

# Lesotho - Urban & Peri-Urban Water, and Metolong Dam

Report generated on: May 29, 2020

Visit our data catalog at: <https://data.mcc.gov/evaluations/index.php>

## Overview

### Identification

---

**COUNTRY**

Lesotho

**EVALUATION TITLE**

Urban & Peri-Urban Water, and Metolong Dam

**EVALUATION TYPE**

Independent Impact Evaluation

**ID NUMBER**

DDI-MCC-LSO-WASH-SI-UPUWMD-2018-v3

### Version

---

**VERSION DESCRIPTION**

Anonymized dataset for public distribution

## Overview

---

**ABSTRACT**

**BACKGROUND:** MCC's \$362.5 million (2008-2013) Lesotho Compact provided \$105.6 million for the Metolong Program's bulk water supply and the Urban and Peri-Urban Water Activity's rehabilitation and expansion works. These investments were based on the theory that improving water supply infrastructure would increase access to and reliability of quality water. This was expected to lead to time savings and reduced illness for households, thereby increasing incomes, and to increased investment by industry. A final performance and impact evaluation was designed to answer questions related to implementation and functionality, management and sustainability, and ultimate impacts on consumers. **METHODS:** This ex-post evaluation includes both performance and impact evaluation methodologies and was conducted in two phases. The first phase included a process evaluation with an implementation fidelity exercise, for which data collection included site visits, key informant interviews, document review, and secondary data analysis. In the second phase, a summative evaluation was conducted, which included two quasi-experimental impact evaluation designs using propensity score matching to measure Metolong Program and Urban and Peri-Urban Water program impacts of improved access and supply in intervention areas where implementation fidelity was highest, plus Customer Surveys in all other towns. Water quality tests (for E. coli and free chlorine residual at the tap and E. coli at the point of consumption), were carried out in all towns, and focus groups were carried out in all impact evaluation and customer survey sites as well as in a small selection of rural villages along the Metolong downstream conveyance to investigate unanticipated effects. All surveying was conducted face-to-face using electronic data collection on mobile devices. Other data collection focused on industry is described further in the evaluation report. **FINDINGS:** Process Evaluation --The Metolong Program, centered around the construction of a new dam, was implemented faithfully. Highly functioning water treatment works increased bulk water supply to Maseru and its surrounds by 75-94 megaliters per day. The Urban and Peri-Urban Water Activity, centered in the rehabilitation, improvement, and expansion of urban water networks, increased storage capacity and network coverage while installing poorly designed intake and treatment plant infrastructure in some sites, requiring repair at the water utility's expense. Impact Evaluation -- Households in townships supplied by Metolong and those not supplied by Metolong alike reported already high levels of service reliability before the intervention. Accordingly, no significant impacts on time savings, water collection, water consumption, diarrheal illness, or water expenditures were detected for households supplied by Metolong. However, it is likely that given the design of the Metolong Program, its actual impact is to assure the supply in Maseru and surrounds into the long-term, rather than having any immediate acute effects at the household level. In peri-urban Maseru and in Semonkong, newly-connected households experienced significant time savings, increased water consumption, and decreased water collection. Unconnected households also experienced time savings, suggesting some positive spillovers. Households with new connections also reported lower prevalence of diarrheal illness among children under five, but differences are statistically insignificant, partially due to smaller than anticipated sample sizes.

**EVALUATION METHODOLOGY**

Ex-Post

**UNITS OF ANALYSIS**

For project impact: Households in Maseru, in Roma and Morija (both peri-urban towns near the capital of Maseru), and in Semonkong (a newly designated urban area in Maseru district)

For project implementation: Packages of water infrastructure and associated works in all towns included in the Compact (e.g. Metolong Water Treatment Works and downstream conveyance, urban water network in each town, etc.)

For project performance: Households in towns not included in the impact evaluation.

