

MEMORANDUM OF UNDERSTANDING BETWEEN
THE MINISTRY OF PLANNING AND INTERNATIONAL COOPERATION OF THE HASHEMITE KINGDOM OF
JORDAN AND THE MILLENNIUM CHALLENGE CORPORATION

This Memorandum of Understanding ("**MOU**") is entered into this 20 day of March, 2017, by and between the Millennium Challenge Corporation ("**MCC**") and the Ministry of Planning and International Cooperation ("**MoPIC**") of the Hashemite Kingdom of Jordan ("**Government**"). MCC and MOPIC are collectively referred to herein as the "**Participants**" and each as a "**Participant**".

WHEREAS, the Government and the United States of America, acting through MCC, entered into that certain Millennium Challenge Compact dated October 25, 2010 (the "**Compact**"), which funded a program aimed at reducing poverty in Jordan through economic growth;

WHEREAS, the Compact term ended on December 13, 2016, the expected results of the Compact program will take years to materialize across most projects; and as a result, monitoring and evaluation activities will continue for several years after the Compact's end;

WHEREAS, the Government and MCC wish to cooperatively monitor the results and evaluate the impacts of the Compact program on reducing poverty through economic growth in the Zarqa Governorate of Jordan;

WHEREAS, the Government has designated MoPIC to manage the Government's post-Compact monitoring and evaluation activities; and

WHEREAS, MCC has engaged, and each of the Participants may in the future engage, one or more service providers (the "**Service Providers**") to collect, review, and analyze the data resulting from the Compact.

NOW, THEREFORE, the Participants have reached the following understandings:

1. **Objective.** The objective of this MOU is to facilitate the continued monitoring of the results of the Compact and timely delivery of accurate evaluations of the Compact's impact on reducing poverty through economic growth in the Zarqa Governorate of Jordan.
2. **Cooperation.** MoPIC and MCC express their intent to cooperate to fulfill the objective by undertaking the tasks and responsibilities set forth in the post-Compact monitoring and evaluation plan, attached hereto as Annex 1 (the "**Post-Compact M&E Plan**"), which plan outlines the monitoring and evaluation tasks that will take place after the Compact's term. Without limiting the foregoing or any provisions of the post-Compact monitoring and evaluation plan, the Participants expect that MCC will hire and manage one or more independent evaluation firms or consultants to support post-Compact data collection and analysis, and MoPIC will facilitate the firms' work, including by providing such resources as necessary for the facilitation.
3. **Communications.**
 - a. MCC and MoPIC endeavor to communicate with each other to coordinate their efforts under this MOU. For purposes of this MOU, the Participants will be represented by the persons holding or acting in the following positions (the "**Representatives**"):

For MCC: Vice President for the Department of Compact Operations. As of the signing of this MOU, the person holding this position is Ms. Kyeh Kim.

For MoPIC: Secretary General of MoPIC. As of the signing of this MOU, the person holding this position is Dr. Saleh Al-Kharabsheh.

- b. The Representatives may each designate, in writing, one or more officials who may represent the respective Participants under this MOU, other than for purposes of modification or termination of this MOU (which may only be undertaken by the Representatives), except as provided in paragraph 4 below. Such officials will function as the primary contact on all substantive issues under this MOU. As of the date hereof:

MCC designates the official holding the position of Managing Director M&E, Department of Policy and Evaluation. As of the signing of this MOU, the person holding this position is Ms. Berta Heybey.

MoPIC designates the official holding the position of Director of Evaluation and Impact Assessment Unit. As of the signing of this MOU, the person holding this position is Eng. Lamia S. Al-Zou'bi.

4. **Terms and Termination.** This MOU is expected to continue for four years from the date of signature by both MCC and MoPIC, and may be extended or modified in writing signed by both Representatives; provided, however, that for modifications to Annex 1, the officials identified in Section 3(b) above have the authority to approve and sign such modifications. MCC or MoPIC may terminate this MOU upon thirty (30) days written notice to the other Participant.
5. **No Financial or Legal Obligation.** Nothing contained in this MOU is intended to be construed as creating any financial or legal obligation or commitment on the part of MCC, the United States Government, MoPIC, or the Government to provide funding or assistance in relation to the proposed activities contemplated hereunder or any other project or program in Jordan. This MOU does not give rise to rights or obligations under international or domestic law.
6. **Dispute Resolution.** The Participants will amicably settle any dispute regarding the interpretation or execution of this MOU by mutual agreement.

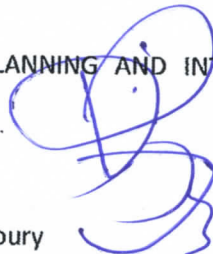
IN WITNESS WHEREOF, MCC and MoPIC have caused this Memorandum of Understanding to be signed and issued as of the date first set forth above.

MILLENNIUM CHALLENGE CORPORATION



By: Ms. Kyeh Kim
Title: Acting Vice President for the Department of Compact Operations

MINISTRY OF PLANNING AND INTERNATIONAL COOPERATION



By: Imad N. Fakhoury
Title: Minister of Planning and International Cooperation

C.A.



MILLENNIUM CHALLENGE ACCOUNT
JORDAN

Post Compact Monitoring and Evaluation Plan
February 2017

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Preamble

The Post Compact Monitoring and Evaluation Plan serves as a guide for monitoring the sustainability of Millennium Challenge Corporation (MCC) investments. The Post Compact Monitoring & Evaluation (M&E) Plan is required according to the M&E policy approved on May 1, 2012: “In conjunction with the Program Closure Plan, MCC and MCA will develop a Post Compact monitoring and evaluation plan designed to observe the persistence of benefits created under the Compact. This plan should describe future monitoring and evaluation activities, identify the individuals and organizations that would undertake these activities, and provide a budget framework for future monitoring and evaluation which would draw upon both MCC and country resources.”

