	No	Process	Temporary employment generated in power infrastructure projects	Number	The number of people temporarily employed or contracted by MCA-contracted construction companies to work on construction of new power infrastructure or reconstruction, rehabilitation, or upgrading of existing power	New indicator added	A measure of Temporary employment generated in power infrastructure projects under the Compact	To track the number of temporary employment generated by energy infrastructure contracts under the Compact

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					infrastructure.			
	No	Process	Contract signed with ECG PSP Provider	Date	Date on which Contract signed with PSP Provider for ECG that is acceptable to both GOG and MCC	New indicator added	A measure of progress made on key milestones under the Compact	To track the date ECG PSP was signed which is a major milestone
NEDCo Financial and Operational Turnaround Project								
Reinvestment and maintenance in capital expenditure	No	Outcome	Capital Expenditure (CAPEX)	US Dollars	Total value of new equipment installed in the distribution network	Indicator dropped	To provide an indication of how much investment in new equipment is made in NEDCo's to improve service quality.	It may be difficult to obtain reliable data on this indicator
Distribution system losses reduced	No	Outcome	Distribution system losses	Percentage	1 – [Total megawatt hours billed / Total megawatt hours received from transmission]	New indicator added	To measure improvements or otherwise of NEDCo's distribution system losses as a result of Compact interventions	New indicator included to track Distribution System Losses incurred by NEDCo
Distribution system losses reduced	No	Outcome	Technical losses	Percentage	Estimated MWh of power dissipated in electricity system components such as distribution lines, transformers	New indicator added	To measure improvements or otherwise in NEDCo's technical losses, which constitute a loss of revenue and impacts on its financial performance	Indicator introduced to track improvements in technical losses
Distribution system losses reduced	No	Outcome	Commercial Losses	Percentage	Total distribution system losses minus distribution technical losses	New indicator added	To measure improvements or otherwise in NEDCo's commercial losses, which constitute a loss of revenue and impacts on its financial performance	Indicator introduced to track improvements in commercial losses
Distribution system losses reduced	No	Outcome	Percentage of pre-payment customers	Percentage	Number of customers with pre-payment meters divided by Total number of customers with legacy credit meters and	New indicator added	A measure of the percentage of pre-payment customers	To track the percentage of customers with pre-paid meters. The prepaid meters contributes to reducing collection losses and the cost of collection, and thereby improving NEDCo's financial health

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					with pre-payment meters in the NEDCo's Target Regions			
Outage response time improved	Yes	Outcome	System Average Interruption Duration Index (SAIDI)	Hours	Sum of durations, in customer-hours, of all customer interruptions in a quarter / Total number of customers connected to network in the same quarter in the NEDCo's Target Regions	New indicator added	To measure the average outage duration for each NEDCo's customer. A reduction in SAIDI will improve NEDCo's service delivery and increase sales	To measure the average outage duration for each NEDCo's customer. A reduction in SAIDI will improve NEDCo's service delivery and increase sales
Unplanned outages and faults reduced	Yes	Outcome	System Average Interruption Frequency Index (SAIFI)	Rate	Sum of customer-interruptions in a quarter / Total number of customers connected to network in the same quarter in the NEDCo's Target Regions.	New indicator added	To measure the average number of interruptions in electricity supply that each NEDCo's customers experiences. A reduction in SAIFI will improve ECG's service delivery and increase sales	To measure the average number of interruptions in electricity supply that each NEDCo's customers experiences. A reduction in SAIFI will improve ECG's service delivery and increase sales
Enhanced investment capacity		Outcome	Asset Turnover	Percentage	Gross sales divided by total assets	Dropped	A measure of how efficiently was the utility able to utilize its assets to generate sales	Definition altered to conform to the DQR recommendation and definition Baseline value was updated as 2015 data become available
Utility Financial Health improved	No	Outcome	Operating Profit (loss)	US Dollars	Operating revenue minus operating expenses	Dropped	It measures the difference between revenues and costs generated by NEDCo operations, before deducting interest, taxes, investment gains/losses and various non-recurring items	Baseline value was updated as 2015 data become available
	No	Outcome	Operating Cost recovery ratio	Percentage	Total revenue collected/Total Operation Cost	New indicator added	A measure of the NEDCo operating revenue to operating costs.	New indicator recommended by DQR consultant and included to track NEDCo's investment capacity and financial health

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
	No	Outcome	Average Collection Period	Days	365 Days * [(Beginning accounts receivables + ending accounts receivable) / 2) / Total sales]	New indicator added	A measure of the liquidity or financial security of NEDCo and the efficiency of revenue collection	New indicator included to track NEDCo's revenue collection efficiency
	No	Outcome	Debt Receivables as a percentage of total sales	Percentage	Total value of accounts receivables over 6days/Total accounts receivable	New indicator added	Measure of NEDCo's financial losses due to bad debt	New indicator included to track the percentage of NEDCo's total sales that becomes bad debt
	No	Outcome	Total Electricity Sold	Mega Watts	The total megawatt hours of electricity sales to all customer types	New indicator added	Measure total electricity sold to customers by NEDCo's	New indicator recommended by DQR consultant and included to track megawatts of Electricity sold by NEDCo's
Timely payments made to sector entities	No	Outcome	Average payment period to power producers	Days	Duration in days of measurement period * [(Beginning accounts payables to power producers + ending accounts payables to power producers) / 2) /Power purchase cost during measurement period]	New indicator added	To measure the time it takes to pay power producers	Indicator included to gauge NEDCo's credit worthiness
	No	Outcome	Average payment period to Ghana Grid Company	Days	Duration in days of measurement period * [(Beginning accounts payables to GRIDCo + ending accounts payables to GRIDCo) / 2) /Total transmission charge payable to GRIDCO during the measurement period]	New indicator added	To measure the time it takes to pay GRIDCo	Indicator included to gauge NEDCo's credit worthiness
Reinvestment and maintenance in capital expenditure	No	Outcome	Ratio of actual Maintenance expenditure to the dollar value of total distribution assets	Percentage	Actual maintenance expenditures / Total value of distribution assets	(1) Indicator name changed to: Maintenance expenditure-asset value ratio (2) Indicator definition	A measure of whether NEDCo's is able to continue providing services at the same level of performance when assets were acquired, and to	Definition altered to conform with "Common indicator" name and definition Baseline value was updated as 2015 data become available

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
						changed to the following: Actual maintenance expenditures / Total value of fixed assets (3) Indicator baseline value changed from 0.6% in 2013 to 0.03% in 2015	maximize returns on investments.	
Technical losses reduced	No	Output	Kilometers of distribution lines upgraded or built	Kilometers	The sum of linear kilometers of new, reconstructed, rehabilitated, or upgraded distribution lines that have been energized, tested and commissioned with MCC support.	New indicator added	To measure of the sum of linear kilometers of lines upgraded or built under the Compact to improve network reliability in NEDCo's operational areas	New indicator included to track the sum of linear kilometers of lines upgraded or built under the Compact
Technical losses reduced	No	Output	Distribution substation capacity added	Mega volt ampere	The total added substation capacity, measured in mega volt amperes that is energized, commissioned and accompanied by a test report and supervising engineer's certification resulting from new construction or refurbishment of existing substations supported by MCC.	New indicator added	Measure of Distribution substation capacity added to improve network reliability in NEDCo's operational areas	New indicator included to track Distribution substation capacity added
Process Milestones Achieved	No	Process	Value of signed power infrastructure feasibility and design contracts	US Dollars	The value of all signed feasibility, design, and environmental impact assessment contracts, including resettlement action plans, for	New indicator added	Measures the value of power infrastructure contracts signed in US dollars	To provide an indication of the value of power infrastructure feasibility and design contracts signed under the Compact

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					power infrastructure investments using 609(g) and compact funds.			
	No	Process	Value disbursed of power infrastructure feasibility and design contracts	Percentage	The amount disbursed of all signed feasibility, design, and environmental impact assessment contracts, including resettlement action plans, for power infrastructure using 609(g) and compact funds.	New indicator added	Measure the value of disbursed power infrastructure construction contracts	To provide indication of the disbursed of power infrastructure feasibility and design contracts signed under the Compact
	No	Process	Percent disbursed of power infrastructure feasibility and design contracts	Percentage	The total amount of all signed feasibility, design, and environmental impact assessment contracts, including resettlement action plans, for power infrastructure disbursed divided by the total current value of signed contracts.	New indicator added	Measures the percent disbursed of power infrastructure feasibility and design contracts	To track percentage of funds disbursed on power infrastructure contracts, to provide an indication of progress towards completing on target.
	No	Process	Value of signed power infrastructure construction contracts	US Dollars	The value of all signed construction contracts for power infrastructure investments using compact funds.	New indicator added	Measure the value of signed power infrastructure construction contracts	To provide indication of the value of signed power infrastructure construction contracts under the Compact
	No	Process	Value disbursed of power infrastructure construction contracts	US Dollars	The amount disbursed of all signed construction contracts for power	New indicator added	Measure the value of disbursed power infrastructure construction contracts	To provide indication of the value disbursed of power infrastructure construction contracts under the Compact

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					infrastructure investments using compact funds.			
	No	Process	Percent disbursed of power infrastructure construction contracts	Percentage	The total amount of all signed construction contracts for power infrastructure investments disbursed divided by the total current value of all signed contracts.	New indicator added	Measure the percent disbursed of power infrastructure construction contracts	To track percentage of funds disbursed on power infrastructure construction contracts, to provide an indication of progress towards completing on target.
	No	Process	Temporary employment generated in power infrastructure projects		Number	New indicator added	A measure of Temporary employment generated in power infrastructure projects under the Compact	To track the number of temporary employment generated by energy infrastructure contracts under the Compact
Regulatory Strengthening and Capacity Building Project								
Cost reflective tariff	No	Outcome	Cost recovery ratio	Percentage	Tariff per kWh divided by average cost per kWh of electricity supplied to customers times 100	1. Indicator name has been dropped and replaced by Cost-reflective tariff regime. 2.The definition has been modified as: Average Tariff per kilowatt-hour / Long-run marginal cost per kilowatt-hour of electricity supplied to customers	Measures utilities' ability to cover expenditures with revenues.	To assess whether tariffs keep pace with Long-run Marginal Cost (LRMC as the denominator may itself be computed only once via the Tariff Study).
Cost-reflective tariff	No	Outcome	Tariff plan in place	Date	Tariff Plan to guide the setting of tariffs by PURC in place	New Indicator		
Automatic tariff adjustment		Outcome	Tariff Adjustment on time	Date	Tariff adjusted on scheduled timeline	New indicator added	Measures ability to revise tariffs and adjust tariff schemes on schedule in other to cover costs with revenue	
Monitoring capacity of policy,	No	Output	Number of training participants	Number	Number of participants from organizations in the energy sector that participated in training to build	New Indicator added	Measure the number of individuals benefiting directly from the program and allows us to track the inclusion of women in Ghana Power Compact sponsored events.	