#### **KIND OF DATA**

Sample survey data [ssd]

#### **TOPICS**

<b>Topic</b>	<b>Vocabulary</b>	<b>URI</b>
Water, Sanitation and Hygiene	MCC Sector	

#### **KEYWORDS**

Lesotho, Water, Urban, Sub-Saharan Africa, Metolong Program, Urban and Peri-Urban Water Activity, Evaluation, WASH, Industry, Process Evaluation, Performance Evaluation

## Coverage

---

#### **GEOGRAPHIC COVERAGE**

The evaluation covers urban and peri-urban areas of Lesotho included in the Metolong Program and UPUW Activity under the MCC Lesotho Compact.

Specifically, these areas include:

Package 1: Maseru, Mazenod, Roma, Morija, Teyateyaneng

Package 2: Semonkong

Package 3: Mafeteng, Mohale's Hoek, Quthing, Qacha's Nek

Package 4: Mokhotlong, Butha-Buthe, Leribe

Package 5: Mapoteng

Evaluation results are representative at the following levels:

IE Design A Results relate to new customers and matched comparisons within 300m of the networks.

IE Design B Results are representative of existing customers in Maseru.

Customer Survey results are representative at the UPUW package level: One group is representative for Package 1 customers and the other for Package 3-5 customers. Customer survey results are not representative at the town level.

#### **UNIVERSE**

Impact evaluation in Roma & Morija as well as in Semonkong: All new customers (who have lived in the town since before completion of the works and connected after completion of the works; varies by site); All unconnected customers -- all within 300m from the network (eligibility boundaries) and having lived in the town since before connection of the works.

Impact evaluation in Maseru: All customers who connected before the Metolong Dam was commissioned in areas supplied by the Dam and in areas supplied by alternative sources.

Performance evaluation: WASCO customers in towns included in the Compact. Utility (WASCO). Industrial firms in Maseru in the garment & textile industry.

## Producers and Sponsors

---

**PRIMARY INVESTIGATOR(S)**

Name	Affiliation
Social Impact, Inc.	

**FUNDING**

Name	Abbreviation	Role
Millennium Challenge Corporation	MCC	

## Metadata Production

---

**METADATA PRODUCED BY**

Name	Abbreviation	Affiliation	Role
Millennium Challenge Corporation	MCC		Review of Metadata
Social Impact, Inc.	SI		Population of Metadata

**DDI DOCUMENT VERSION**

Version 2 (Final): The final metadata for the evaluation, including evaluation results from the Final Report.

**DDI DOCUMENT ID**

DDI-MCC-LSO-WASH-SI-UPUWMD-2018-v3

## MCC Compact and Program

---

**COMPACT OR THRESHOLD**

Lesotho Compact

**PROGRAM**

In a Compact with the Government of Lesotho (GoL) implemented between 2008 and 2013, the Millennium Challenge Corporation (MCC) aimed to address challenges in urban water supply through two major investments, including the Urban and Peri-Urban Water (UPUW) Activity and the Metolong Program (MP). Taken together, the objective of the UPUW Activity & Metolong Program was to ensure an adequate and reliable supply of high-quality water in urban areas of Lesotho, for domestic, commercial, and industrial use. The UPUW Activity was implemented in ten urban and peri-urban locations, each comprised of a tailored set of new or rehabilitated infrastructure. MCC co-financed the Metolong Program (MP) along with a consortium of other donors, to increase and provide a long-term, reliable bulk water supply to Maseru and surrounding areas.

**MCC SECTOR**

Water, Sanitation and Hygiene (WASH)

# Sampling

## Study Population

---

Impact evaluation in Roma & Morija as well as in Semonkong: All new customers (who have lived in the town since before completion of the works and connected after completion of the works; varies by site); All unconnected customers -- all within 300m from the network (eligibility boundaries) and having lived in the town since before connection of the works. Impact evaluation in Maseru: All customers who connected before the Metolong Dam was commissioned in areas supplied by the Dam and in areas supplied by alternative sources. Performance evaluation: WASCO customers in towns included in the Compact. Utility (WASCO). Industrial firms in Maseru in the garment & textile industry.