List of Acronyms

AE	Authority Engineer
ASR	Annual Summary Report
CCR	Compact Completion Report
DMA	District Meter Area
DOS	Department of Statistics
DQR	Data Quality Review
ERR	Economic Rate of Return
FIDIC	Federation Internationale des Ingenieurs-Conseils
GoJ	Government of Jordan
HH	Households
IE	Implementing Entity
ITT	Indicator Tracking Table
JVA	Jordan Valley Authority
L/C/D	Liters per Capita per Day
MCA-J	Millennium Challenge Account- Jordan
MCC	Millennium Challenge Corporation
MCM	Million Cubic Meters
M&E	Monitoring and Evaluation
MIS	Management Information System
MWI	Ministry of Water and Irrigation
MoPIC	Ministry of Planning and International Cooperation
NRW	Non Revenue Water
PMC	Project Management Consultant
QDRP	Quarterly Disbursement Request Package
SPC	Samra Project Company
TBD	To be determined
TOR	Terms of Reference
US\$	United States Dollar
WAJ	Water Authority of Jordan
WSA	Water Supply Area
WSH	Water Smart Homes

Compact and Objective overview

Introduction

This Post-Compact Monitoring and Evaluation Plan serves as a guide for the implementation and management of Post Compact evaluations, so that the Millennium Challenge Corporation (MCC), Ministry of Planning and International Cooperation (MoPIC) staff, Steering Committee members, Executive Committee, Consultative Group members, program implementers, beneficiaries, and other stakeholders understand the progress being made toward the achievement of objectives and results, and are aware of variances between targets and actual achievements during implementation.

The Post Compact 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 and identifies data sources, and reporting frequency in order to define how performance and results will be measured. Outlines the flow of data and information from the project sites 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, 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 its consultants will evaluate whether or not the interventions achieve their intended results and expected impacts over time.
- Establishes M&E roles and responsibilities.

On June 7, 2016 an Implementation Letter was signed between the MCC and GoJ, naming MoPIC as the PoC for the Post Compact M&E activities. Accordingly, the below plan will detail the expected role of MoPIC and other stakeholders in Post Compact M&E evaluations.

Program Logic

Compact Background

The Government of the United States of America acting through the Millennium Challenge Corporation (MCC) and the Government of Jordan (GoJ) have entered into a Millennium Challenge Compact in the amount of two hundred seventy-five million one hundred thousand dollars (\$275,100,000) to be implemented over five years by the Millennium Challenge Account-Jordan (MCA-J). The agreement was signed on 25 October 2010 and entered into force on 13 December 2011.

Compact Logic

The Compact Goal is to reduce poverty through encouraging the economic growth and development in Zarqa Governorate. The Compact consists of three interlinked projects: the Water Network Project, the Wastewater Network and the As Samra Expansion Plant Project.

The project aims at increasing the supply of water to households and businesses through improvements in the efficiency of water delivery system, the extension of wastewater collection and the expansion of wastewater treatment. Program logic is developed for the Compact in order to:

- a) Trace the relationships between projects, intermediate outputs, and final outcomes,
- b) Illustrate the overlapping relationships between project activities and desired outcomes, and
- c) Draw attention to the underlying assumptions.

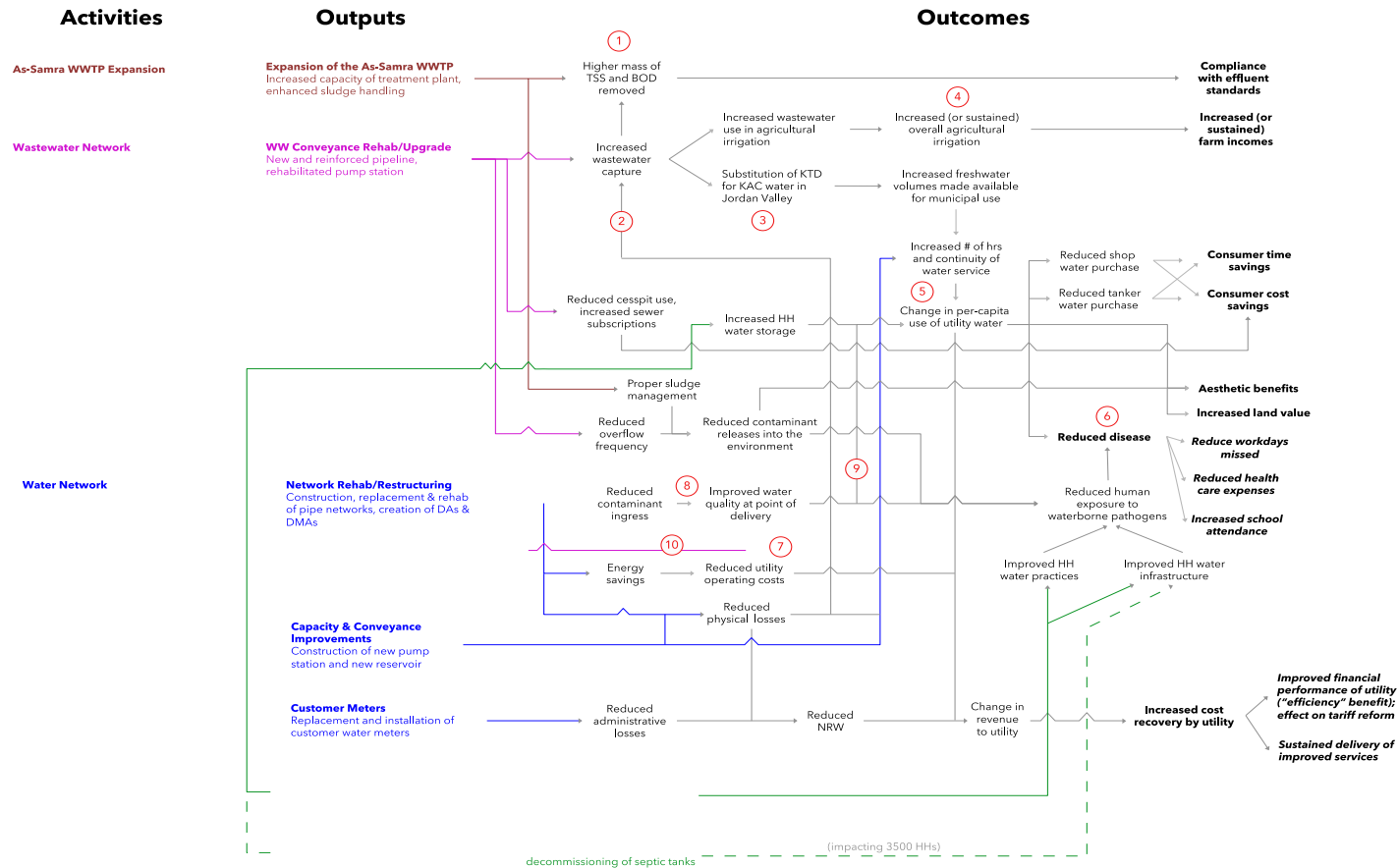
Figure (1) illustrates the Compact Logic; in specific, it describes the causal relationships among the program components and synthesizes expected outcomes intended to achieve the project objectives and the program goal. The increase in the effective supply of water through the projects comes from two main sources: First, reductions in water losses or non-revenue water (NRW)¹ will directly increase the amount of water and its duration (or reliability of service) that reaches end users of the water network. As more water becomes available through the network on a more continuous basis, the expectation is that households and businesses will reduce their consumption of more expensive alternatives, namely tanker water and treatment shop water.

