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Impact Evaluation Design Report

Jordan Compact – Water Smart Homes

March 2019

DISCLAIMER

CONTENTS

ACRONYMS

Acronym	Definition
DQA	Data Quality Assurance
EDR	Evaluation Design Report
FGD	Focus Group Discussion
GOJ	Government of Jordan
HH	Household
IHWM	In-Home Water Management
ISW	Infrastructure Works
KII	Key Informant Interview
MCC	Millennium Challenge Corporation
NAF	National Aid Fund
NGO	Non-Governmental Organization
SI	Social Impact
US	United States
WPP	Women Plumbers Program
WSH	Water Smart Homes

1. OVERVIEW

The Water Smart Homes (WSH) evaluation is intended to explore the three activities under the WSH program:

- Activity 1: Outreach campaign
- Activity 2: Direct assistance program
- Activity 3: Women plumbers program

Throughout this Evaluation Design Report (EDR), we reference the Impact Evaluation Design Report[1] prepared by Social Impact for the evaluation of the Millennium Challenge Corporation's (MCC) five-year Compact with the Government of Jordan (GOJ). At the time of approval of the Compact EDR, there was insufficient information about the Water Smart Homes Activity to produce an evaluation design. It was determined then that an evaluation component could be proposed at a later date, but that the scope of this evaluation would have to be commensurate with the small scale of the investment relative to the main infrastructures.

This document expands on the approach to the Water Smart Homes evaluation detailed in Annex F of the Compact EDR. Table 1 below summarizes the data collection events used in the evaluation of each WSH Activity. The methodology for each Activity is detailed in the following sections.

Table 1: Data collection approaches by activity

Data Collection Event	Activity 1: Outreach Campaign	Activity 2: Direct Assistance Program	Activity 3: Women Plumbers Program
Seasonal 2 Backcheck Survey	X		
Endline Household Survey	X		
Semi-Quantitative NAF Interviews	X	X	
NAF Focus Group Discussions (Unfunded)*		X	
Women Plumber Key Informant Interviews			X

* SI proposed a set of Focus Group Discussions (FGDs) with NAF beneficiaries to complement the semi-quantitative survey; however, this component was not funded by MCC. The methodology for the FGDs is detailed in Annex A.

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[1] Social Impact, Inc. (2014). *Impact Evaluation Design Report: Jordan Compact – Water Network, Wastewater Network, and As-Samra Expansion Projects*. Retrieved from: https://data.mcc.gov/evaluations/index.php/catalog/103/download/482

2. ACTIVITY 1: OUTREACH CAMPAIGN

2.1 Background

Activity Description: The WSH Outreach Campaign aimed to promote water conservation behaviors and investments in Zarqa, targeting a variety of communication channels. The communications strategy was developed following a needs assessment conducted by the implementing consultant Cowater. The needs assessment helped to "segment target audiences, develop messages, and identify most appropriate and effective communication channels that would most likely lead to behavior change." Messages were disseminated through interpersonal channels (religious "waethat", NAF, and women NGO networks; tribal "madafa" networks, and school education), and distribution of differentiated communication materials (interpersonal messages, posters/banners, news and social media channels, pamphlets, toolkits and water bottles, and educational videos).

Project Participants: Cowater determined that women play a large role in in-house water management (IHWM), while men commonly make household decisions related to the water utility. The assessment identified children as influential persons within families, who could contribute to behavior change. Therefore, the primary audience was household decision makers on IHWM, mainly but not exclusively women. The secondary audience was mainly comprised of male and female elementary school children.

Geographic Coverage: Surveys conducted prior to implementation revealed that Zarqa customers who were connected to the public system had a low perception of water quality from the system. These customers were not aware of how water quality would change within household systems over time, and due to behaviors, this often led to persistence of unsafe water habits. These studies showed demand for targeted education and awareness on household water practices. The Outreach Campaign was targeted in Zarqa governorate to align with the rest of the Compact activities.