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
planning and regulatory agencies strengthen ed					their capacity			
	No	Output	Number of organization s trained	Number	Number of different organizatio ns in the energy sector that sent individuals for training	Indicator dropped	The indicator was selected to measure the extent of contribution towards closing the skills gap within the organizations in the energy sector that need institutional capacity support from the Compact II program.	
	No	Output	Capacity needs assessment	Date	Capacity and needs assessment s with regards to data quality, monitoring systems (data collection, analysis, reporting, quality control, and communica tions) on key performanc e metrics identified for the Compact and Partnership for Growth for listing in the Electricity Supply and Distributio n (Technical and Operational) Rules (L.I. 1816, 2005).	New Indicator added	The capacity and needs assessments and its timeliness is important in assessing the success of building the capacity of institutions for Sector Performance Monitoring.	
Cost reflective tariff	No	Output	Partnership arrangement s	Date	A partnership arrangemen t with qualified organizatio ns comprised of state, national or internationa l regulatory practitioner	Indicator dropped	Information sharing with regulators and experts through partnership activities will help identify best practices in regulation as well as areas for improvement within the PURC	

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					s and technical experts in place for EC and PURC.		and EC regulatory structures	
Access Project								
Process milestones achieved	No	Process	Value of signed Power infrastructure feasibility and design contracts	USD	The value of all signed feasibility, design, and environmental contracts, including resettlement action plans, for Access Project infrastructure investments under the Access Project using 609(g) and compact funds	Newly introduced indicator		To provide an indication of the level of financial commitment made to the MEEs and social institutions under the Access Project
	No	Process	Value disbursed of Power infrastructure feasibility and design contracts	USD	The amount disbursed of all signed feasibility, design, and environmental contracts, including resettlement action plans, for Access project infrastructure investments under the Access Project using 609(g) and compact funds	Newly introduced indicator		To provide indication of the value of Access Project infrastructure feasibility and design contracts signed under the Compact
	No	Process	Percent disbursed of Power infrastructure feasibility and design contracts	Percentage	The total amount of all signed feasibility, design, and environmental contracts, including resettlement action plans, for Access Project infrastructu	Newly introduced indicator	As a proxy to give an indication of how close the project is to delivering (i) a design for bidding documents and (ii) for works to commence	To provide indication of how close the Access Project is to the completion of feasibility and design; and to the commencement of works and delivery of Project outputs

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					re disbursed under the Access Project divided by the total value of all signed contracts.			
	No	Process	Value of signed Power infrastructure construction contracts	USD	The value of all signed construction contracts for power infrastructure investments using compact funds.	Newly introduced indicator		To provide indication of the value of Access Project infrastructure construction contracts signed under the Compact
	No	Process	Value disbursed of Power infrastructure construction contracts	USD	The amount disbursed of all signed construction contracts for Access project infrastructure investments using compact funds.			To track funds disbursed under the Access project infrastructure construction contracts signed.
	No	Process	Percent disbursed of Power infrastructure construction contracts	Percentage	The total amount of all signed construction contracts for power infrastructure investments disbursed divided by the total current value of all signed contracts.	Newly introduced indicator	As a proxy to give an indication of how close the project is in delivering its tangible product or output.	To track percentage of funds disbursed on power infrastructure contracts, to provide an indication of progress towards completion of of works.
	No	Process	Temporary employment generated in Power infrastructure projects	Number	The number of people temporarily employed or contracted by MCA-contracted construction companies to work on construction of new power infrastructure or reconstructi	Newly introduced indicator	The Access project infrastructure construction projects will generate income, mostly for Ghanaians and between the gender divide	To track the number of temporary jobs generated under the Access infrastructure contracts

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					on, rehabilitation, or upgrading of existing power infrastructure.			
Power Generation Sector Improvement Project								
Load shedding and outages reduced	No	Outcome	Load shed	MWh	MWh of load shed from Transmission to Distribution during the year due to lack of available generation capacity	1) Indicator name changed to: Total Systems Load Shed 2) The indicator definition modified as: Total megawatt-hours shed in a year. 3) Indicator baseline value changed from TBD in 2013 to 373,895 in (2015	To measure extent and magnitude of generation shortfalls leading to planned outages	To make the indicator name more specific
	No	Outcome	Frequency of load shed	Number	Number of times in a year that load shedding occurred	1) Indicator definition changed to: Number of times that load shedding occurred in a quarter.	Measures the number of times in a quarter that load shedding occurred. As the enabling environment is created for IPPs to invest in generation, the amount of power installed plants could improve electricity situation to reduce frequency of load shedding and outages.	This is a recommendation from DQR Report (Vol. 1, p. 44) to change the frequency of reporting to quarter
	No	Outcome	Duration of load shed	Hours	Total duration in hours of load shed during the year	Indicator definition changed to: Total duration in hours of load shed in a quarter	Measures the total duration in hours of load shed during the year. Assumption is that, the amount of power installed plants could improve electricity situation to reduce load shedding and outages.	This is a recommendation from DQR Report (Vol. 1, p. 44) to change the frequency of reporting to quarter
	No	Outcome	Installed capacity	MW	Total amount of power installed plants can generate (capacity)	1. Indicator name changed to installed generation capacity. 2. Indicator definition changed to: Total generation capacity, in megawatts, installed plants can generate within the country. 3.Indicator	Measures the amount of power installed plants can generate. Assumption is that, the installed plants could improve electricity situation to reduce load shedding and outages.	Definition altered to conform to "Common indicator" name and definition. Baseline value was updated as 2014 data become available

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
						baseline value changed from 2,840 in 2013 to 2,831 in 2014		
	No	Outcome	Available generation capacity	MW	Total amount of energy available for transmission to the end users	New indicator added	Measures megawatts of power produced by plants that are actually in operation. This provides a better picture of whether or not actual power supply is improving, thus reduction in load shed and outages	Recommendation from DQR .They indicated it is a more realistic indicator for actual usable generation capacity available considering plant maintenance, fuel availability, etc.
On-grid renewable energy increased	No	Outcome	Share of on-grid renewable energy	Percentage	Installed capacity (in MW) of on-grid renewable energy (as defined in Renewable Energy Act, 2011 (Act 832)) as a percentage of installed capacity (in MW) of on-grid conventional capacity.	1. Indicator name changed to: Share of renewable energy in the country. 2.Baseline value changed from 0.01 to 0.11 in 2014	The share of on-grid renewable energy is an indication of the level of diversification in power generation towards more sustainable sources	Definition altered to conform to "Common indicator" name and definition. Baseline value was updated as 2014 data become available
Off-grid and mini-grid renewable energy increased.	No	Outcome	Installed capacity	MW	Total number of MW installed capacity of off-grid and mini-grid renewables.	1.Indicator name changed to: Installed capacity (of renewable energy) 2.Baseline value changed from 0.8 to 3.8 in 2014	Measures the total number of MW installed capacity of off-grid and mini-grid renewables	Baseline value was updated with data from MoEn for 2014
New IPP generation committed	No	Outcome	IPP Generation committed	MW	Total generation capacity committed by IPPs at Financial Close	Indicator baseline value is given as 1800-1900	Measures total generation capacity committed by new IPPs at Financial Close, and provides an indication of progress towards increasing power generation.	Baseline value was updated with data from EC for 2014
	No	Outcome	Number of IPPs that achieve financial close	Number	Number of IPPs that have secured financial agreement with financial institutions by satisfying all conditions or received	New indicator added	Measures the number of IPP's that have secured financial agreement with financial institutions by satisfying all conditions or received a waiver, requisite documents fully executed, and draw-downs	New indicator included to track the number of IPPs that achieve financial close

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					a waiver, requisite documents fully executed, and draw-downs become permissible		become permissible	
Electricity supplied	No	Outcome	Total electricity supply	Megawatt hours	Total electricity, in megawatt hours, produced and/or imported in a year.	New indicator added	This is to gauge the quantity of power available to meet demand	New indicator included to measure the sum of gross electricity supplied during the year for all generating stations and imports
Quality of maintenance	No	Outcome	Power plant availability	Percentage	Unweighted average across all power plants of the following: total number of hours per quarter that a plant is able and available to produce electricity/ Total number of hours in the same month	New indicator added	The objective of measuring availability is to gauge the quality of maintenance being carried out at the plant	Indicator introduce to measure the quality of maintenance being carried out at the plant
Capacity of energy sector organizations enhanced	No	Output	Number of advisory service days provided	Number	Number of advisory service days provided by MiDA and third-parties under contract on gas sector structuring and policy determination	New indicator added	Indicator of advisory services to ensure future ability to reform and sustain the gas sector.	Indicator to track the number of advisory service provided
	No	Output	Number of training participants	Number	Number of participants from organizations in the energy sector that participated in training to build their capacity	New indicator added	Measure the number of individuals benefiting directly from the program and allows us to track the inclusion of women in Ghana Power Compact II sponsored events.	New indicator to track individuals benefiting directly from training sessions from the Compact program
Energy Efficiency and Demand Side Management								
Increased energy savings as a result of	Yes	Outcome	Energy savings from upgraded streetlights	MWh	(1) Total MWh of energy saved	(1) The "result statement" and "indicator" name have been	The street lighting activity will be relying heavily on the use of energy saving street	(1) It is preferable to have the cause of the outcome in the indicator name

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
street lighting					due to new or upgraded street lighting in ECG Target Regions (2) Total kilowatt hours of energy saved due to new or upgraded street lighting in ECG Target Regions. Energy saved (kWh) = Energy consumption in kWh of existing lamps less new lamps	respectively revised as follows: • Increased energy savings, and • Energy savings from upgraded streetlights (2) The "unit of measure" has been changed from megawatt hours to kilowatt hours	lamps and appropriate infrastructure for adequate illumination to reduce the lighting load at peak.	than in the result statement, which may be related to more than one indicator. For instance, increased energy savings may be caused by street lights activity as well as the standards and labels activity. (2) DQR recommendation
Increased energy savings	Yes	Outcome	Energy savings from "race to retrofit/ renewables"	kWh	Total kilowatts saved by the participating institutions in "race to retrofit"	Newly introduced indicator	The "race to retrofit" activity is targeted at eligible MMDAs to use more energy efficient appliances, which is expected to ultimately reduce power consumption	Introduced to comprehensively measure the effect of all the EEDSM activities.
Increased energy savings	Yes	Outcome	Energy savings from standards and labels	kWh	Total kilowatt hours of energy saved from the use of energy efficient appliances in place of high energy consuming appliances.	Newly introduced indicator	To track over time the energy saved by the different energy efficient appliances with standards and labels developed as well as L.Is promulgated and enforced. Energy savings along each step of the	Introduced to comprehensively measure the effect of all the EEDSM activities.

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					Energy saved (kWh) = Energy consumption in kWh of existing appliances less new appliances, as measured by improved energy meters (i.e. data loggers)		process will be measured	
	Yes	Outcome	Percentage of appliances compliant with standards	Percentage	Percentage of targeted electrical appliances tested at the points of entry that demonstrate compliance with newly promulgated standards	Newly introduced indicator		
Demand profile improved and growth rate reduced	Yes	Output	Number of products with standards developed and passed	Number	Number of standards on electrical appliances developed, with legislative instruments (LIs) amended (for the existing standards) or promulgated (for new standards) by Parliament of Ghana to facilitate mandatory compliance	Newly introduced indicator	Under the EE activity legislations on standards and labels for 17 new and 3 existing energy efficient appliances would be developed and upgraded respectively. This will involve several processes and institutions like EC, GSA, AG's Department and Parliament, thus will help track where challenges are in the process.	Promulgation of legislations on standards and labels can be very challenging and time-consuming since it will involve key institutions like AG's Department and Parliament, who the project has limited control over. Thus, it is necessary to measure to help identify which issues are slowing the process for timely resolution with the relevant Government of Ghana institution.
Demand profile improved and growth rate reduced	No	Output	Number of appliance test labs established	Number	Number of electrical appliance test labs constructed and commissioned/ functional	Newly introduced indicator	An AC Test Lab facility plus at most two additional Test Labs for other electrical appliances including electronics to be established.	A metric to track compliance at the points of entry will provide proxy indication of market penetration of the energy efficient appliances
Increased energy savings	No	Output	Number of institutions participating in "race to retrofit "	Number	Total number of institutions that benefit from Compact funds to	Newly introduced indicator	The number of institutions in the "race to retrofit/renewables" will provide an indication of the level of	Indicator introduced to help estimate the amount of energy saved prior to actual energy savings measurement. Also for the purposes of

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					implement the "race to retrofit/renewables" Program		commitment among the MDAs and MMDAs to reduce power consumption, in addition to assessing the likely impact of the activity.	accountability to MCC
Increased energy savings	No	Output	Number of buildings retrofitted	Number	Total number of buildings with electrical installations and equipment retrofitted in participating institutions	Newly introduced indicator		The number of facilities that undergo retrofits will confirm the level of commitments of the MMDAs to reduce power consumption, in addition to assessing the likely impact of the activity.
Increased energy savings	No	Output	Number of energy audits	Number	Total number of energy audits conducted by trainees	Newly introduced indicator		To help track the immediate outcome of the auditing training
Increased energy savings	No	Output	Number of people trained in energy auditing	Number	Number of people trained and certified in energy auditing	Newly introduced indicator	The adequacy of trained and certified local energy auditors is expected to contribute to successful implementation of energy efficiency programs.	This indicator was introduced to measure the availability of human resource in the area of energy auditing in-country.
Increased public information, Education and communication on energy use efficiency	No	Output	Number of Public education campaigns	Number	Number of public education campaigns organized via different media platforms to disseminate information on energy efficiency.	Newly introduced indicator	It is assumed other EE/DSM indicators to facilitate public and private patronage of energy efficient appliances and give indications of sustainability of results.	This indicator was introduced to track the dollar amount of grants awarded to qualified institutions for the purposes of accountability to MCC and Government of Ghana.
Increased public information, Education and communication on energy use efficiency	No	Output	Number of students reached	Number	Total number of students from pilot pre-tertiary institutions using the curriculum	Newly introduced indicator	Incorporating energy efficient practices in pre-tertiary institutions will inculcate such habits in the future generations and ensure sustainability, even if the older generation is unable to do so.	Indicator introduced to help assess the timeliness in efforts to incorporate energy efficiency in the curricula of pre-tertiary institutions.
Increased energy savings	No	Output	Number of energy saving streetlights	Number	Total number of energy saving bulbs/street lights installed	Newly introduced indicator	With the introduction of more LED bulbs (and probably better technologies in the future) into	Indicator introduced to help estimate the energy savings to be realized from the construction of new or upgrade of existing street lamps