Second, increased collection and treatment of wastewater will generate additional supplies of high quality treated water that can be used for irrigated agriculture. When that treated wastewater is substituted for surface water commonly used for irrigation in the Jordan Valley, equivalent supplies of freshwater can be diverted to higher value uses in the urban areas of Amman and Zarqa governorates where fresh water has the greatest economic benefit. Fresh water supplied through the network is then collected as wastewater from urban areas and sent for treatment to the As-Samra Wastewater Treatment Plant where it can then be reused in the Jordan Valley. Finally, the investments also contribute to reducing the need to develop increasingly expensive sources of water, for example Disi², and provide alternatives to unsustainable extraction of water from Jordan's aquifers.

¹ NRW is comprised of Unaccounted for Water that is not billed as a consequence of physical losses (leaks) and administrative losses plus any unbilled but authorized consumption, including, for instance, water used for system flushing.

² Disi Aquifer lies beneath the desert in southern Jordan and northwestern Saudi Arabia. The water is piped to the capital, Amman, and other cities to meet increased demand.

Figure1. Compact Logic Diagram



1. Projects and Activities

A preliminary analysis of constraints in consultation with different local parties and citizens concluded the importance of selecting the water sector in Zarqa Governorate out of the 12 Governorates in Jordan. Furthermore, the preliminary analysis was followed by a submission of concept paper by the GoJ and an assessment of the concept paper carried out by MCC. Finally, feasibility studies that included rigorous analysis of economic rates of return of the projects were completed.

1.1. Water Network Project

The Water Network Project, through the infrastructure investment activity, aims to reduce water losses and improve continuity of water service thereby improving the overall efficiency of water network delivery. In order to improve the distributional effects of the Projects, the Water Smart Homes Activity Project aims to improve the quality of home water systems and decrease costs that households, particularly poor households, in Zarqa Governorate incur to satisfy their subsistence water needs.

1.1.1. Infrastructure Investment Activity

The Infrastructure Investment Activity will restructure and rehabilitate transmission and distribution water supply systems in key areas of Zarqa Governorate. In addition to reducing physical leaks, this activity is designed to facilitate the transition of the water supply systems from periodic distribution under high pressure to more frequent, gravity-fed distribution. This Activity consists of the following sub-activities:

- i. Water Supply Area (WSA) Works –rehabilitate, restructure and upgrade works in the primary, secondary and tertiary water supply systems in Russeifa High and Low, Zarqa High and Batrawi Distribution Areas.
 - ii. Strategic Infrastructure Works –replacement of defective customer meters and restructure and construct District Meter Areas.
1. Construct Reservoir and pumping station at Al-Basateen Area-Ruseifa.

1.1.2. Water Smart Homes Activity ³

³ In Sept 2009, the GoJ and MCA-Jordan contracted ECO Consult to carry out “the Study of the Benefits to the Poor of MCC financed water sector projects in Zarqa Governorate”. The study focus themes were: analysis of key factors affecting under-consumption for the poor and non-poor consumers, estimating the economic benefits of addressing the under-consumption key factors, prioritizing investment areas for water and wastewater services, and identifying and examining a set of policy, institutional, and household interventions and recommend an intervention for project preparation. Accordingly, a set of policy, management and operation, infrastructure investments, and household infrastructure interventions were examined throughout the study. These interventions were analyzed to evaluate the benefits to the poor and cost effectiveness of implementation, examine the overlap and complementarities of other programs, and assess the overall impacts to the consumers and the utility. As a result, the household Infrastructure and Knowledge Improvement (now the ‘Water Smart Homes Activity’) intervention was selected to be implemented throughout the compact.

The Water Smart Homes (WSH) Activity is designed to improve the conditions of home water systems and enhance the benefits that households, particularly poor households, gain from increases in the effective supply of water in Zarqa Governorate. This activity consists of two sub-activities:

- Water Smart Homes-Social, Outreach and Engineering Services (WSHs-SOES).

The outreach campaign will achieve the desired outcomes through education of the general public in Zarqa Governorate to encourage behavioral change. The outreach campaign will promote adoption of residential water best management practices to maintain water quality and quantity within households.

- Water Smart Homes-Infrastructure Works (WSHs-ISW).

The WSHs-ISW will achieve the desired outcomes through physical replacement and repair of in-home water and wastewater infrastructure. The Works consist of in-house repairs/repositions/renewal of the plumbing systems including (i) water storage systems, (ii) water pipes, (iii) sewage systems, (iv) kitchen and bathroom appliances, and (v) connection to WAJ sewage system. As part of the infrastructure works, female plumbers will be trained.

1.2 Wastewater Network Project

The Wastewater Network Project aims to increase access to the wastewater network, increase the volume of wastewater collected and reduce the incidents of sewage overflow. The increased wastewater collected is linked to the benefits derived from the As-Samra Expansion Project.