2.2 Methodology

Evaluation Methodology: As mentioned above, the evaluation of the Water Smart Homes program was not included in the initial impact evaluation design. Therefore SI did not include WSH questions in the household baseline or midline surveys. After approval from MCC on a draft WSH design (Annex F of the Compact EDR), the evaluation team piloted a WSH Outreach module to test for message recall within the first data collection event following approval. This data collection event was a backcheck on the household seasonal 2 survey conducted from November-December 2016. The team then embedded the module into the existing household survey research, including it in the household endline survey conducted from April-June 2018. The inclusion of the WSH Outreach module in both the seasonal 2 backcheck and household surveys came at minimal additional cost to MCC since the module was integrated with preexisting research. Finally, we included the WSH Outreach module in the NAF survey conducted in February-March 2019 to test for recall and behavior change in this distinct population. Sample details for each of these surveys are detailed in the sampling section below.

The evaluation for the Water Smart Homes Outreach Campaign is an ex-post design, using different methods for respondents from the household survey sample versus households from the NAF beneficiary survey sample. For the household sample, the evaluation is an impact evaluation using a difference-in-difference (DiD) panel analysis. For the NAF sample, the evaluation is a cross-sectional impact evaluation

using post-intervention means comparisons and multivariable regression (controlling for potential household confounders) of outcomes across treated and untreated households with NAF beneficiaries. The primary purpose of the NAF survey is the evaluation described under Activity 2 below, though we built the Outreach section into the NAF survey as well. However, the NAF beneficiary evaluation may not be powered to detect differences in final outcomes that may be of interest due to evaluation budget constraints that limited the sample size.

Table 2: Data sources in relation to the WSH Outreach Campaign project logic

Evaluation Question	Result in Project Logic	Key Outcomes (Survey Module)	Data source	Data type
Did the WSH messaging campaign lead to significant changes in household water handling and storage, that manifested in a) improved water potability and b) improved water efficiency at the household level?	Increased access to information on IHWM best practices among the population of Zarqa	Recall of specific WSH messages (Section V. Prior Exposure to Water, Sanitation & Hygiene Messages)	Heads of household or spouses in Zarqa and Amman	Quantitative and semi-quantitative surveys (HH/backcheck/NAF)
(Same evaluation question throughout table)	Increased household water storage	Storage and use of household water (Section VIII. Water Sources and Water Behaviors)	Heads of household or spouses in Zarqa and Amman	Quantitative and semi-quantitative surveys (HH/backcheck/NAF)
(Same evaluation question throughout table)	Improved household water practices	Households in Zarqa demonstrating improved IHWM (Section V. Prior Exposure to Water, Sanitation & Hygiene Messages; Section IX: Sanitation)	Heads of household or spouses in Zarqa and Amman	Quantitative and semi-quantitative surveys (HH/backcheck/NAF)
(Same evaluation question throughout table)	Reduced disease	Cases of diarrhea & other water-borne diseases (Section VII. Diarrheal and Other Water-Related Diseases)	Heads of household or spouses in Zarqa and Amman	Quantitative and semi-quantitative surveys (HH/backcheck/NAF)
(Same evaluation question throughout table)	Reduced workdays missed	Time missed from work due to illness or caretaking of affected individual (Section VII. Diarrheal and Other Water-Related Diseases)	Heads of household or spouses in Zarqa	Quantitative and semi-quantitative surveys (HH/backcheck/NAF)

(Same evaluation question throughout table)	Reduced health care expenses	Money spent on treatment for family members (Section VII. Diarrheal and Other Water-Related Diseases)	Heads of household or spouses in Zarqa and Amman	Quantitative and semi-quantitative surveys (HH/backcheck/NAF)
(Same evaluation question throughout table)	Increased school attendance	Time missed from school due to illness or caretaking of affected individual (Section VII. Diarrheal and Other Water-Related Diseases)	Heads of household or spouses in Zarqa	Quantitative and semi-quantitative surveys (HH/backcheck/NAF)
(Same evaluation question throughout table)	Reduced costs to households in meeting water needs	Monthly household costs of purchasing and using tanker and shop water (Section VIII. Water Sources and Water Behaviors)	Heads of household or spouses in Zarqa and Amman	Quantitative and semi-quantitative surveys (HH/backcheck/NAF)