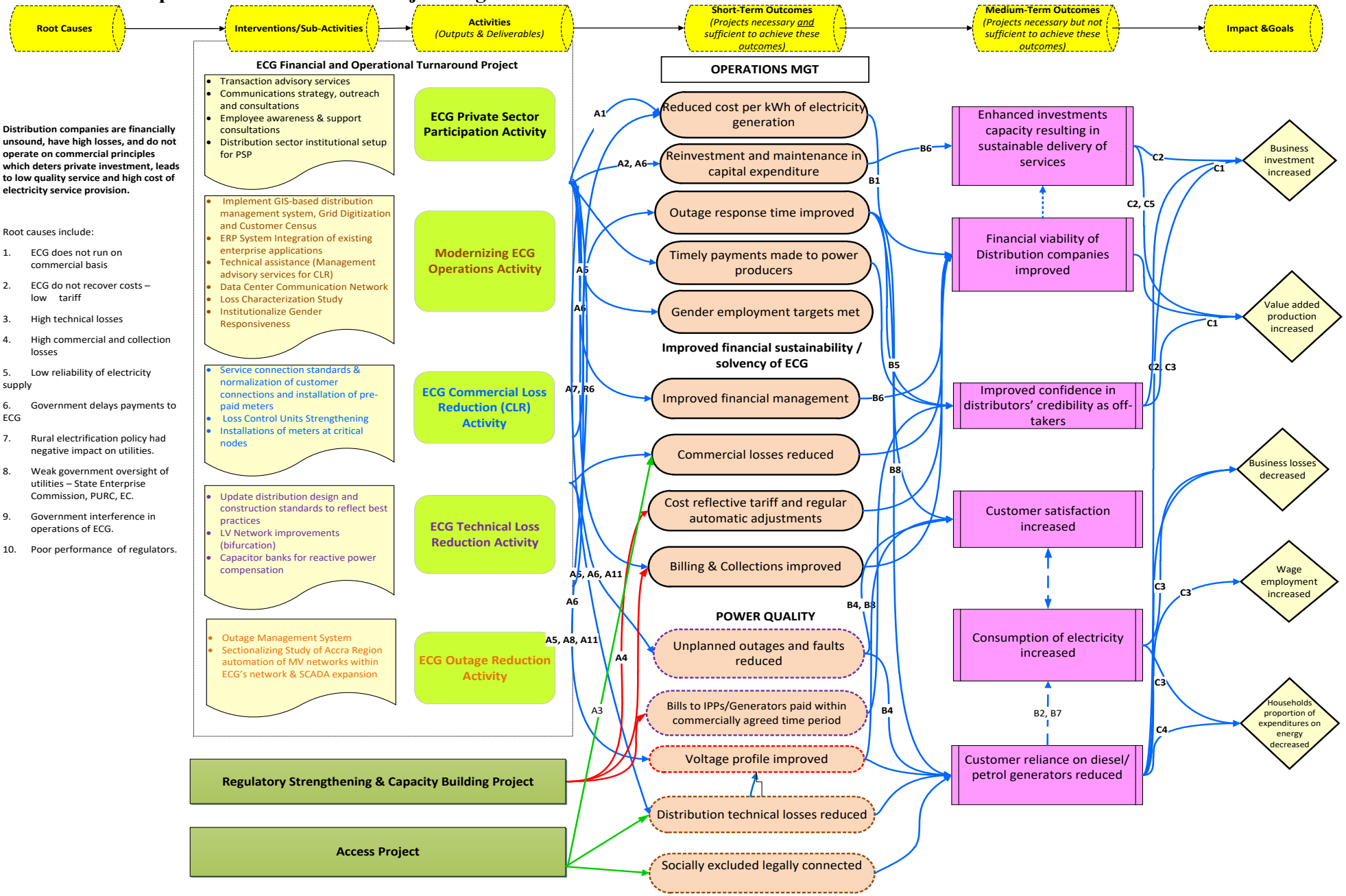
Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
							the street lighting system, the load at peak will be shaved.	with more energy efficient ones.
Process milestones achieved	No	Process	Value of signed power infrastructure feasibility and design contracts	USD	The value of all signed feasibility, design, and environmental impact assessment contracts, including resettlement action plans, for power infrastructure investments under EEDSM using 609 (g) and Compact funds.	Newly introduced indicator	To track the value of EEDSM infrastructure feasibility and design contracts	Indicator introduced to track the value of EEDSM infrastructure feasibility and design contracts for accountability purposes.
Process milestones achieved	No	Process	Value disbursed of power infrastructure feasibility and design contracts	US Dollars	The amount disbursed of all signed feasibility, design, and environmental impact assessment contracts, including resettlement action plans, for power infrastructure under EEDSM using 609(g) and compact funds.	Newly introduced indicator		To track funds disbursed under the EEDSM infrastructure feasibility and design studies contracts signed.
Process milestones achieved	No	Process	Percent disbursed of power infrastructure feasibility and design contracts	Percentage	The total amount of all signed feasibility, design, and environmental impact assessment contracts, including resettlement action plans, for power infrastructure under EEDSM disbursed divided by the total current	Newly introduced indicator	As a proxy to give an indication of how close the project is to delivering (i) a design for bidding documents and (ii) for works to commence	Indicator introduced as a proxy to give an indication of how close the project is in producing a deliverable – Feasibility Study reports and designs for preparation of bidding documents.

Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					value of signed contracts.			
Process milestones achieved	No	Process	Value of signed power infrastructure construction contracts	USD	The value of all signed construction contracts for power infrastructure investments under EEDSM using Compact funds.	Newly introduced indicator	To track the value of DSM infrastructure construction contracts	Indicator introduced to track the value of DSM infrastructure construction contracts for accountability purposes.
Process milestones achieved	No	Process	Value disbursed of power infrastructure construction contracts	USD	The amount disbursed of all signed construction contracts for power infrastructure investments under EEDSM using compact funds.	Newly introduced indicator		To track funds disbursed under the EEDSM infrastructure construction (works) contract signed.
Process milestones achieved	No	Process	Percent disbursed of power infrastructure construction contracts	Percentage	The total amount of all signed construction contracts for power infrastructure investments under EEDSM disbursed divided by the total current value of all signed contracts.	Newly introduced indicator	As a proxy to give an indication of how close the project is in delivering its tangible product or output.	Indicator introduced as a proxy to give an indication of how close the project is in delivering a tangible product or output, which at times may take some time to achieve.
Process milestones achieved	No	Process	Temporary employment generated in power infrastructure projects	Number	The number of people temporarily employed or contracted by MCA-contracted construction companies to work on construction of new power infrastructure or reconstruction, rehabilitati	Newly introduced indicator	It is assumed that the DSM infrastructure construction projects will generate income, mostly for Ghanaians and between the gender divide	Indicator introduced to track the number of people, especially Ghanaians, who have gained employment under the DSM infrastructure projects. That is to measure the extent of job creation by the Compact.

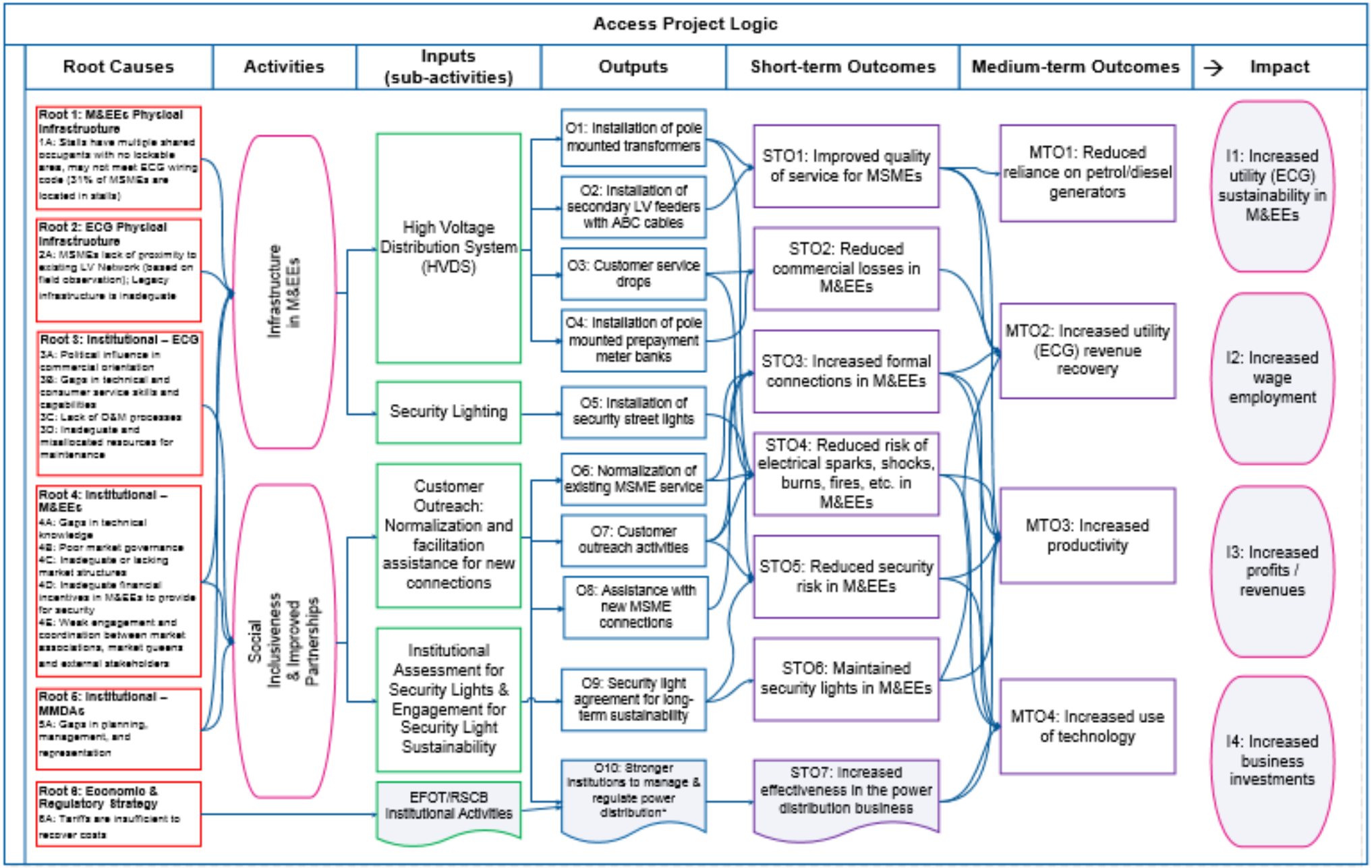
Result Statement	ERR linked	Level	Indicator	Unit	Definition	Modification	Original Assumptions & Rationale	Justification for Change
					on, or upgrading of existing power infrastructure under EEDSM.			