The main activities of the Wastewater Project will expand, rehabilitate and reinforce the network in East Zarqa Zone, West Zarqa Zone and west Russeifa. During the implementation of the wastewater project, costs savings as a result of transparent and competent tendering procedures as well as the efficient financial management allowed to expand the scope of services to include the Princess Haya – West Zarqa Zone.

A new WAJ Administrative Building will enhance the utility's operation and maintenance activities by placing them in the same location and creating more space for customer service. This upgrade of the current WAJ-Zarqa rented offices comes in time to support Miyahuna's contract management activities for Zarqa Governorate. The building will also serve to memorialize the MCC-Jordan Compact's less visible investments, namely the water and wastewater pipes now underground. WAJ Administrative Building was funded by the MCA-Jordan program, through savings achieved during the implementation of the Compact.

Ten High Pressure Jetting Sewage Cleaners also funded through savings achieved during the implementation of the Compact will be deployed by WAJ-Zarqa (6) and WAJ-Amman (4) to maintain the design capacity of the MCC-funded wastewater network so that volumes are maximized. This is particularly important as water volumes are expected to increase in Zarqa as a result of a currently Government of Jordan funded program designed to bring aquifer water from the Disi district to Zarqa. The High Pressure Jetting Sewage Cleaners will also be used to expand the capacity of Amman's wastewater networks which service design flows into As Samra WWTP. The combined effect will ensure the targeted capacity is sustained.

1.3. As-Samra Expansion Project

The As-Samra Expansion Project aims to increase the volume of treated wastewater that is available as a substitute for freshwater in agricultural use and protect existing agriculture from untreated wastewater.⁴

The main activity of the As-Samra Treatment Plant Expansion Project is its expansion. The expansion is designed to increase the hydraulic capacity of the existing treatment plant and its ability to handle suspended solids and biological materials, among other critical treatment requirements.

1.4 Assumptions and Risks

The program logic and expected outcomes and impact are based on specific assumptions about the linkages between individual project activities and the long-term goal of poverty reduction. These assumptions inform the economic return analysis while risks are external to program implementation but are likely to affect program success.

The assumptions and risks for each of the projects are presented below in Table 1: Assumptions and Risks. Note that as the analysis for the Wastewater Network Project and the As-Samra Expansion Project is done in tandem, so too are the assumptions and risk.

⁴ The Ministry of Water and Irrigation under the national water strategy is compelled to optimize the use of fresh water as well as treated water. On October 13, 2009, as a condition precedent to disbursement of MCC 609 (g) funds, the Ministry of Water and Irrigation submitted to MCC a Memorandum of Understanding (MOU) between the Jordan Valley Authority and the Jordan Water Authority for the substitution of treated wastewater by fresh water. MCC and MCA-J will work with MWI to ensure the implementation of this MOU.

Assumptions	Risks
Water Network Project	
<ul style="list-style-type: none"> • Of NRW, physical losses are assumed to be a much greater share than administrative losses. During Compact development, total NRW was estimated at roughly 57% with 50% physical and 7% administrative losses (all figures as a percent of total system input) in the MCC funded feasibility study. • It is assumed that none of the 38% (57-19%) of NRW that would be eliminated in Compact project areas (and would thus consist of extra water delivered to beneficiaries) is actually currently consumed by households (i.e. all of this reduction is physical loss). Since some physical losses (perhaps 10%) are probably inevitable, the implication is that only about 9% of the 57% (of the NRW consists of administrative losses (consistent with the estimate of 7% in consultant reports). • It is assumed that the extra water that is produced for consumption in Zarqa by reducing NRW would have been sourced from the relatively more expensive Disi project in the absence of the investment. In reality, it is quite possible that this alternative cost is irrelevant. For example, if water would not have been supplied to Zarqa from Disi, then there would be no “efficiency” gain. 	<ul style="list-style-type: none"> • If the share of administrative losses is actually much higher than the estimate, the overall NRW figure may not improve as predicted since the intervention addresses primarily physical, not administrative, losses. Some administrative losses may be reduced with the introduction of improved meters. • Another method that was applied to data from the Zarqa water system, also indicates a level of NRW of 57%. However, it estimates that this is composed of 33% physical losses and 24% administrative losses, not the feasibility estimate of 50% physical losses, and 7% administrative losses. Meaning that residents in Zarqa are actually using more water than previously measured, and that the potential gains from reducing physical leakage could be smaller than anticipated. • If this did not represent additional water made available to households, it would be inappropriate to consider that the cost of the water would be saved relative to the next best alternative (Disi water).
<ul style="list-style-type: none"> • Households consume tanker water to cope with the poor quality of network water. The intervention will improve network water quality by limiting the time the network is under no pressure and contaminated water can seep into the pipes. Quality will also improve when less air is present in the system (due to continuous supply) which will prevent the formation of rust. With improvements of quality, households will shift their source of drinking water from high cost treatment shop water to low cost network water, and therefore generate a net savings. 	<p>Consumption of treatment shop water may not decrease with improvements in network water.</p> <ul style="list-style-type: none"> • First, treatment shop water may be consumed for reasons poorly correlated to quality of network water such as status. • Second, perceptions of poor quality of network water may persist due to customers having incomplete information. If there are important differences in quality between source (e.g. shop v. network water), and these have not been considered in the demand analysis, the substitution may be much less than expected.