Timeframe of Exposure: The Outreach Campaign was implemented between September 2015 and August 2016. The first data collection event to be completed in totality after implementation was the seasonal 2 backcheck survey conducted from November-December 2016 (for which only a subsample of 345 respondents were interviewed). For this sample, given the timing of the intervention, the time elapsed since the initial exposure would have been 3-16 months depending on the date of exposure to messages or participation in awareness-raising events. The reason for the small sample was that the primary focus of the survey was to conduct an in-depth data quality assurance (DQA) review rather than a standalone piece of the evaluation. Thus, we decided to follow up on the Outreach Campaign evaluation by including these questions in the more robust household endline survey (n=3850). The time elapsed since initial exposure in this case would have been 20-33 months, depending on the specific date of exposure to messaging or participation in awareness-raising events. The Outreach Campaign questions are included in the NAF survey as well in order to test recall among this distinct population. The time elapsed since initial exposure for this data collection event would have been 30-43 months. This timing is important in interpreting results from each of these data collection events, because while the *duration* of exposure would not have changed across surveys (since all occurred after the completion of the campaign), recall is likely to have changed owing to the difference in proximity to the campaign.

Table 3: WSH Outreach Campaign data collection events

Data Collection	Timing	Sample Unit/ Respondent	Sample Size	Relevant Instruments/ Modules	Data Collection Firm
Seasonal 2 backchecks	11/2016-12/2016	Household/Head of household or spouse	345	Backcheck survey/questions on recall of 4 promotional messages; water consumption behavior	id:rc
Endline Household Survey	4/2018-6/2018	Household/Head of household or spouse	3850 (estimated)	Household survey/ questions on recall of 4 promotional messages; water consumption behavior	Ipsos
Semi-quantitative interviews with NAF beneficiaries	2/2019-3/2019	NAF beneficiary head of household or spouse in Zarqa who received/did not receive infrastructure grants	140 (95 treatment; 45 comparison)	NAF survey/questions on recall of 4 promotional messages; water consumption behavior	Ipsos

2.3 Sampling

Sample size and associated assumptions and calculations:

Seasonal 2 Backcheck Survey: The sample size for this survey was based on DQA specifications for the Seasonal 2 household survey.

Endline Household Survey: Detailed sample calculations for the household survey can be found in the Compact EDR.[2] The sampling strategy for both the Seasonal 2 Backcheck and Household Surveys follows the strategy for the household survey, also detailed in the main Compact EDR.
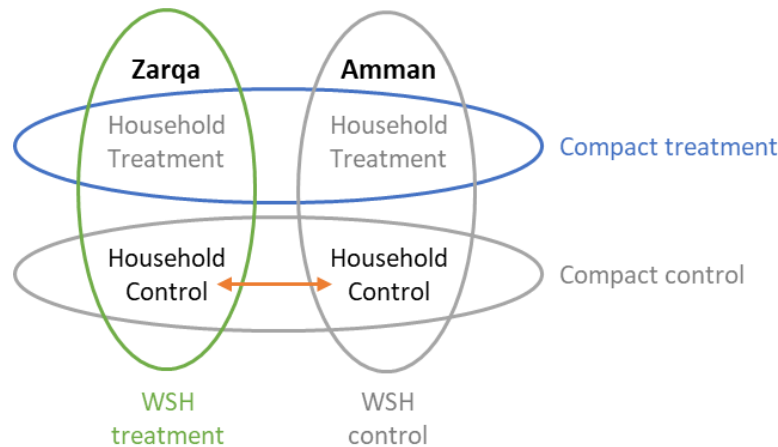
Semi-Quantitative Interviews with NAF Beneficiaries: The sample size listed in the EDR for the WSH qualitative work (now NAF semi-quantitative surveys) is 150 households. We arrived at 150 from a budgetary perspective, and divided the sample into 100 treatment households and 50 controls. We chose to sample a larger number of treatments than controls to cover the largest variety of specific infrastructure improvements possible within our treatment sample. After multiple rounds of revisions and cuts during the procurement stage for the WSH activity, the evaluation team made the decision with concurrence from MCC to cut 10 participants from the sample size in order to keep the procurement under the data collection ceiling for WSH. The sample was reduced to 95 treatment households and 45 controls.