ADDITIONAL ANNEXES: PROJECT LOGICS

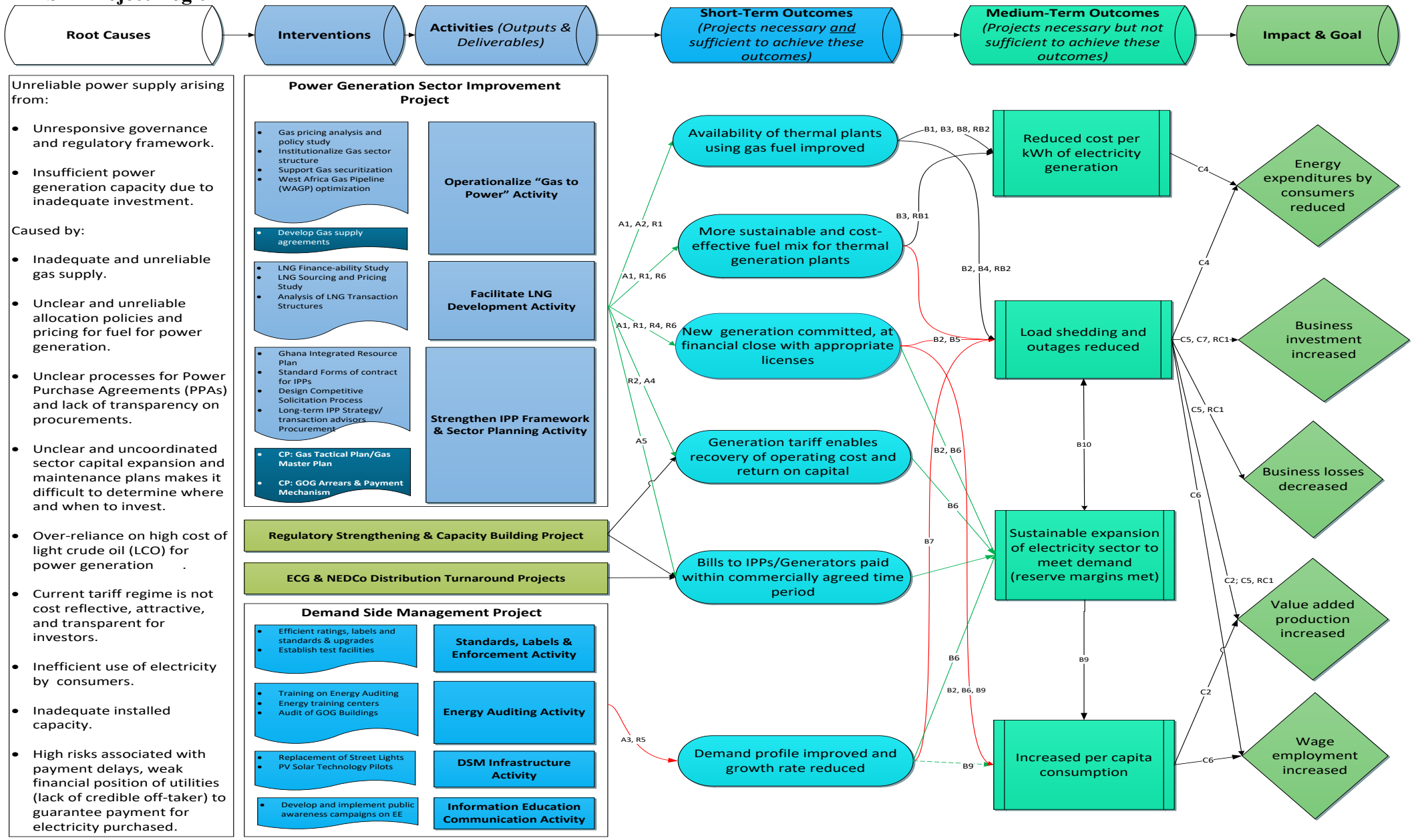
ECG Financial and Operational turnaround Project Logic



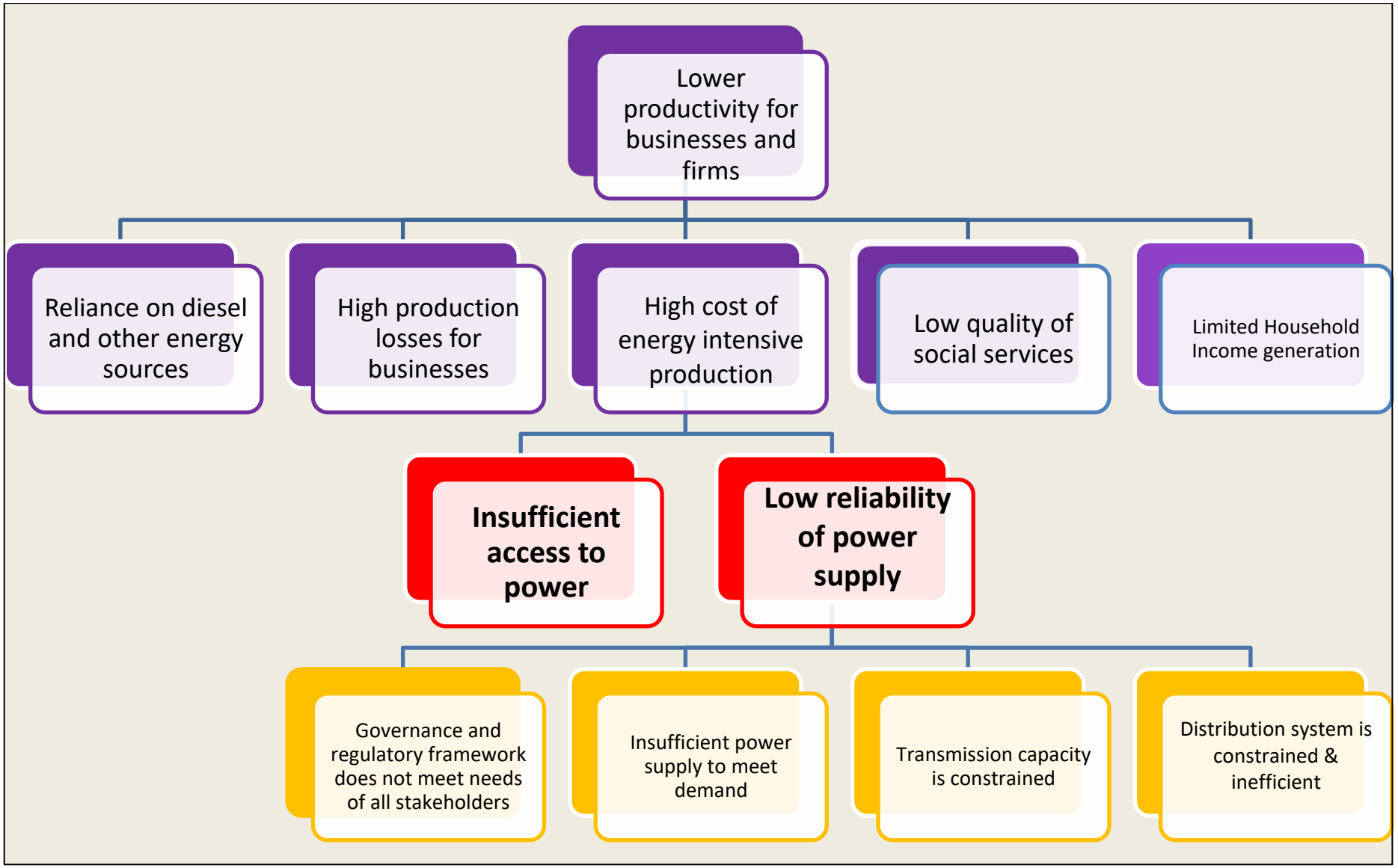
Access Project Logic


Access Project Logic
Root Causes
Activities
Inputs (sub-activities)
Outputs
Short-term Outcomes
Medium-term Outcomes
Impact
Root 1: M&EEs Physical Infrastructure
1A: Stalls have multiple shared occupants with no lockable area, may not meet ECG wiring code (31% of MSMEs are located in stalls)
Root 2: ECG Physical Infrastructure
2A: MSMEs lack of proximity to existing LV Network (based on field observation); Legacy infrastructure is inadequate
Root 3: Institutional – ECG
3A: Political influence in commercial orientation
3B: Gaps in technical and consumer service skills and capabilities
3C: Lack of O&M processes
3D: Inadequate and misallocated resources for maintenance
Root 4: Institutional – M&EEs
4A: Gaps in technical knowledge
4B: Poor market governance
4C: Inadequate or lacking market structures
4D: Inadequate financial incentives in M&EEs to provide for security
4E: Weak engagement and coordination between market associations, market queens and external stakeholders
Root 5: Institutional – MMDAs
5A: Gaps in planning, management, and representation
Root 6: Economic & Regulatory Strategy
6A: Tariffs are insufficient to recover costs
Infrastructure in M&EEs
Social Inclusiveness & Improved Partnerships
High Voltage Distribution System (HVDS)
Security Lighting
Customer Outreach: Normalization and facilitation assistance for new connections
Institutional Assessment for Security Lights & Engagement for Security Light Sustainability
EFOT/RSCB Institutional Activities
O1: Installation of pole mounted transformers
O2: Installation of secondary LV feeders with ABC cables
O3: Customer service drops
O4: Installation of pole mounted prepayment meter banks
O5: Installation of security street lights
O6: Normalization of existing MSME service
O7: Customer outreach activities
O8: Assistance with new MSME connections
O9: Security light agreement for long-term sustainability
O10: Stronger institutions to manage & regulate power distribution*
STO1: Improved quality of service for MSMEs
STO2: Reduced commercial losses in M&EEs
STO3: Increased formal connections in M&EEs
STO4: Reduced risk of electrical sparks, shocks, burns, fires, etc. in M&EEs
STO5: Reduced security risk in M&EEs
STO6: Maintained security lights in M&EEs
STO7: Increased effectiveness in the power distribution business
MTO1: Reduced reliance on petrol/diesel generators
MTO2: Increased utility (ECG) revenue recovery
MTO3: Increased productivity
MTO4: Increased use of technology
I1: Increased utility (ECG) sustainability in M&EEs
I2: Increased wage employment
I3: Increased profits / revenues
I4: Increased business investments