<ul style="list-style-type: none"> Households consume tanker water to cope with the limited quantity and frequency of network water delivered. As the availability of network water improves, households will shift their source of water from high cost tanker water to low cost network water, and therefore generate a net savings. Additional water that would be supplied to households due to reduced physical losses, now at lower cost to households, would be partially used to offset tanker and shop water purchases. This additional water might also provide other benefits as well, in terms of productivity due to greater quantity, reduced time costs associated with acquiring water, or other lifestyle benefits, etc. 	Limited external risk
<ul style="list-style-type: none"> Consuming 50 liters per capita per day or less of water experience minor health costs (lost days of productivity and incurred medical expenses). Since hygiene requirements are not 100% met, when these households are able to consume 60 liters of water or more, the health costs are eliminated. 	Limited external risk
Waste Water Network and As-Samra Expansion Projects	
<ul style="list-style-type: none"> Incremental freshwater substitution begins shortly after project completion and increases over a few years to reach 10 MCM per year. Fresh water transfers from irrigated agriculture to urban consumers. 	<ul style="list-style-type: none"> Operational decisions may be taken to not increase or even reduce the amount of freshwater pumped out of the Jordan Valley. The Disi project will supply large quantities of freshwater to the municipal areas as scheduled in a fix priced contract. In response, water authorities may reduce the pumping out of the valley as municipal supplies could be met for several years based on the Disi increase (in the long term, substitution is very likely to resume).
<ul style="list-style-type: none"> Additional treated wastewater leads to incremental value-added as current supplies of water are notably short of optimum levels. Similarly, additional treated wastewater preserves the existing agriculture, which would otherwise be lost with diminishing supplies of water. 	<ul style="list-style-type: none"> Any negative external shocks to the agriculture sector would diminish the magnitude of the assumed benefits (e.g. a fall in output prices, unfavorable weather conditions, etc.)

<ul style="list-style-type: none"> • The ERR assumes a significant number of people connect to the wastewater network in response to the project activities, thus increasing the volume of water collected and treated. 	<ul style="list-style-type: none"> • Actual connection rates may be short of the projected connection rates. If so, the substitution and incremental agriculture production would be reduced.
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2. Projected Economic Benefits

ERR Categorization of Benefits from the Compact

The ERR calculations were conducted separately for a) the water network investments and b) the wastewater network + As-Samra expansion investments as shown in table 2 below.

Water network investments

Benefits were grouped as:

1. Water “efficiency” benefits, resulting from steep declines in non-revenue water (NRW), from 57% to 19% overall, following the network rehabilitation, which would decrease the cost of water supply relative to the alternative source for this extra water, i.e. the Disi project;
2. Consumer savings, from substitution of network water for tanker and shop water;
3. Health benefits for households, due to increased consumption of water.

Table 2: Summary of Economic Rates of Return

Project	Original Economic Rate of Return (ERR)	Date Original Economic Rate of Return (ERR) Established
Water Network Project	19%	10 th of Jan 2011
Waste Water Network & As-Samra Expansion Projects	14%	10 th of Jan 2011
Compact ERR	16%	10 th of Jan 2011

Note: Time horizon of ERR estimated based on 20 years.

2.1. ERR Water Network Project

The economic analysis of **the Water Network Project** focuses on improvements in the efficiency of water supplied to the populations of Zarqa and Ruseifa.⁵ In 2010, most households received water through the water supply network only once or twice per week, making water availability a key challenge. At the same time, roughly half of the water supplied to the network was non-revenue water (NRW)—which includes a combination of physical water loss and administrative lapses. Evidence from the feasibility study suggests that a high portion of NRW losses are due to physical losses.

From the utilities perspective, reducing the physical loss component of NRW reduces both the average cost to deliver a cubic meter of water and the total quantity of water that must be produced for a given level of per capita consumption.

From the household's perspective, the problem of limited water availability is exacerbated in the summer months. In 2010, about 35 percent of households received network water deliveries no more than once per week, while another 30 percent received water deliveries no more than two times per week.⁶ To supplement these limited supplies, many households purchased additional supplies of water from “treatment shops” and private tanker trucks. According to a detailed socio-economic survey conducted by Jordan's Department of Statistics, nearly 30 percent of poor households in Zarqa consume shop water, at an average additional cost of JOD 10-15 (\$14.40-21.60) per month.⁷

Improvements in the water network that reduce water losses, enable more water to reach end consumers and extend supply hours would make higher quantities of water available for use in households. Because network water is substantially less expensive than other sources of supply, these changes would favorably impact household incomes or allow consumption of higher quantities of water at a given cost. Enhanced efficiency also shifts the water “supply curve” upward, reducing quantities that must be extracted from groundwater aquifers in order to meet the consumption needs of the region's growing population.

These efficiency gains, including shifts in household consumption patterns, represent an overall economic return (ERR) to the project of 19 percent. This return includes benefits to households where per capita consumption is low enough to cause health risks related to sanitation and hygiene, although these overall impacts were found to be modest. However, it does not include potentially higher value-added in commerce and industry, the benefits of which are difficult to model because data was not readily available. In Zarqa, commercial and industrial users account for roughly 15 percent of

⁵ Water quality is not an issue that is being addressed through the chosen Projects as ‘the water quality data for the supply network for the year 2008 indicates a high level of compliance with key parameters such as presence of coliforms and chlorine residual. For the samples taken at the pumping station/reservoir sites and at various locations in the supply network, the level of compliance with the coliform standard of less than 1.1 MPN/1000ml was over 98%. In addition a chlorine residual was detected at 99% of sampling locations’, per ‘Zarqa Governorate Water System Restructuring and Rehabilitation’ Investment Master Plan, page 75.

⁶ Cowi, “World Bank GPOBA Jordan Water and Wastewater Output Based Aid (OBA) Study: Task 1 Report - Feasibility,” Washington, DC, presentation, April 15, 2010.

⁷ 2009 Water Survey Report, Department of Statistics

total water consumption, and it appears that much of the industry that has developed in the region does not rely on large water supplies.⁸

2.2. ERR Wastewater Network

The economic analysis of the **Wastewater Network Project** focuses on the increased efficiency of substituting treated wastewater for freshwater, when properly collected and treated. This is particularly true in the case of irrigated agriculture, which already uses large volumes of treated wastewater in Jordan. Given the relation between collection and treatment, the benefits of the Wastewater Network Project and the As Samra Expansion Project have been analyzed together.