Sample frame:

Seasonal 2 Backcheck Survey & Endline Household Survey: Given the breadth of the WSH Outreach Campaign, we decided to test whether households in the primary household survey sample for the impact evaluation recognized the WSH behavior change messages and made changes following exposure to such messages. This message recall was folded into back-checks of the seasonal survey data with a random sub-sample of the overall household sample, and repeated with the complete sample as part of the endline household survey. The treatment group for the Outreach Campaign within the household survey sample are households that were sampled for the household survey as controls (i.e., they were not exposed to the Compact's main water and wastewater infrastructure interventions, but only to the Zarqa-wide outreach campaigns) and are located in Zarqa, where the WSH Outreach Campaign activities took place. The control group are households that were sampled for the household survey as controls and are located in Amman, where the WSH Outreach Campaign was not implemented. This sampling approach is displayed in **Error! Reference source not found.** below. Though comparing household s urvey controls in Amman to those in Zarqa will allow us to isolate the effects of the WSH Outreach Campaign from the rest of the Compact activities, we are aware that there may be differences outside of the WSH intervention between Zarqa and Amman participants. Some of these, specifically time-invariant differences, are accounted for due to the matching approach used to select comparable control zones in Zarqa and Amman. We will attempt to control for time-varying differences in our analysis.

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[2] *Ibid.*

Figure 1: Water Smart Homes household survey sampling

<u>Semi-Quantitative Interviews with NAF Beneficiaries</u>: Participants in the NAF beneficiary semi-quantitative interviews will be sampled from lists of NAF households constructed and shared by Cowater. SI will draw a stratified random sample of NAF beneficiaries that received and did not receive infrastructure grants. The sample will include replacements. Due to the small sample size of this activity, the data collection will likely not be powered to provide definitive causal evidence on the impacts of this program. Selection into the intervention, confounding, and other threats preclude clean identification of impacts. More information about the sample is provided under the Activity 2 description below.

2.4 Analysis

Analysis Plan: The evaluation team will conduct means and regression-based comparisons to determine whether respondents in Zarqa (WSH treatment) recalled WSH behavior change messages more frequently than respondents in Amman (WSH comparison), and assess whether recall was associated with behavior change and economic outcomes. Since the household survey controls in Zarqa received WSH messaging, we will conduct DiD panel analysis comparing household survey Zarqa controls to their matched household survey controls in Amman. Comparing household survey controls in Amman to those in Zarqa will better isolate the effects of WSH from the rest of the Compact activities. With the inclusion of this activity in the NAF survey, we will also compare message recall between NAF beneficiaries in Zarqa and the general population.

We will present results from each of the three surveys (seasonal 2 backcheck, household endline, and NAF), and discuss any differences between the three sets of results. The seasonal 2 backcheck and household endline surveys will allow us to compare results between 3-16 months elapsed since exposure, and 20-33 months elapsed since exposure. Inclusion of the NAF survey will allow us to compare results among this group to the general population, and to check for any added effects the WSH Outreach Campaign may have had on recipients of other WSH activities (as discussed under Activity 2 below).

3. ACTIVITY 2: DIRECT ASSISTANCE PROGRAM

3.1 Background

Activity Description: The WSH Infrastructure Works (WSH-ISW) program aimed to address accessibility barriers to financing replacement work via household infrastructure grants.

Project Participants: The program selected recipients from a survey of roughly 11,000 National Aid Fund (NAF) beneficiaries living in Zarqa governorate who were located using information in NAF enrollment lists and an intensive field campaign. Based on the results of these surveys, 5,198 households were deemed eligible for infrastructure support, and were ranked in priority based on a composite eligibility score that included factors related to baseline infrastructure conditions, land tenure, and household socio-economic variables. In the end, 3,958 of NAF households benefited from the improvements; some of these were newly enrolled based on the evolution of the NAF lists between the original field survey and the time of implementation.