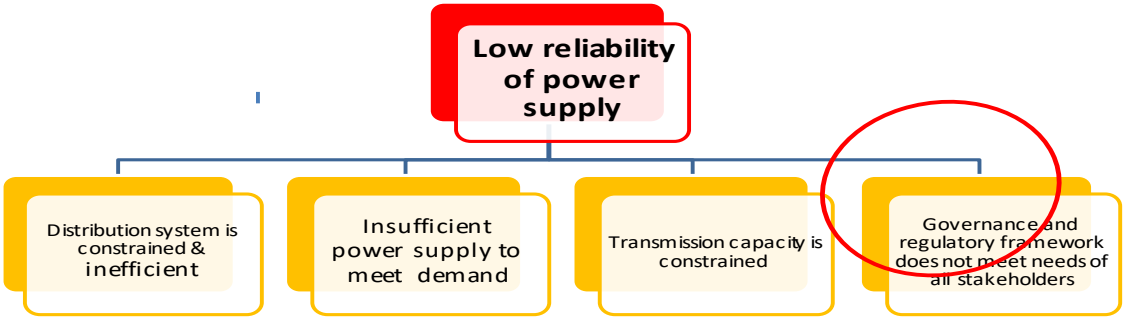
EEDSM Project Logic



ADDITIONAL ANNEXES: PROBLEM TREE

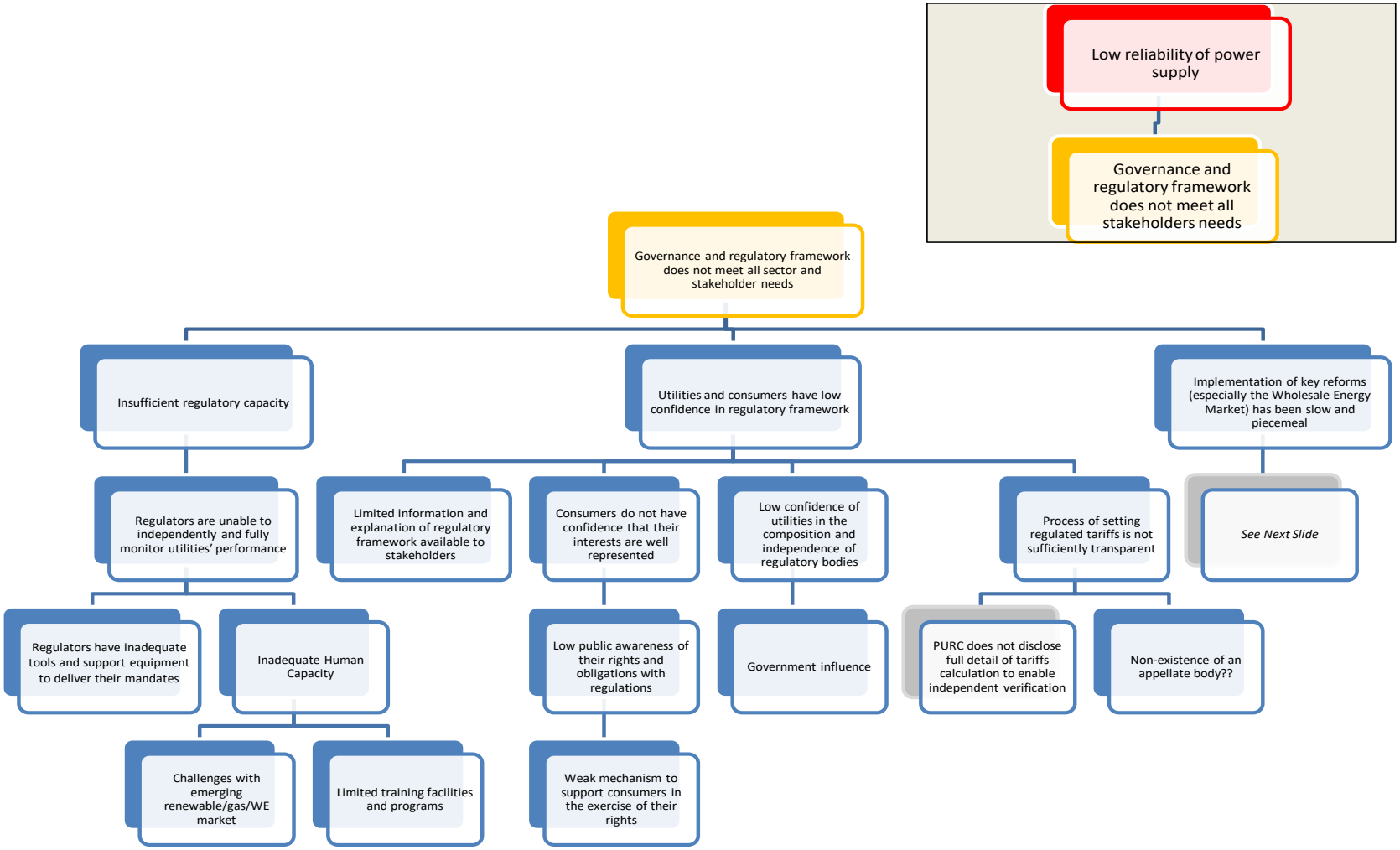


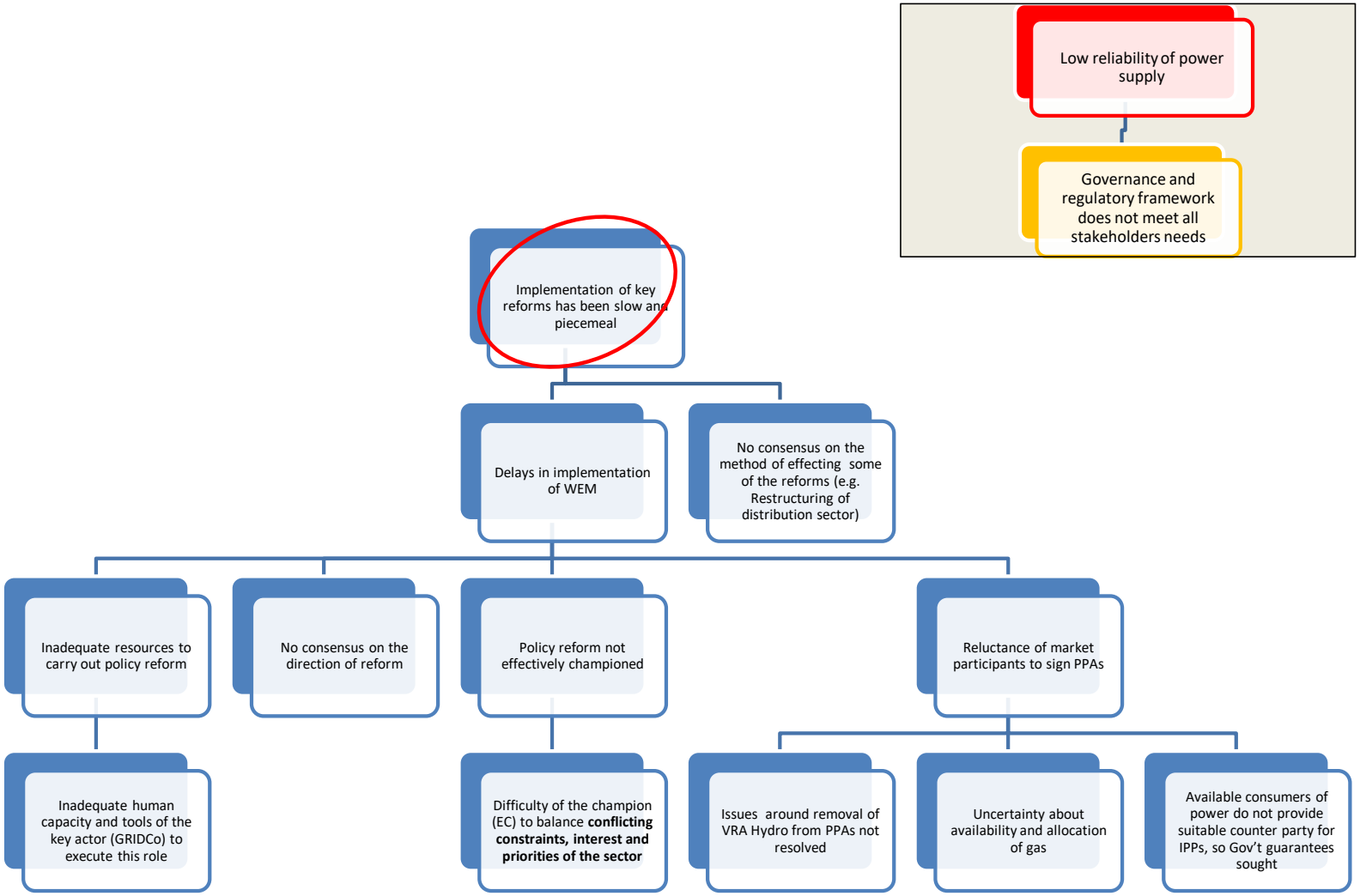
1a.



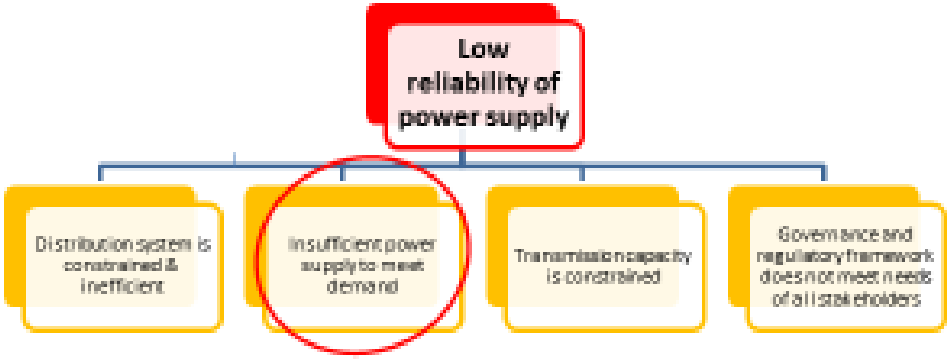
Ghana Power Sector Problem Tree Node:

"THE GOVERNANCE & REGULATORY FRAMEWORK DOES NOT MEET THE NEEDS OF ALL STAKEHOLDERS"


Low reliability of power supply
Governance and regulatory framework does not meet all stakeholders needs
Governance and regulatory framework does not meet all sector and stakeholder needs
Insufficient regulatory capacity
Utilities and consumers have low confidence in regulatory framework
Implementation of key reforms (especially the Wholesale Energy Market) has been slow and piecemeal
Regulators are unable to independently and fully monitor utilities' performance
Limited information and explanation of regulatory framework available to stakeholders
Consumers do not have confidence that their interests are well represented
Low confidence of utilities in the composition and independence of regulatory bodies
Process of setting regulated tariffs is not sufficiently transparent
See Next Slide
Regulators have inadequate tools and support equipment to deliver their mandates
Inadequate Human Capacity
Low public awareness of their rights and obligations with regulations
Government influence
PURC does not disclose full detail of tariffs calculation to enable independent verification
Non-existence of an appellate body??
Challenges with emerging renewable/gas/WE market
Limited training facilities and programs
Weak mechanism to support consumers in the exercise of their rights

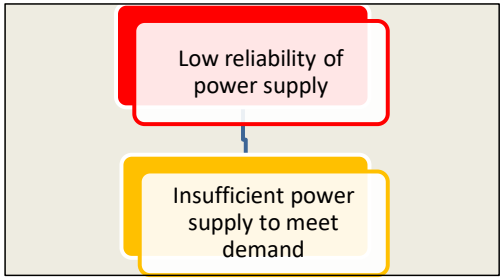

Low reliability of power supply
Governance and regulatory framework does not meet all stakeholders needs
Implementation of key reforms has been slow and piecemeal
Delays in implementation of WEM
No consensus on the method of effecting some of the reforms (e.g. Restructuring of distribution sector)
Inadequate resources to carry out policy reform
No consensus on the direction of reform
Policy reform not effectively championed
Reluctance of market participants to sign PPAs
Inadequate human capacity and tools of the key actor (GRIDCo) to execute this role
Difficulty of the champion (EC) to balance conflicting constraints, interest and priorities of the sector
Issues around removal of VRA Hydro from PPAs not resolved
Uncertainty about availability and allocation of gas
Available consumers of power do not provide suitable counter party for IPPs, so Gov't guarantees sought

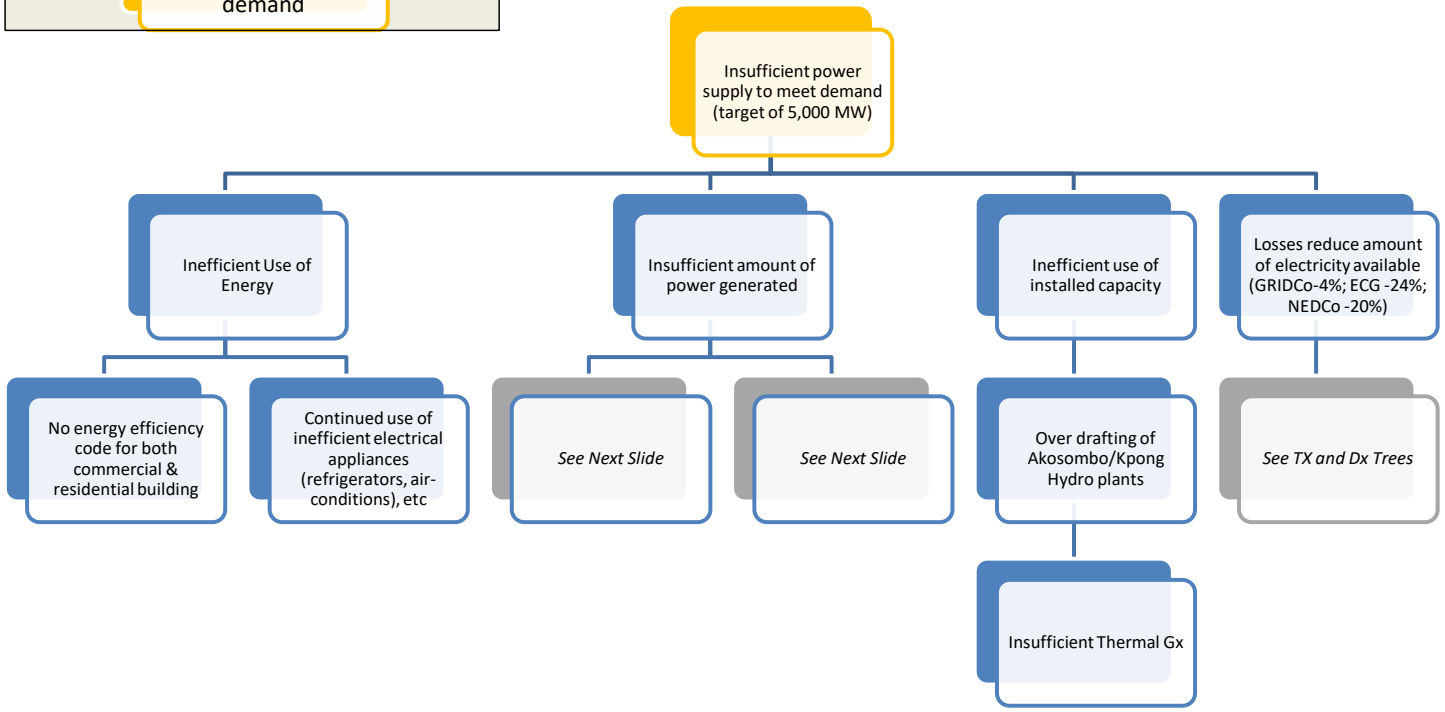
1b.