Given the large share of water resources consumed in agriculture, expansion in the capacity to collect and treat wastewater increases the supply of high quality treated wastewater potentially available for substitution. Much of the infrastructure needed for this substitution currently exists. The existing As-Samra Wastewater Treatment Plant is a key part of the system, and wastewater treated at As-Samra is currently used in agricultural irrigation throughout the middle and lower portions of the Jordan Valley. In exchange for the treated wastewater, supplies of fresh surface water are pumped from the Jordan Valley to Amman and Zarqa Governorates, where they meet residential and commercial needs before flowing through the urban wastewater collection system. Eventually, much of the wastewater from Amman and Zarqa Governorates is treated at the As-Samra Wastewater Treatment Plant, from which it is conveyed to the Jordan Valley and used in irrigation. At present, the As-Samra Wastewater Treatment Plant cannot handle additional flows of wastewater, and the limitations on its capacity have prevented opportunities to expand the wastewater collection system in Amman and Zarqa Governorates. Thus, the decision to expand treatment capacity through the As-Samra Expansion Project enables the expansion of wastewater collection through the Wastewater Network Project. These two projects together may generate up to 10 million cubic meters of additional freshwater to Zarqa Governorate that will be available for substitution on an average annual basis.

The analysis values fresh water made available for domestic consumption at the marginal cost of water supply. Given the high costs associated with other options for supplying water, including the Disi aquifer project⁹ pumping from the Jordan Valley offers a lower cost alternative for expanding effective urban supplies.¹⁰ The analysis also includes a measure of added value in agriculture associated with improved reliability and availability of treated wastewater for agricultural cropping. Finally, the analysis also measures the negative impact on existing agricultural production if facilities for treating the rapidly growing volumes of wastewater from Amman and Zarqa were not realized, resulting in a deterioration of the quality of water making its way into the irrigation supply. The effects could include food safety risks and the loss of markets for agricultural goods. **Based on these assumptions, the estimated ERR for the two projects together is 14 percent.**

⁸ Possible explanations that account for commercial and industrial users comprising only 15% of total water consumption includes type of industry, low agriculture and high use of personal wells and tanks.

⁹ Disi is expected to come online in 2014.

¹⁰ Costs associated with Disi water were considered when ERRs were calculated for the As-Samra Expansion Project and the Wastewater Network Project.

2.3. ERR As-Samra Expansion Project

The analysis of the economic returns to **the As-Samra Expansion Project** is identical to that already described for the Wastewater Network Project. Benefits derive from two principle sources: (i) the value of fresh irrigation water “freed up” for use in Amman and Zarqa through substitution with increased volumes of high-quality treated wastewater flowing through the As-Samra Expansion Project; and (ii) the prevention of a collapse in agricultural production values that would occur without appropriate treatment of wastewater.

3. Program Beneficiaries¹¹

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 the 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 Jordan, used for Compact justification to MCC’s Investment Committee, is presented in the Table 3. The estimated total number of beneficiaries for the Jordan Compact is estimated as per the outlined methodology to reach up to 3 million citizens, which consists of beneficiaries of each project, it is worth mentioning that the net of beneficiaries who are expected to incur benefits from two or more of the projects, to avoid possible double-counting.

Table 3: Projected program participants and beneficiaries

Projects	Program Participant Definition	Est. Benefits	Program Beneficiary Definition	Beneficiaries	Present Value (PV) of Benefits
Water Network Project		\$197,800,000	The projected total population of Zarqa Governorate who will benefit from the efficiency gains anticipated in the water supply network; over twenty years.	1,634,000	\$101,879,917

¹¹ MCC’s definition of a beneficiary is those individuals who realize improved standards of living, primarily through higher incomes, as a result of economic gains generated by the MCC-funded project...counting as beneficiaries all members of households that have at least one individual who realizes an income gain. <http://www.mcc.gov/documents/guidance/guidance-economicandbeneficiaryanalysis.pdf>. The beneficiary estimates include population growth and exclude accounts for double counting.

Projects	Program Participant Definition	Est. Benefits	Program Beneficiary Definition	Beneficiaries	Present Value (PV) of Benefits
Wastewater Network Project and As-Samra Expansion Project		\$602,500,000	Population of Amman and Zarqa Governorates that will benefit from additional supplies of freshwater that can be transferred to these areas as larger volumes of treated wastewater will be available for substitution in the Jordan Valley, in addition to individuals in the Jordan Valley who are expected to benefit from consistent supplies of high quality treated wastewater that can be used in irrigation; over twenty years	2,023,000	\$296,984,948
Compact Total				3,000,000	\$398,864,865

The **Water Network Project** is expected to benefit approximately 302,000 households, for a total of 1,634,000 individuals, over twenty years. This figure represents the projected total population of Zarqa Governorate who may benefit from the efficiency gains anticipated in the water supply network. This figure includes an estimated 110,000 households, for a total of 600,000 individuals who will benefit directly from changes in domestic expenditure or higher consumption of water provided through the water supply network. The figure also includes an estimated 3,500 poor households, for a total of almost 19,000 individuals, who will benefit from direct assistance to rehabilitate their household water and sanitation systems under the Water Smart Homes Activity.

Within the Water Network Project an estimated four percent of beneficiaries will be among those living on less than US\$2.00 per day on a purchasing power parity basis, with those living on US\$2.00 – US\$4.00 per day representing another quarter of the total beneficiaries.

The **Wastewater Network Project** will provide direct benefits to the residents of East Zarqa, West Zarqa Princess Haya and adjacent neighborhoods, where up to 23,004 households, for a total of 126,522 individuals, will have opportunities to connect to new lateral sewer lines over the next twenty years and forego the installation, maintenance and potential health risks associated with the use of cesspits in an urban environment.

Together with the Wastewater Network Project, the As-Samra Expansion Project will benefit approximately 375,000 households, for a total of 2,023,000 individuals, in Amman and Zarqa Governorates. These households will benefit from additional supplies of freshwater that can be transferred to these areas as these Projects make larger volumes of treated wastewater available for substitution in agricultural applications in the Jordan Valley. This includes approximately 8,500 households in the Jordan Valley, for a total of 46,000 people that are expected to benefit from consistent supplies of high-quality treated wastewater that can be used for irrigation.

4. Monitoring Component

4.1. Summary of Monitoring Strategy

Post Compact performance will be monitored systematically and progress reported in order to track the use of Compact investments and sustainability of Compact activities.