## Sampling Procedure

---

Household Surveys - varies by site

- In Maseru, sampled connected households using the WASCO customer database, in two groups: those in Metolong-supplied townships and those not in Metolong-supplied townships. All had to have been connected prior to the completion of the works.
- In Roma & Morija and Semonkong: A listing activity was first conducted for all households living within the 300m distance from the network, eligibility bounds. Connected status and duration of residence in the town was ascertained. Sampling was conducted randomly from the eligible households on this list.
- In all other towns, as well as for new customers in Maseru and existing customers in Roma & Morija, sampled connected households from the WASCO database; proportionally sampled those with existing connections vs. those connected following completion of the works.

Water Quality Tests:

- Random sub-sample of households from the household survey. Selected ex-ante and programmed the module into electronic program to activate when required.

Other data collection:

- Focus groups: Conducted with newly connected and unconnected households in all towns covered by the study. Connected households were selected randomly from a subset of customers in each town who (i) had connected after the completion of UPUW Works in their town and (2) had a phone number in the WASCO database. Unconnected households were selected from a list of local unconnected households provided by local chiefs. In Maseru, additional focus groups were conducted with a randomly selected subset of WASCO customers in each town who (i) had connected before the commissioning of the Metolong Dam and (ii) had a phone number in the WASCO database.

Finally, four focus groups were conducted in rural villages along the Metolong Downstream Conveyance System. Sampling for these focus groups mirrored the procedure for the unconnected households in UPUW towns.

- Key informant interviews: Respondents were selected purposively, including stakeholders from the utility, Compact management, contractors, local authorities, and others knowledgeable about the Compact works.
- Industrial firms: selected purposively from a list of all textile and garment firms located in the Thetsane and Tikoe industrial estates in Maseru with intention to include firms with large numbers of employees and different production processes in each site.

## Weighting

---

For the impact evaluations, no weighting is required because the sample was selected randomly from the sampling frames. For the Customer Survey, households were sampled proportionally to their makeup in the sampling frame (existing customer or new customer) - but weights were applied to (i) capture the relative population of WASCO customers in each town that comprised the Package 1 and Package 3-5 groups for which the sample is meant to be representative and (ii) correct minor deviations from the sampling methodology in practice due to erroneous inclusion of sewer-only accounts in the sampling frame.

# Questionnaires

## Overview

---

- 1.) WASCO Staff and Other Water-Sector Stakeholder KII Guides: Semi-structured interview guides customized by service area and role meant to understand deviations from plans, current functionality, and management procedures for works funded by the project. Implemented with WASCO headquarters staff, regional managers, area managers, and operators as well as technical staff at the Metolong WTW. Also implemented with miscellaneous water sector stakeholders involved in project implementation, such as LMDA, the Metolong Authority, engineering firms, etc.
- 2.) Structured Observation Protocol: Spreadsheet tool pre-populated with planned works and functionality at each site to which actual works and functionality were compared. Also classifies management, funding, and operations and maintenance at each site.
- 3.) Implementation Fidelity Scorecard: Spreadsheet in which each site is scored on the dimensions of fidelity in design, installation, management/operations and maintenance, and funding of works. These scores total to a weighted overall implementation fidelity score.
- 4.) Household Survey: Quantitative survey targeting outcomes of interest, matching variables, and covariates for household beneficiaries. Modules include demographic and socioeconomic information, water use, sanitation, water-related illness, and expenditure. Applied for impact evaluation and customer survey households alike.
- 5.) Household FGD Guide: FGD guide meant to inform viability of quantitative design and help explain quantitative results. Topics include selection into treatment, experience of interventions, potential spillover effects, WASH practices, potential bias and confounding factors, and outcomes of interest. An adapted version was applied regarding the same topics for households in rural villages along the Metolong Downstream Conveyance.
- 6.) Industry KII Guide: Semi-structured interview guide meant to characterize outcomes for industry-level beneficiaries including topics such as pre-Compact perceptions of water supply, industrial supply chain, current water usage, perceived impacts of the MP, and future expectations for industry.
- 7.) SME KII Guide: Semi-structured interview guide meant to characterize outcomes for SME-level beneficiaries including topics such as factors in and constraints to SME growth, SME usage of water, and future expectations for SMEs.
- 8.) Local Chief KII Guide: Semi-structured interview guide meant to characterize internal migration and housing market dynamics that could confound the viability of SI's experimental design.
- 9.) Lesotho Housing and Land Development Corporation KII Guide: Semi-structured interview guide meant to characterize internal migration and housing market dynamics that could confound the viability of SI's experimental design.