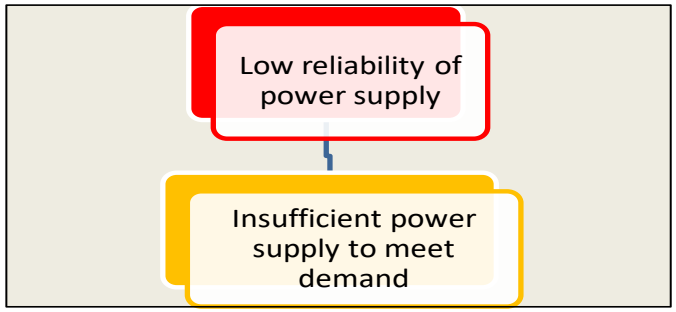


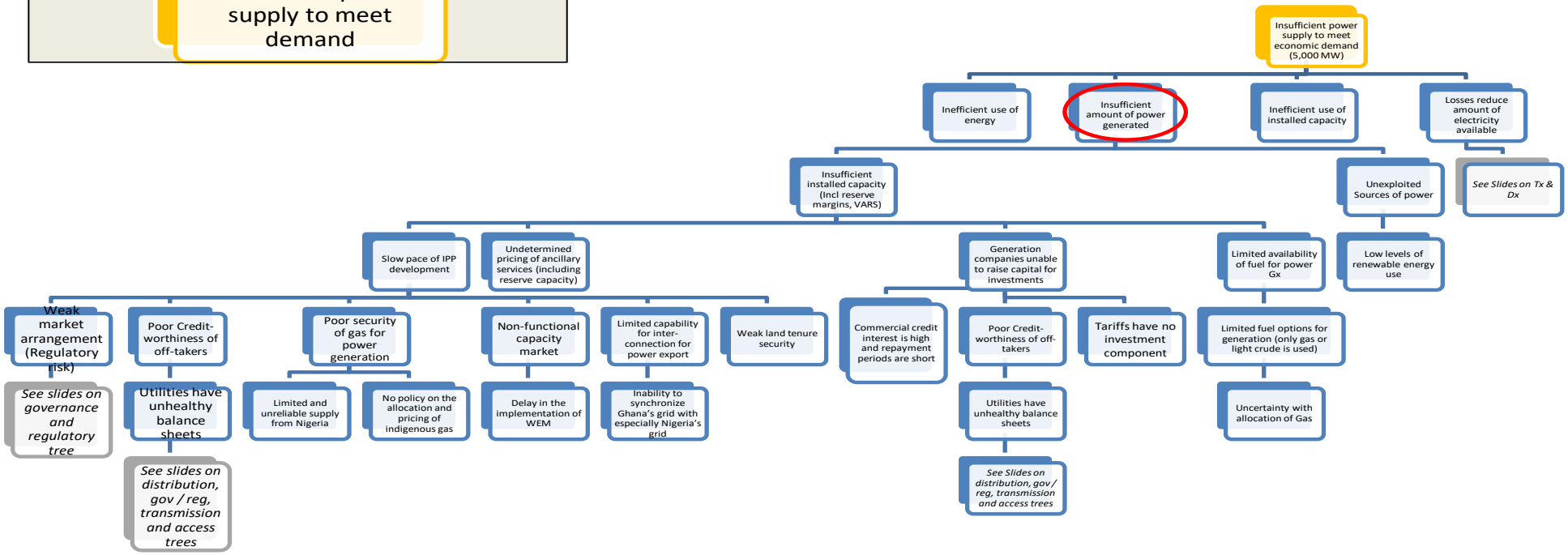
Ghana Power Sector Problem Tree Node:

"INSUFFICIENT POWER SUPPLY TO MEET ECONOMIC DEMAND"

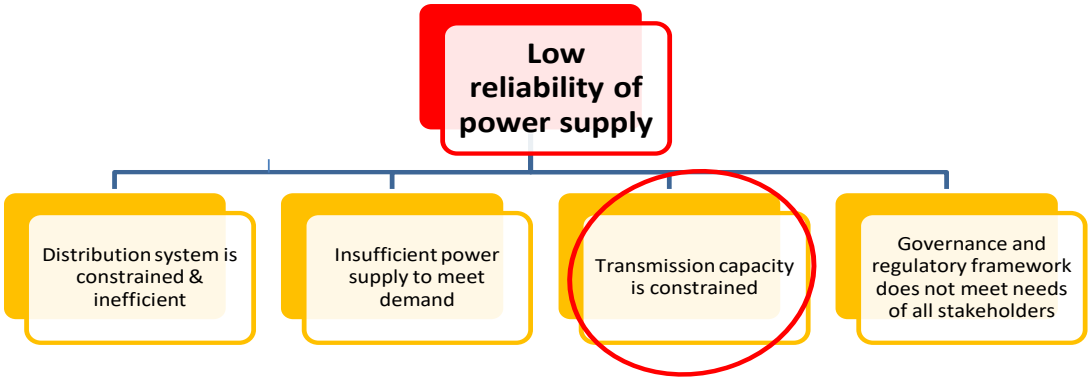

Low reliability of power supply
Insufficient power supply to meet demand


Insufficient power supply to meet demand (target of 5,000 MW)
Inefficient Use of Energy
Insufficient amount of power generated
Inefficient use of installed capacity
Losses reduce amount of electricity available (GRIDCo-4%; ECG -24%; NEDCo -20%)
No energy efficiency code for both commercial & residential building
Continued use of inefficient electrical appliances (refrigerators, air-conditions), etc
See Next Slide
See Next Slide
Over drafting of Akosombo/Kpong Hydro plants
See TX and Dx Trees
Insufficient Thermal Gx


Low reliability of power supply
Insufficient power supply to meet demand

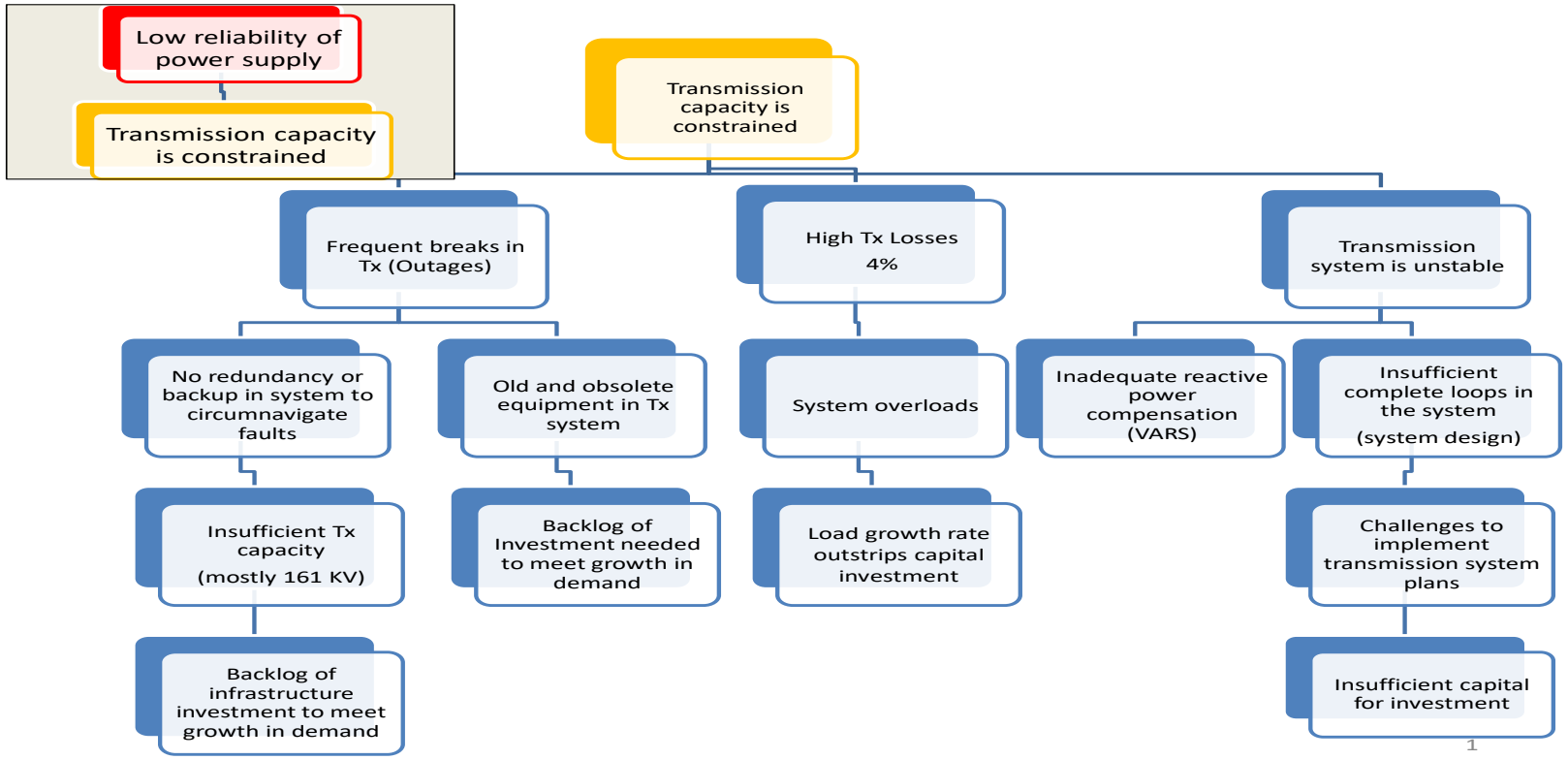

Insufficient power supply to meet economic demand (5,000 MW)
Inefficient use of energy
Insufficient amount of power generated
Inefficient use of installed capacity
Losses reduce amount of electricity available
See Slides on Tx & Dx
Insufficient installed capacity (Incl reserve margins, VARS)
Unexploited Sources of power
Low levels of renewable energy use
Slow pace of IPP development
Undetermined pricing of ancillary services (including reserve capacity)
Generation companies unable to raise capital for investments
Limited availability of fuel for power Gx
Weak market arrangement (Regulatory risk)
Poor Credit-worthiness of off-takers
Poor security of gas for power generation
Non-functional capacity market
Limited capability for inter-connection for power export
Weak land tenure security
Commercial credit interest is high and repayment periods are short
Poor Credit-worthiness of off-takers
Tariffs have no investment component
Limited fuel options for generation (only gas or light crude is used)
See slides on governance and regulatory tree
Utilities have unhealthy balance sheets
Limited and unreliable supply from Nigeria
No policy on the allocation and pricing of indigenous gas
Delay in the implementation of WEM
Inability to synchronize Ghana's grid with especially Nigeria's grid
Utilities have unhealthy balance sheets
Uncertainty with allocation of Gas
See slides on distribution, gov / reg, transmission and access trees
See Slides on distribution, gov / reg, transmission and access trees

1c.