There are three levels of indicators included in the post-Compact ITT that flow from the program logic framework: (i) output, (ii) outcome, and (iii) 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.

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 and are directly related through the Program Logic to the output indicators. Output indicators directly measure Project Activities. They describe and quantify the goods and services produced directly by the implementation of an activity.

Monitoring Indicators, Baseline, and Target Definitions

MCC, MCA-J, and designated representatives at the Ministry of Planning and International Cooperation (MoPIC) selected the post-compact indicators and agreed that MoPIC will monitor these indicators at least until all Compact evaluation work is complete. All indicators with their (i) name; (ii) definition; (iii) unit of measurement; (iv) level of disaggregation; (v) data sources; (vi) responsible party; and (vii) frequency of reporting are listed in Annex I. Some post-Compact indicators were also monitored during the Compact. For these indicators, Annex II provides the baselines and targets that were included in the final closeout M&E Plan, however, no new targets for the post-Compact period are needed, per MCC Policy, and thus are not included. For new indicators that have been added for the post-Compact period, these indicators generally do not have baseline information or annual targets from the Compact period. Indicators can be retired at any time if they are deemed unnecessary with mutual agreement between MCC and MoPIC.

Data Sources

For the post-Compact period, there will be two reporting mechanisms for reporting post-compact ITT data. One will be through MoPIC and the other will be through MCC's evaluation consultants.

MoPIC will coordinate the collection of most post-Compact indicators. For indicators whose responsible party is "MCC Evaluator", post-Compact ITT data will be provided by MCC's evaluation consultants. MCC's consultants should provide post-Compact ITT data to both MCC as well as MoPIC. These indicators will have their responsible party listed as "MCC Evaluator." All other indicators will be reported on by MoPIC in the post-Compact Indicator Tracking Table (ITT).

For indicators whose responsible party is not "MCC Evaluator," the responsible party will appoint a point of contact (POC) who will be responsible for providing the data to MoPIC post-Compact. If the (POC) changes, the responsible party should alert MoPIC and provide contact information for the new POC.

Data Collection Frequency

For MoPIC, reporting will be on a quarterly basis. For data provided by MCC's evaluation consultants, these data will be available on a rolling basis, as they become available upon survey/evaluation completion.

4.2. Data Quality Reviews

The Data Quality Review aims to review and analyze the utility, objectivity, and integrity of performance information. DQRs 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.

For locally collected data, MoPIC will be responsible for ensuring data quality by verifying the accuracy and reliability of performance data from each reporting entity. Similarly, MCC's evaluation consultants will be responsible for overseeing and managing the quality of survey-collected data.

The results of data quality reviews will be thoroughly documented, including the methodology used to conduct them, all major findings and issues, and recommendations for addressing any concerns or problems identified. Further, MoPIC plans for follow-up, including which recommendations will be implemented, will be documented for all stakeholders' information. Findings related to post-Compact M&E indicators will be shared directly with MCC.

MCC may contract an independent data quality reviewer if deemed necessary. MoPIC may also conduct field visits to review the quality of the data gathered through the Post-Compact M&E Plan. This exercise will be done in coordination with MCC and the respective stakeholders.

4.3. Standard Reporting Requirements

MoPIC will be responsible for submitting an Annual Summary Report (ASR) to MCC covering through 2019. These reports should be submitted via email to the MCC M&E counterpart and the Vice President of the Department of Compact Operations VPOperations@mcc.gov with the subject line "Jordan Post Compact Reporting" and the dates of report coverage.

The Annual Summary Report about Compact program activities should include the following information:

- A summary of any activities undertaken or continued by the GoJ post-Compact that relate to the sustainability of Compact investment including any issues with operations and maintenance of infrastructure.
- A summary of progress on any activities undertaken by GoJ or other donors that are complementary to Compact investments.
- A Post Compact Indicator Tracking Table (ITT) that includes all of the indicators included in Annex 1 of the plan for the preceding calendar year.
- The status of outstanding issues for infrastructure components through the end of the defects liability period.

The Annual Summary Report is due on March 31st of each year. The Annual Summary Report will be sent to MCC for information by MoPIC. It will be made public and posted on MCC's and MoPIC's website.

Other post-Compact reports may also be requested, as deemed necessary by MCC.

5. Evaluation Component

While good program monitoring is necessary for program management, it is not sufficient for assessing ultimate results. Therefore, MCC - will use 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 the evaluations as rigorous as warranted in order to understand the causal impacts of the program on the expected outcomes and to assess cost effectiveness. The Evaluation Component 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 below. The results of all evaluations will be made publicly available in accordance with the MCC M&E Policy.

Independent Evaluations

According to the MCC M&E Policy, every Project in a Compact must undergo a comprehensive, independent evaluation (impact and/or performance). The next section on Specific Evaluation Plans describes the purpose of each 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, which are hired by MCC.

For each independent evaluation, MoPIC and relevant stakeholders are expected to review and provide feedback to independent evaluators on the evaluation design reports,¹² 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. Results will be presented in Jordan by the Independent Evaluator. MoPIC is expected to facilitate these presentations and coordinate with local stakeholders.

Final Independent Evaluations

The main objective of the Impact Evaluation (IE) is to determine whether or not the interventions of the Jordan Compact lead to changes in well-being (e.g., income, productivity, and possibly health), among beneficiaries living in the Zarqa governorate, as well as farmers in the Jordan Valley. In particular, the IE aims to establish a causal relationship between Compact interventions and social and economic outcomes by comparing the changes experienced over time by beneficiaries (the treatment group) to those experienced by non-beneficiaries (the control group). By carefully developing an IE

¹² Evaluation Design Report http://www.mca-jordan.gov.io/SystemFiles/Pages/file_635477671270618242.pdf

design that applies state-of-the-art program evaluation methods for identifying comparable treatment and control groups, the IE will minimize the potential for bias in its estimates of Compact impacts.