Geographic Coverage: The target audience for the WSH-ISW intervention was poor and under-consuming households who are connected to the public system in Zarqa. Zarqa was selected for the WSH-ISW program, as the Zarqa Governorate received the water network rehabilitation program and the population of NAF beneficiaries in Zarqa is large.

3.2 Methodology

Evaluation Methodology: The evaluation of the WSH-ISW program is a cross-sectional impact evaluation using post-intervention means comparisons and multivariable regression (controlling for potential household confounders) of outcomes across treated and untreated NAF households. One detail to note, however, is that this NAF beneficiary evaluation may not be powered to detect differences in final outcomes that may be of interest, due to budget constraints that limited the sample size.

Data Collection Approach: While specified in Annex F of the Compact EDR as qualitative work with NAF beneficiaries, this element of data collection shifted to a semi-quantitative survey in order to better align with outcomes listed in the project logic and displayed in the table above. The qualitative work was initially proposed as a cost saving measure; however, through the procurement process we found the cost of a solely qualitative study to be prohibitively high. Thus, we shifted our proposed approach to a semi-quantitative survey with 140 households paired with a series of Focus Group Discussions intended to probe in more detail the importance of household behavioral responses to the infrastructure support. This approach would have allowed us to give a detailed report on the pathways to outcomes listed in the project logic while providing insight to the quality of the WSH-ISW program and sustainability of the infrastructure improvements over time. Ultimately the FGDs were not approved by MCC, so the final evaluation design for this activity consists of the semi-quantitative survey alone. The section below details the semi-quantitative survey; details on the unfunded FGDs can be found in Annex A.

Table 4: Data sources in relation to the WSH Direct Assistance Program project logic

Evaluation Question	Result in Project Logic	Key Outcomes (Survey Module)	Data source	Data type
Did the WSH activity lead to infrastructure improvements among NAF beneficiaries?	Improved household water infrastructure	NAF households with sustained in-home water systems repairs/rehabilitated by WSH-ISW (Section 4: Water Subscriber Information & Recent Activity; Section 11: Infrastructure Observation)	Heads of households or spouses in Zarqa	Semi-quantitative survey (NAF); Focus group discussions
Did NAF beneficiaries experience economic benefits from these infrastructure and behavioral changes, specifically through reduced coping costs, increased household productivity, and/or improved health and well-being?	Improved IHWM among NAF households	NAF households in Zarqa demonstrating improved IHWM (Section 5: Prior Exposure to Water, Sanitation & Hygiene Messages)	Heads of households or spouses in Zarqa	Semi-quantitative survey (NAF); Focus group discussions
(Same as above)	Reduced disease	Cases of diarrhea & other water-borne diseases (Section 7: Diarrheal and Other Water-Related Diseases)	Heads of households or spouses in Zarqa	Semi-quantitative survey (NAF); Focus group discussions
(Same as above)	Reduced workdays missed	Time missed from work due to illness or caretaking of affected individual (Section 7: Diarrheal and Other Water-Related Diseases)	Heads of households or spouses in Zarqa	Semi-quantitative survey (NAF); Focus group discussions
(Same as above)	Reduced health care expenses	Money spent on treatment for family members (Section 7: Diarrheal and Other Water-Related Diseases)	Heads of households or spouses in Zarqa	Semi-quantitative survey (NAF); Focus group discussions
(Same as above)	Increased school attendance	Time missed from school due to illness or caretaking of affected individual (Section 7: Diarrheal and Other Water-Related Diseases)	Heads of households or spouses in Zarqa	Semi-quantitative survey (NAF); Focus group discussions
(Same as above)	Increased land value	Land value (Section 4: Water Subscriber Information & Recent Activity; Section 10: Income, Consumption & Assets)	Heads of households or spouses in Zarqa	Semi-quantitative survey (NAF); Focus group discussions

(Same as above)	Decreased use of tanker water and treatment shop water among NAF households	NAF households using tanker and treatment shop water (Section 8: Water Sources and Water Behaviors)	Heads of households or spouses in Zarqa	Semi-quantitative survey (NAF); Focus group discussions
(Same as above)	Reduced costs to households in meeting water needs	Monthly household costs of purchasing and using tanker and shop water (Section 8: Water Sources and Water Behaviors)	Heads of households or spouses in Zarqa	Semi-quantitative survey (NAF)

Timeframe of Exposure: The WSH-ISW program was implemented between April 2015 and August 2016. Due to the number of distinct data collection events being mobilized in the time immediately following WSH-ISW implementation, the evaluation was postponed until the higher priority surveys were complete (refugee, household, agriculture, enterprise). The survey will be conducted in February-March 2019, for a total of between 30 and 47 months since the initial exposure, depending on the date of construction for each household.