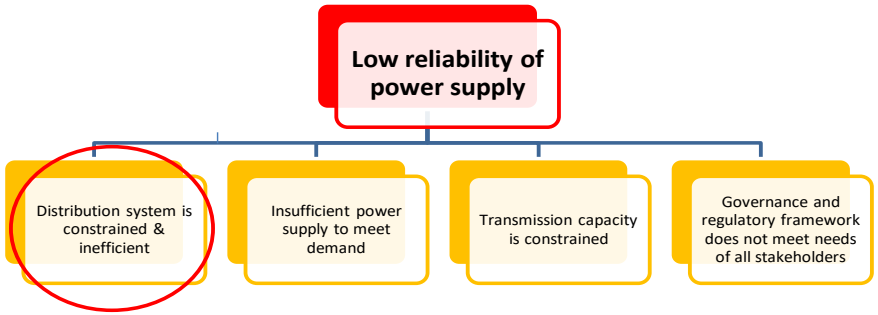


Ghana Power Sector Problem Tree Node:

"TRANSMISSION CAPACITY IS CONSTRAINED"

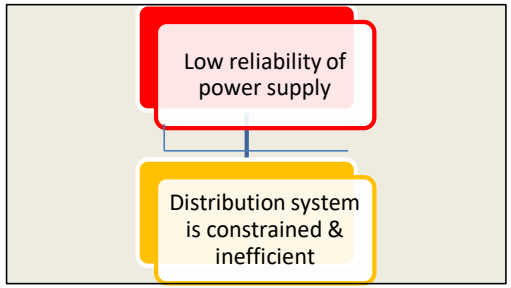

Low reliability of power supply
Transmission capacity is constrained
Transmission capacity is constrained
Frequent breaks in Tx (Outages)
High Tx Losses 4%
Transmission system is unstable
No redundancy or backup in system to circumnavigate faults
Old and obsolete equipment in Tx system
System overloads
Inadequate reactive power compensation (VARS)
Insufficient complete loops in the system (system design)
Insufficient Tx capacity (mostly 161 KV)
Backlog of Investment needed to meet growth in demand
Load growth rate outstrips capital investment
Challenges to implement transmission system plans
Backlog of infrastructure investment to meet growth in demand
Insufficient capital for investment
1

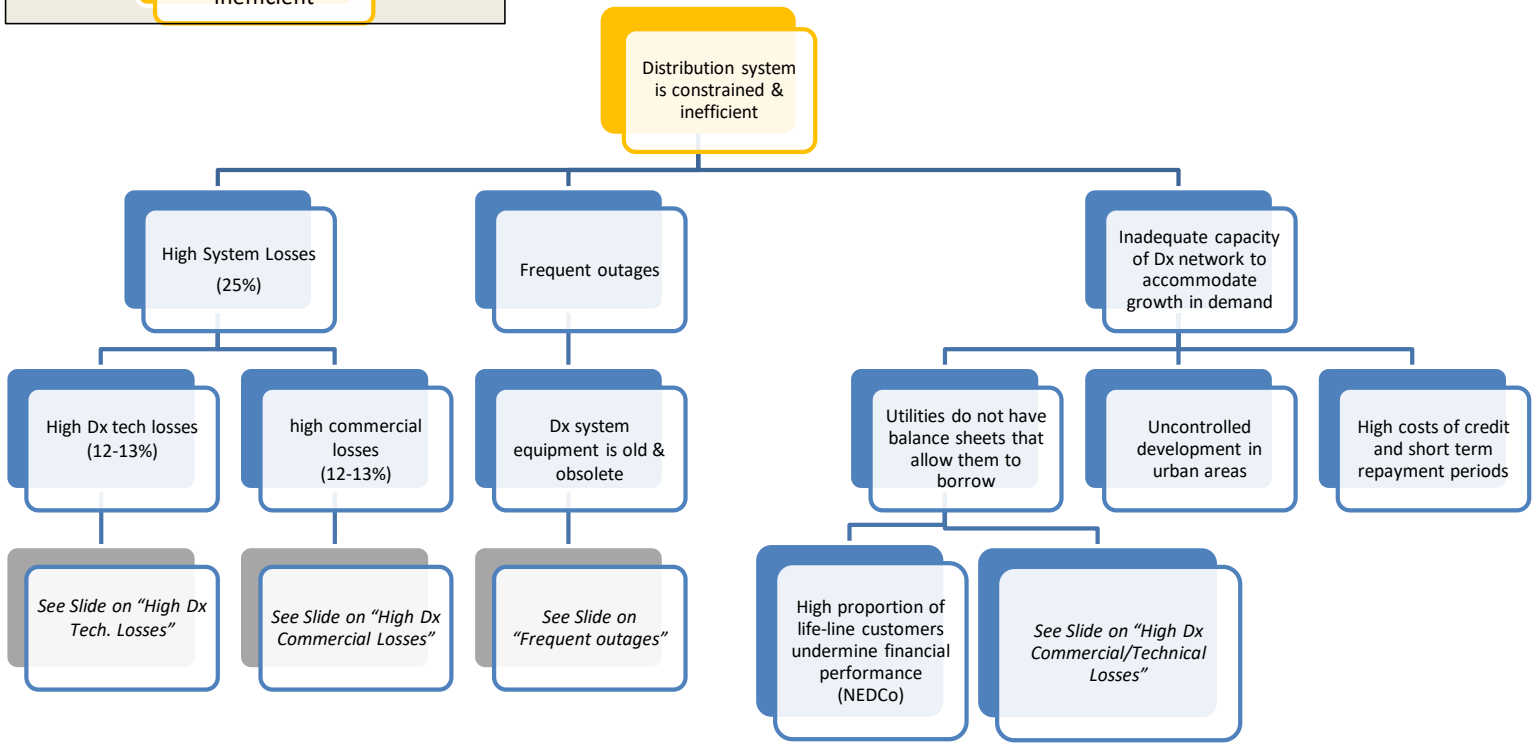
1d.

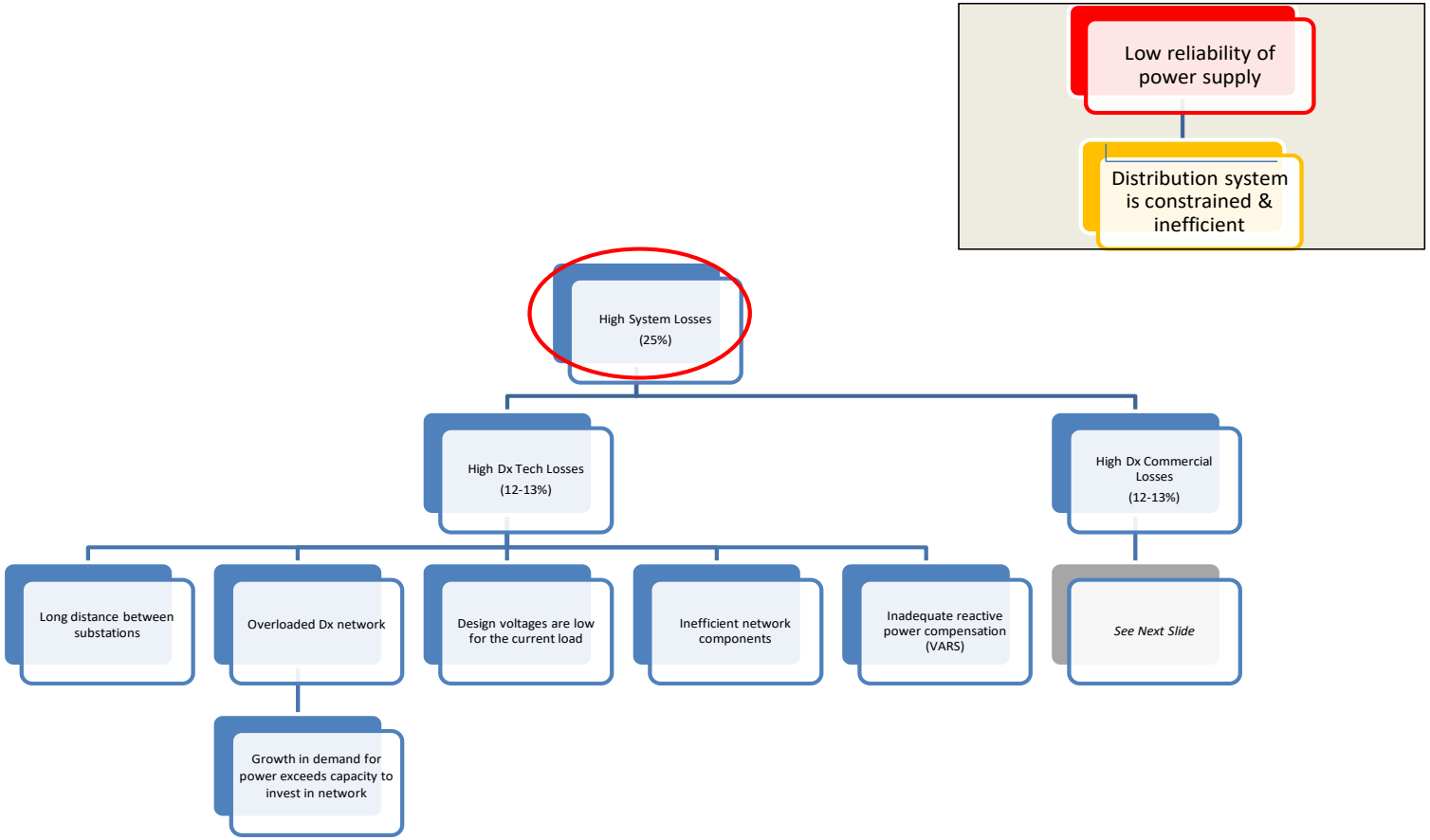


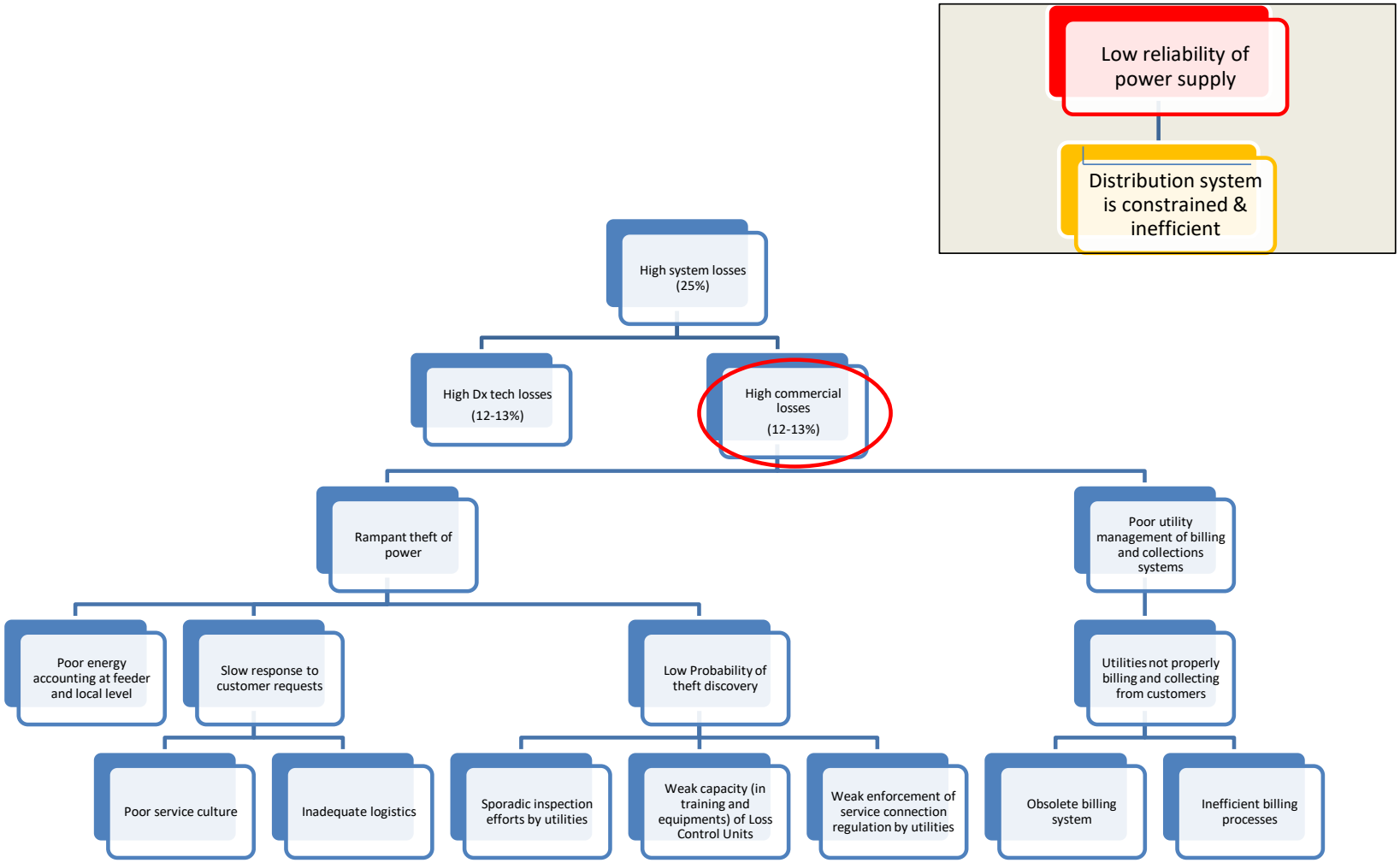
Ghana Power Sector Problem Tree Node:

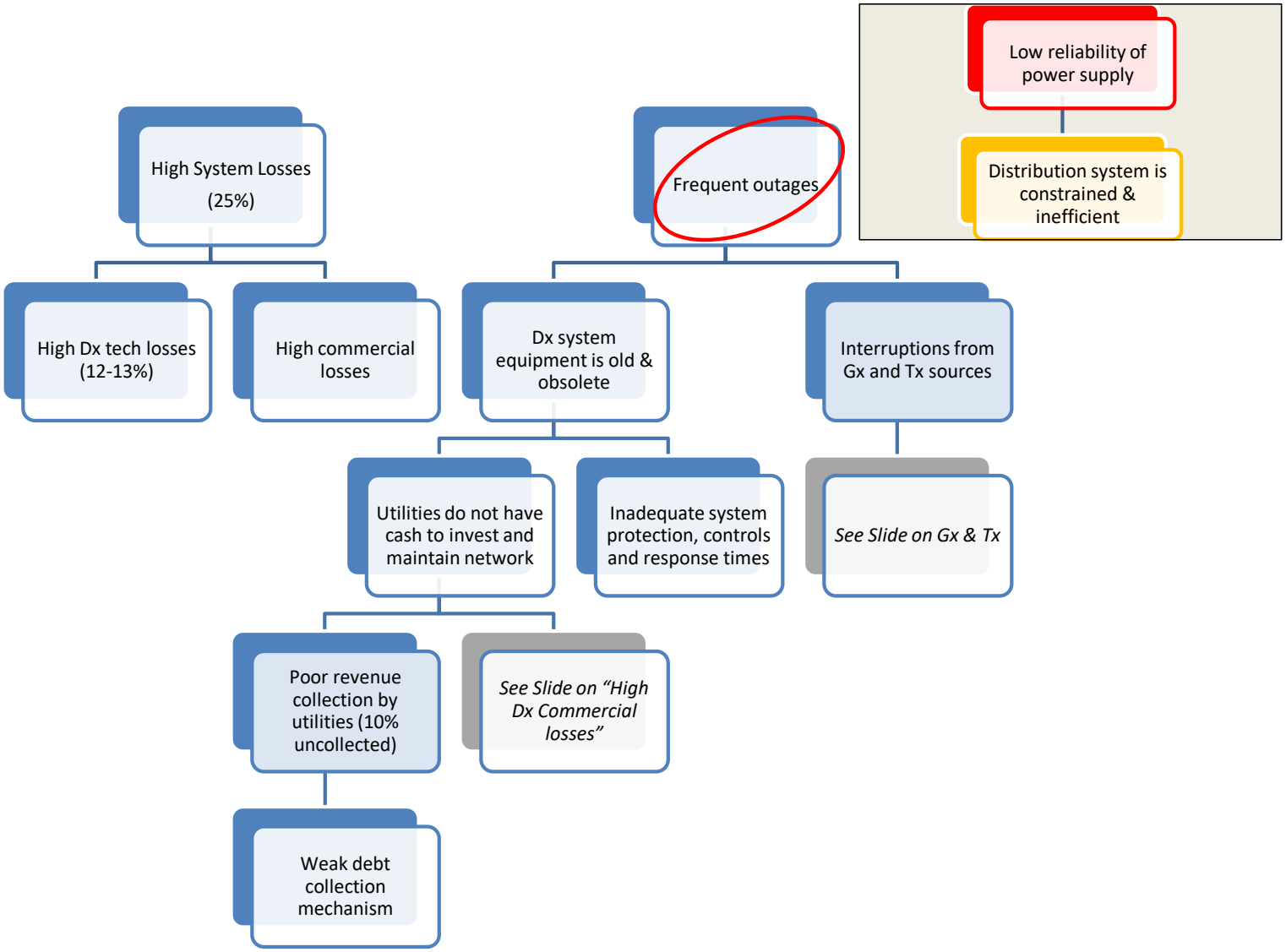
"DISTRIBUTION SYSTEM IS CONSTRAINED AND INEFFICIENT"

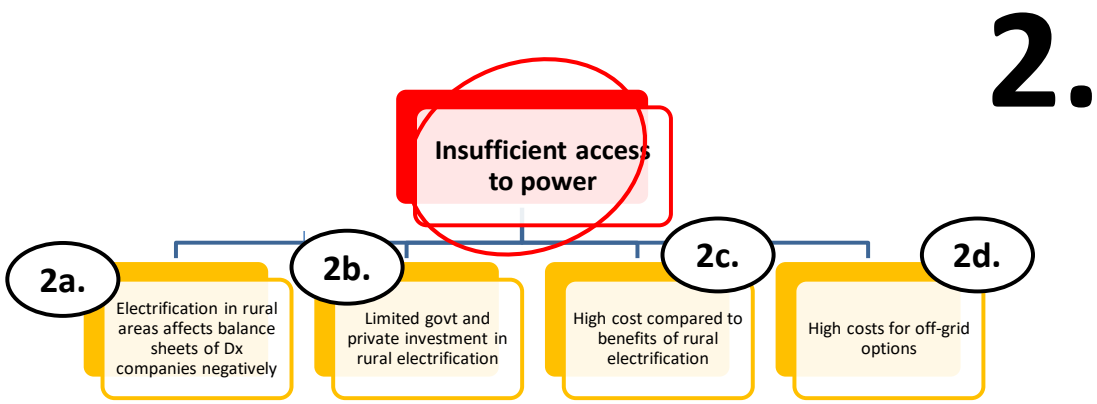

Low reliability of power supply
Distribution system is constrained & inefficient


Distribution system is constrained & inefficient
High System Losses (25%)
Frequent outages
Inadequate capacity of Dx network to accommodate growth in demand
High Dx tech losses (12-13%)
high commercial losses (12-13%)
Dx system equipment is old & obsolete
Utilities do not have balance sheets that allow them to borrow
Uncontrolled development in urban areas
High costs of credit and short term repayment periods
See Slide on "High Dx Tech. Losses"
See Slide on "High Dx Commercial Losses"
See Slide on "Frequent outages"
High proportion of life-line customers undermine financial performance (NEDCo)
See Slide on "High Dx Commercial/Technical Losses"


Low reliability of power supply
Distribution system is constrained & inefficient
High System Losses (25%)
High Dx Tech Losses (12-13%)
High Dx Commercial Losses (12-13%)
Long distance between substations
Overloaded Dx network
Design voltages are low for the current load
Inefficient network components
Inadequate reactive power compensation (VARS)
See Next Slide
Growth in demand for power exceeds capacity to invest in network

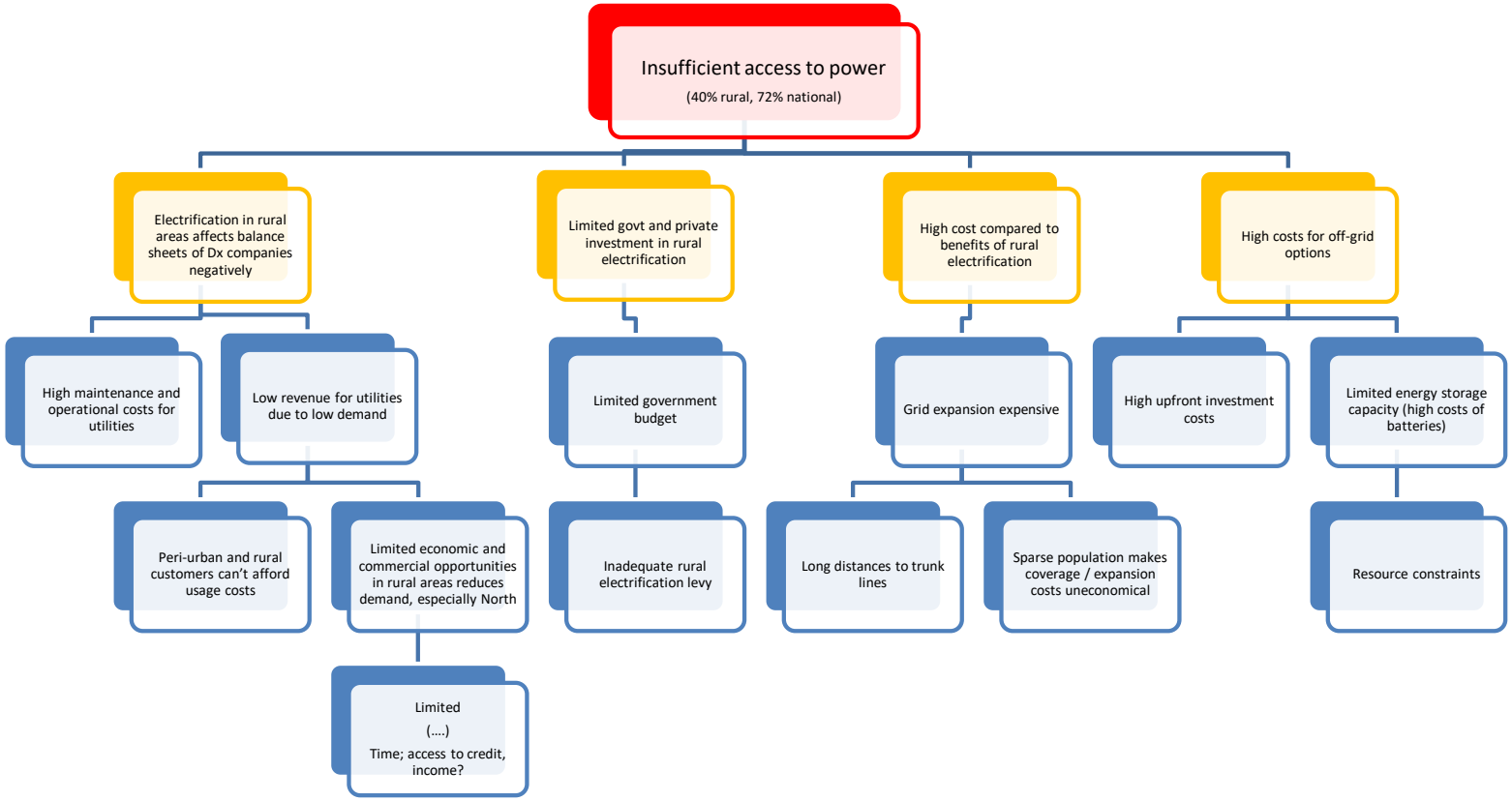

Low reliability of power supply
Distribution system is constrained & inefficient
High system losses (25%)
High Dx tech losses (12-13%)
High commercial losses (12-13%)
Rampant theft of power
Poor utility management of billing and collections systems
Poor energy accounting at feeder and local level
Slow response to customer requests
Low Probability of theft discovery
Utilities not properly billing and collecting from customers
Poor service culture
Inadequate logistics
Sporadic inspection efforts by utilities
Weak capacity (in training and equipments) of Loss Control Units
Weak enforcement of service connection regulation by utilities
Obsolete billing system
Inefficient billing processes


Low reliability of power supply
Distribution system is constrained & inefficient
High System Losses (25%)
Frequent outages
High Dx tech losses (12-13%)
High commercial losses
Dx system equipment is old & obsolete
Interruptions from Gx and Tx sources
Utilities do not have cash to invest and maintain network
Inadequate system protection, controls and response times
See Slide on Gx & Tx
Poor revenue collection by utilities (10% uncollected)
See Slide on "High Dx Commercial losses"
Weak debt collection mechanism



Ghana Power Sector Problem Tree Node:

"INSUFFICIENT ACCESS TO POWER"


Insufficient access to power
(40% rural, 72% national)
Electrification in rural areas affects balance sheets of Dx companies negatively
Limited govt and private investment in rural electrification
High cost compared to benefits of rural electrification
High costs for off-grid options
High maintenance and operational costs for utilities
Low revenue for utilities due to low demand
Limited government budget
Grid expansion expensive
High upfront investment costs
Limited energy storage capacity (high costs of batteries)
Peri-urban and rural customers can't afford usage costs
Limited economic and commercial opportunities in rural areas reduces demand, especially North
Inadequate rural electrification levy
Long distances to trunk lines
Sparse population makes coverage / expansion costs uneconomical
Resource constraints
Limited
(....)
Time; access to credit, income?