## Data Collection

### Data Collection Dates

Start	End	Cycle
2019-04-30	2019-07-21	N/A

### Data Collection Mode

Household Surveys: In person, using mobile Android devices, deploying SurveyCTO platform. Conducted by local firm contracted by SI. Water Quality Testing: mWater test kits for E. coli; Sensafe test strips for free and total chlorine residual. Focus Group Discussions: Groups of approximately 6-8 community members per group; in person discussions. Conducted by local firm contracted by SI, with exception of focus groups in downstream conveyance villages. Key Informant Interviews: In-person interviews conducted by two Evaluation Team members. Secondary Data: Discussions and permission from Lesotho BOS, WASCO, and LNDC to extract and utilize data for this evaluation.

### Questionnaires

- 1.) WASCO Staff and Other Water-Sector Stakeholder KII Guides: Semi-structured interview guides customized by service area and role meant to understand deviations from plans, current functionality, and management procedures for works funded by the project. Implemented with WASCO headquarters staff, regional managers, area managers, and operators as well as technical staff at the Metolong WTW. Also implemented with miscellaneous water sector stakeholders involved in project implementation, such as LMDA, the Metolong Authority, engineering firms, etc.
- 2.) Structured Observation Protocol: Spreadsheet tool pre-populated with planned works and functionality at each site to which actual works and functionality were compared. Also classifies management, funding, and operations and maintenance at each site.
- 3.) Implementation Fidelity Scorecard: Spreadsheet in which each site is scored on the dimensions of fidelity in design, installation, management/operations and maintenance, and funding of works. These scores total to a weighted overall implementation fidelity score.
- 4.) Household Survey: Quantitative survey targeting outcomes of interest, matching variables, and covariates for household beneficiaries. Modules include demographic and socioeconomic information, water use, sanitation, water-related illness, and expenditure. Applied for impact evaluation and customer survey households alike.
- 5.) Household FGD Guide: FGD guide meant to inform viability of quantitative design and help explain quantitative results. Topics include selection into treatment, experience of interventions, potential spillover effects, WASH practices, potential bias and confounding factors, and outcomes of interest. An adapted version was applied regarding the same topics for households in rural villages along the Metolong Downstream Conveyance.
- 6.) Industry KII Guide: Semi-structured interview guide meant to characterize outcomes for industry-level beneficiaries including topics such as pre-Compact perceptions of water supply, industrial supply chain, current water usage, perceived impacts of the MP, and future expectations for industry.
- 7.) SME KII Guide: Semi-structured interview guide meant to characterize outcomes for SME-level beneficiaries including topics such as factors in and constraints to SME growth, SME usage of water, and future expectations for SMEs.
- 8.) Local Chief KII Guide: Semi-structured interview guide meant to characterize internal migration and housing market dynamics that could confound the viability of SI's experimental design.
- 9.) Lesotho Housing and Land Development Corporation KII Guide: Semi-structured interview guide meant to characterize internal migration and housing market dynamics that could confound the viability of SI's experimental design.

### Data Collectors

Name	Abbreviation	Affiliation
Forcier Consulting		

## **Data Processing**

No content available

## Data Appraisal

No content available