Table 5: WSH Direct Assistance Program data collection events

Data Collection	Timing	Sample Unit/ Respondent	Sample Size	Relevant instruments/modules	Data Collection Firm
Semi-quantitative interviews with NAF beneficiaries	12/2018-1/2018	NAF beneficiary head of household or spouse in Zarqa who <u>received</u> infrastructure grants	95	WSH infrastructure support, diarrheal and other water-related diseases, water sources and behaviors, income, consumption & assets	Ipsos
Semi-quantitative interviews with NAF beneficiaries	12/2018-1/2018	NAF beneficiary head of household or spouse in Zarqa who <u>did not receive</u> infrastructure grants	45	Infrastructure observation, diarrheal and other water-related diseases, water sources and behaviors, income, consumption & assets	Ipsos
Focus group discussions with NAF beneficiaries (Unfunded)	2/2018	NAF beneficiary head of household or spouse in Zarqa who <u>received</u> infrastructure grants	6 FGDs (4-6 participants each)	Protocol TBD	Social Impact
Focus group discussions with NAF beneficiaries (Unfunded)	2/2018	NAF beneficiary head of household or spouse in Zarqa who <u>did not receive</u> infrastructure grants	4 FGDs (4-6 participants each)	Protocol TBD	Social Impact

3.3 Sampling

Sample size and associated assumptions and calculations: The sample size listed in the EDR for the WSH qualitative work (now NAF semi-quantitative surveys) is 150 households. We arrived at 150 from a budgetary perspective, and divided the sample into 100 treatment households and 50 controls. We chose to sample a larger number of treatments than controls to cover the largest variety of specific infrastructure improvements possible within our treatment sample. After multiple rounds of revisions and cuts during the procurement stage for the WSH activity, the evaluation team made the decision with concurrence from MCC to cut 10 participants from the sample size in order to keep the procurement under the data collection ceiling for WSH. The sample was reduced to 95 treatment households and 45 controls.

Sample frame: WSH-ISW program participants were selected from a survey of roughly 11,000 National Aid Fund (NAF) beneficiaries living in Zarqa governorate who were located using information in NAF enrollment lists and an intensive field campaign. Based on the results of these surveys, 5,198 households were deemed eligible for infrastructure support, and were ranked in priority based on a composite eligibility score that included factors related to baseline infrastructure conditions, land tenure, and household socio-economic variables. In the end, 3,958 of NAF households benefited from the improvements; some of these were newly enrolled based on the evolution of the NAF lists between the original field survey and the time of implementation. The sample frame for the semi-quantitative interviews will be data from the prioritization survey conducted by Cowater, specifically the 5,198 households that were deemed eligible for infrastructure support. SI will determine which of these households received infrastructure grants using the WSH-ISW Site Information Master Table provided by MCC. The treatment group will be selected from NAF households who were eligible for WSH-ISW and received infrastructure grants. The control group will be selected from NAF households who were eligible for WSH-ISW but did not receive infrastructure grants. Because households were selected for the WSH-ISW program based on a composite score representing the household's need for assistance, it is expected that some differences may remain between the treatment and control groups. SI will control for as many of these factors as possible in the analysis, using data from the prioritization survey.

