

Tanzania - Zanzibar Interconnector

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Overview

Identification

COUNTRY

Tanzania

EVALUATION TITLE

Zanzibar Interconnector

EVALUATION TYPE

Independent Performance Evaluation

ID NUMBER

DDI-MCC-TZA-IE-ENERGY-2010-v1

Version

VERSION DESCRIPTION

Not applicable to this evaluation; no quantitative data to be shared

Overview

ABSTRACT

The Mathematica team designed the evaluation of the cable activity in close cooperation with MCC, MCA-T, and stakeholders in Zanzibar. The impact evaluation will address four research

questions. These research questions are answered with different sets of data, but together contribute to answering an overarching question about the extent of the cable activity's impact.

The four research questions are:

- Research question 1—What is the impact of the cable activity on the reliability and quality of electricity supply on Unguja Island?
- Research question 2—What is the impact of the cable activity on the financial performance of hotels on Unguja Island?
- Research question 3—What were the effects on hotel operations of the extended power outage (“blackout”) in Unguja Island from December 2009 through March 2010?
- Research question 4—Is the cable activity warranted based on the benefit-cost analyses? (Re-estimation of the project's economic rate of return.)

One planned component of the evaluation was a pre-post study using ZECO data on aggregate electricity consumption, reliability, quality, and connectivity in Zanzibar; that component will not be carried out due to concerns about data quality.

The other component of the evaluation involves a pre-post analysis of hotel survey data. The hotel survey is meant to be a case study focusing on a specific key industry that is sensitive to electricity supply. This case study is used as a proxy for how businesses may be affected by power quality and reliability. The survey questions related to the blackout are meant to provide some indication of the nature and potential magnitude of the impacts that can be expected from the cable activity by reducing blackouts.

EVALUATION METHODOLOGY

Pre-Post

UNITS OF ANALYSIS

Hotels

KIND OF DATA

Sample survey data [ssd]

KEYWORDS

Energy, Performance evaluation, pre-post, Zanzibar

Coverage

GEOGRAPHIC COVERAGE

Unguja Island

UNIVERSE

The evaluation will use two sets of data to answer the first three research questions. For the baseline study, the study team collected electricity supply data from ZECO and carried out surveys of hotels.

Producers and Sponsors

PRIMARY INVESTIGATOR(S)

Name	Affiliation
Mathematica Policy Research, Inc.	Independent Evaluator

FUNDING

Name	Abbreviation	Role
Millennium Challenge Corporation	MCC	

Metadata Production

METADATA PRODUCED BY

Name	Abbreviation	Affiliation	Role
Millennium Challenge Corporation	MCC		Review of Metadata

DATE OF METADATA PRODUCTION

2014-04

DDI DOCUMENT VERSION

Version 1 (April 2014)

DDI DOCUMENT ID

DDI-MCC-TZA-IE-ENERGY-2010-v1

MCC Compact and Program

COMPACT OR THRESHOLD

Tanzania Compact I

PROGRAM

Tanzania has one of the lowest electrification rates in the world, with only about ten percent of the population benefiting from electric power service. Where electricity is available, the quality of supply is poor and blackouts and service interruptions are common. Consequently, businesses, individuals, and service providers suffer from the lack of access to reliable, affordable and modern energy services. The Energy Sector Project aims to improve the quality and increase the quantity of electricity to businesses and households, thereby increasing investment potential. The Energy Sector Project will add new supply and transmission capacity to improve reliability and quality of energy and new distribution capacity to extend access to electricity to communities and businesses not currently served with electricity. The Energy Sector Project consists of the three Project Activities. Tanzania Electric Supply Company Limited ("TANESCO") was the Implementing Entity for each Project Activity of the Energy Sector Project. For the Zanzibar Interconnector Activity, TANESCO will coordinate and consult with Zanzibar Electricity Corporation ("ZECO"). This evaluation covers the Zanzibar Interconnector Activity.

According to the Compact, MCC Funding would be used to increase the electric power supply to Zanzibar's Unguja Island by laying a submarine transmission cable, to make associated investments to increase the capacity of certain overhead transmission lines and to rehabilitate the main substation near Zanzibar Town. Specifically, MCC Funding would support: (i) Final design, and an environmental assessment, together with any resulting RAPs (consistent with World Bank Operational Policy 4.12) and EMPs, each as needed and as satisfactory to the MCC, and occupational health and safety standards. (ii) Construction and installation of an approximately 40 km-long, 132kV, 100MW capacity submarine electric transmission cable (including telecom fiber optic shield wire) from Ras Kiromoni on the mainland to Ras Fumba on Unguja Island. (iii) Installation of a 132kV switchgear at Ubungo substation and laying of an approximately 20 km-long, supplementary 132kV overhead line along an existing transmission line from Ubungo to Ras Kiromoni. (iv) Laying of an approximately 22 km-long, supplementary 132kV overhead line along an existing transmission line from Ras Fumba to Mtoni substation. (v) Adding 120MVA of 132/33kV transformation capacity to the Mtoni substation on Unguja Island. (vi) Capacity building and technical support for TANESCO and ZECO, including assistance with preparation of engineering design and bidding documents, tender review, supervision of construction, project management, and quality control. (vii) Project coordination and construction supervision of all improvements and upgrades under the Zanzibar Interconnector Activity.

MCC SECTOR

Energy (Energy)

PROGRAM LOGIC

The program logic anticipated that, by improving the reliability and quality of electricity supply on Unguja Island, the cable activity would have a range of economic benefits that would contribute to economic growth and poverty reduction in Zanzibar. The program logic assumed that more reliable and better quality supply would: (i) allow the Zanzibar Electricity Company (ZECO) to connect more customers, as the greater cable capacity allows it to meet greater demand; (ii) allow existing customers to consume more energy; and (iii) reduce the costs associated with having poor power quality and reliability, the most substantial of which is the cost of backup power.

Sampling

Study Population

The evaluation will use two sets of data to answer the first three research questions. For the baseline study, the study team collected electricity supply data from ZECO and carried out surveys of hotels.

Sampling Procedure

Thirty hotels were surveyed three times each in the months of June, July, and August 2010. We used a master list of 306 hotels (based on data from 2008) provided by the Zanzibar Commission for Tourism as the sampling frame to select the 30 hotels that we sampled for the survey. To remain in the sample, hotels were required to have: (i) ten or more rooms, to distinguish the hotels in the sample from smaller guesthouse-like operations; and (ii) an international grade of at least one star. After applying those restrictions, 45 hotels were put into the potential sample pool. The remaining hotels were then randomly assigned a number and sorted from lowest to highest. The Mathematica team made initial contact with the hotels based on the order of that list. If a hotel was out of business, was not connected to the ZECO's electricity network, or refused to participate in the survey, it was replaced with the next hotel on the list. A local Zanzibari consultant worked with a representative from the Zanzibar Commission for Tourism to make first contacts with the hotels.

Questionnaires

No content available

Data Collection

Data Collection Dates

Start	End	Cycle
2010-06-01	2010-08-31	N/A

Data Processing

No content available

Data Appraisal

No content available