Sampling strategy: SI will draw a stratified random sample of NAF beneficiaries that received and did not receive infrastructure grants. The sample will include replacements. Due to the small sample size of this activity, the data collection will likely not be sufficient to provide definitive causal evidence on the effects of this program. Selection into the intervention, confounding, and other threats preclude clean identification of impacts. More information about the sample is provided in Table 5.
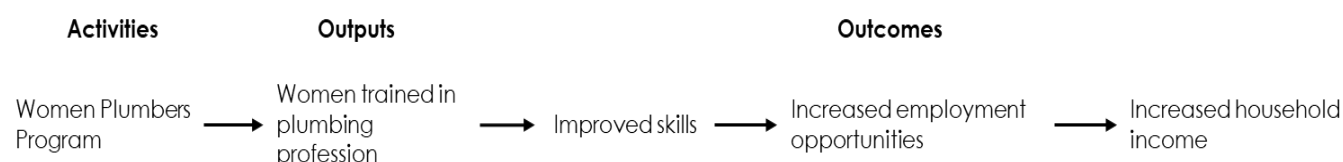
3.4 Analysis

Analysis Plan: We will conduct means comparisons of key outcomes across groups: NAF beneficiaries of WSH support, and those not benefitting. In addition, we will run regressions controlling for the main observed differences between those groups, acknowledging, in all reporting and discussion of these results, that unobservable confounding will remain a major threat.

4. ACTIVITY 3: WOMEN PLUMBERS PROGRAM

4.1 Background

Activity Description: The Women Plumber Program (WPP) contributes to the overall Compact objective of poverty reduction and economic growth through development of skills among women to enable access to income generation opportunities. The program which trained women to work as plumbers aimed to provide women in Zarqa with employment opportunities and increase household income. The WPP is not included in the overall WSH project logic since the activity does not contribute the medium/long-term outcome of WSH: reduced costs to households in meeting water needs. The diagram below displays the project logic for the WPP.

Figure 2: Women Plumbers Program project logic

Activities	Outputs		Outcomes	
Women Plumbers Program →	Women trained in plumbing profession →	Improved skills →	Increased employment opportunities →	Increased household income

Project Participants: The target population was women between the ages 25 and 40 with a minimum level of education of 9th grade. The lower limit on age was established because a younger candidate might not be able to manage harassment properly; the higher limit due to the physical demands. The education requirement was related to the need to read, write, and use mathematical skills. Participants were required to clear a security and health screening and report family acceptance of their participation in the program. The security and health clearance was related to the safety of potential clients, and family acceptance due to social considerations and avoiding risk of drop out.

Geographic Coverage: The WPP was advertised in Zarqa and Russeifeh and conducted in Zarqa. The WPP was implemented in Zarqa as a complement the rest of the WSH work.

4.2 Methodology

Evaluation Methodology: The evaluation of the Women Plumbers Program is an ex-post performance evaluation using qualitative methods.

Data Collection Approach: Due to the small number of participants in the program (30) and the lack of a well-established logical framework, we decided to use qualitative key informant interviews to answer the evaluation question for this activity within the WSH program.

Table 6: Data sources in relation to the WSH Women Plumbers Program project logic

Evaluation Question	Result in Project Logic	Key Outcomes (Specify Survey Module)	Data source	Data type
Did the plumbers training portion of the WSH intervention lead to long term capacity and employment opportunities for the women who participated?	Improved skills/capacity	Plumbing skills (Q5a and b, Q6.1 if left plumbing)	Participants of the women plumbers program	Key informant interviews
(Same evaluation question throughout table)	Improved skills/capacity	Fundamentals of plumbing business (Q5a and b, Q6.1 if left plumbing)	Participants of the women plumbers program	Key informant interviews
(Same evaluation question throughout table)	Improved skills/capacity	Marketing skills to promote services (Q5a and b, Q6.1 if left plumbing)	Participants of the women plumbers program	Key informant interviews
(Same evaluation question throughout table)	Long-term employment opportunities	Work outside family and social networks (Q6)	Participants of the women plumbers program	Key informant interviews
(Same evaluation question throughout table)	Increased household income	Household income (Q2, Q6)	Participants of the women plumbers program	Key informant interviews

Timeframe of Exposure: The selection process for the WPP took place from December 2014 to February 2015. The training took place from March to April 2015. Due to the number of distinct data collection events being mobilized in the time immediately following implementation, the evaluation was postponed until the higher priority surveys were complete (refugee, household, agriculture, enterprise). This data collection is planned for February-March 2019. The time elapsed since the completion of the training period will thus have been 48-49 months.

Table 7: WSH Women Plumbers Program data collection events

Data Collection	Timing	Sample Unit/ Respondent	Sample Size	Relevant instruments/modules	Data Collection Firm
WSH qualitative work	2/2019 – 3/2019	Participants in women plumbers program	30	Protocol TBD	Social Impact

4.3 Sampling

Sample size and associated assumptions and calculations: We will attempt to reach all 30 of the participants in the Women Plumber Program for participation in KIIs. However, anticipating some loss to follow-up among these participants, we expect the final sample size to be less than 30.

Sample frame: We will use participant lists from the WPP activity to attempt to reach the 30 participants of the program. These 30 participants comprise the treatment group. There is no comparison group used for the evaluation of this activity.

Sampling strategy: We will make at least 3 attempts to reach each participant of the program, potentially exploring creative ways to track participants as suggested by local consultants as there are no replacements for this sample.

4.4 Analysis

Qualitative: We will analyze the data from the KIIs using qualitative coding of detailed field notes. The evaluation team will first review notes and create a set of pre-set codes to expedite the coding process. After the codes are established, the team of qualitative coders will conduct focused coding using Excel tally sheets. A random subset of notes will be double coded to ensure consistency among coders. Using the tally sheets, we will examine frequencies of the codes related to the following broad topics: reasons for applying to program, skills gained from the program, career trajectory before and after program, and program satisfaction. We will compare frequencies of the codes within each topic between those currently working the plumbing field and those who are not anymore. Across all data we will look for connections made between the Women Plumbers program, improved skills, improved employment opportunities, and increased household income.

Quantitative: Though the focus of the KIIs will be qualitative, the instrument may include a minimal amount of quantitative questions to supplement the qualitative data. We will provide simple summary statistics on any quantitative data collected.

REFERENCES

1. Social Impact, Inc. (2014). *Impact Evaluation Design Report: Jordan Compact – Water Network, Wastewater Network, and As-Samra Expansion Projects*. Retrieved from:
https://data.mcc.gov/evaluations/index.php/catalog/103/download/482

2. *Ibid.*

ANNEX A: FGD APPROACH (UNFUNDED)

A.1 Sampling

- **Sample size and associated assumptions and calculations:** The sample size for the FGDs with NAF beneficiaries is 10 FGDs with 4-6 participants in each (40-60 participants total). The evaluation team deemed this sample appropriate to capture sufficient variation in the sample. As noted above, this aspect of data collection was not approved by MCC, despite the evaluation team's recommendation on its importance for assessing more carefully the importance of assumptions about behavioral responses to the WSH-ISW intervention.
- **Sample frame:** Participants for the FGDs will be sampled from lists of NAF households constructed and shared by Cowater. SI will determine whether these households received infrastructure grants using the WSH-ISW Site Information Master Table.
- **Sampling strategy:** SI will draw a stratified random sample of NAF beneficiaries not sampled for the semi-quantitative interviews that received and did not receive infrastructure grants. The sample will include replacements.

A.2 Analysis

Analysis Plan: We will analyze the data from the qualitative section of the semi-quantitative survey and the FGDs using qualitative coding of detailed field notes. The evaluation team will first create a set of pre-set codes for each the survey and the FGDs to expedite the coding process. After the codes are established, the team of qualitative coders will conduct focused coding using Excel tally sheets. A random subset of notes will be double coded to ensure consistency among coders. Using the tally sheets, we will examine frequencies of the codes related to the following topics: water quality, water infrastructure, water behaviors, and health. We will compare frequencies of the codes within each topic between treatments and controls. Additionally among treatments, we will obtain frequencies for recommendations made to the WSH-ISW program. Across all data, we will look for connections made between the WSH-ISW program, improved infrastructure, improved water practices/behaviors, water quality, health, and any other long-term outcomes mentioned. We will compare connections made with these categories between treatments and controls, as well as explore cases where connections were not made.

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