For this purpose, three different types of surveys were deployed in the field. The first is a household-level survey, used to gather information on household demographics; water sourcing, storage, and use behaviors; preferences and satisfaction with water supply and sewer service; water quality measurement; coping and health costs; and expenditures, income, and other socio-economic characteristics. This survey is to be repeated twice a year at baseline, midline, and endline to capture the seasonal variation in water use within Zarqa. The second is an enterprise survey, which focuses on enterprise characteristics, production inputs and outputs, costs and revenues, and constraints with regards to use of water as an input to production. The third is an agricultural survey with farmers in the Jordan Valley to capture the crop cycles and their use of treated wastewater. The baseline household, agricultural, and enterprise surveys were conducted in the spring and winter of 2014, respectively, in conjunction with the Jordanian Department of Statistics (DoS).

All independent evaluation reports are publicly available and posted to the MCC and MCA-J website to ensure transparency and accountability.

Specific Evaluation Plans

Table 5: Evaluation of the Jordan Compact

Evaluation Name	Evaluation Type	Evaluator	Data Source	Primary/ Secondary Methodology	Sample size	Survey name & Timing
Impacts of infrastructure improvements on urban households and enterprises in Zarqa (WNP and WWNP).	(Impact) Propensity score matching (PSM) in combination with difference-in-differences (DiD) and regression analysis.	Social Impact	Department Of Statistics (DOS)	Element A: 1-Household/enterprise surveys. 2- Utility monitoring. Element B: 1- Water vendor industry analysis. 2-land values survey	3440 households; 345 enterprises. N/A	Baseline Survey Household: April 2014 – May 2014 Enterprise: November 2014 - January 2015 End line Survey: TBD
Impacts on irrigators downstream of As Samra treatment plant (WNP; WWNP; and AEP)	(Impact) Difference-in-Difference (DiD) and (Performance)	Social Impact	Department Of Statistics (DOS)	Element A: water balance modeling Element B: Agriculture survey	N/A 550 farmers	Agriculture survey: June 2015 –2015

Impacts on WAJ-Zarqa Performance	Performance	Social Impact	Water Authority Of Jordan (WAJ-Z) Miyahuna Zarqa	<p>Element A: Augmented tracking of utility performance</p> <p>Element B: Small number of basic engineering tests.</p> <p>Element C: Impact/Performance Evaluation. Other geo-coded data collection over areas included in Component 1 (and across Zarqa).</p>	N/A	January 2015 – December 2016
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Component 1: Evaluation of Water and Wastewater Network Project Impacts in Zarqa Governorate

Objective

The primary evaluation objective for the first IE component, which focuses on measurement of outcomes conducted in Zarqa, is to determine how outcomes experienced by individual and commercial/industrial sector enterprise units affected by the Compact's investments compare to what those individuals would have experienced had the investments not been made.

- Household surveys. Household-level surveys were developed to collect information on household demographics; water sourcing, pumping, storage, and use behaviors; preferences and satisfaction with water supply and sewer service; water quality measurement; coping and health costs related to intermittent water supply and poor water quality; and expenditures, income, and other socio-economic characteristics.
- Enterprise surveys. The enterprise surveys focused on enterprise characteristics, production inputs and outputs, costs and revenues, and assess constraints with regards to using water as an input to production. In addition, for assessing impacts on Zarqa's important informal sector.

Data Collection methodology

The baseline data collection event is necessary so that the Independent Evaluator can assess the impacts of the Jordan Compact on areas of interest (households, Enterprise and Agriculture) in Zarqa, Amman Governorate and Jordan Valley; specifically for Component 1: Impacts of infrastructure improvements on urban households and enterprises in Zarqa (Water Network Project and Waste Water Network Project).

DoS was responsible for developing and implementing work plans, revising and finalizing questionnaires (drafts provided by the Independent Evaluator), testing data collection instruments, recruiting, hiring and training field staff, implementing data collection and adhering to the deliverable schedule, managing documentation of the dataset, data cleaning, and delivering a cleaned data set and a final Data Collection Completion Report. However, it is also important to acknowledge that the timing of the arrival of Disi water in Zarqa (even if indirect, via effects on water allocation across urban areas in central Jordan) complicates this picture somewhat. To the extent that the baseline occurs prior to the arrival of any or most of the water volumes added by Disi, a naïve evaluation strategy that failed to account for Disi would misattribute this additional water (which may swamp the savings obtained from the reduction of physical losses and the primary substitution effect) to the Compact. Still, the plan is going to explicitly account for these added volumes by requesting data on water flows from Disi to Zarqa from the WAJ, and integrating this information into the overall integrating water balance analysis.

Evaluation questions

1. **Impacts on water consumption:** Does the Water Network Project (WNP) change the quantity of water consumed at the household (HH) and enterprise (E) levels (reduced leaks, increased reliability)?

2. **Impacts on environmental quality:** Does the Water Network Project alter the quality of water consumed at the HH / E levels? Does the Waste Water Network Project (WWNP) reduce the risk of disease from exposure to untreated wastewater?
3. **Impacts on expenditure:** Does the Water Network Project affect time and money expenditure on water ('secondary' substitution effect)? Does the WWNP change consumer expenditure on wastewater management and disease prevention and treatment?
4. **Impacts on income:** Does the Water Network Project change HH / E income?
5. **Impacts on asset value:** Does the WNP / WWNP affect property/asset values?
6. **Overall impacts on welfare in Zarqa:** What is the net economic value of changes in quantity and quality of water consumed?

Component 2: Evaluation of impacts on agriculture downstream of As Samra and in the Jordan Valley

Objective

As human populations push against the constraints posed by limited conventional freshwater resources, there is hope that wastewater reclamation will become an increasingly valuable means of maintaining human welfare and enabling future growth. In few places is the necessity for viewing wastewater as a resource rather than a nuisance more pronounced than in the water-scarce countries of the Middle East, of which Jordan is a prime example. Indeed, much of the economic rationale for the MCC investment program in Zarqa does not rest in the benefits of these activities to households residing specifically within the zones of Zarqa receiving infrastructure improvements, but rather in its indirect effects on increased water availability in Jordan. These effects would occur via the substitution of reclaimed wastewater (i.e., the product of wastewater treatment that meets water quality requirements for a specific end use) for more expensive water sources (specifically, conventionally sourced freshwater from the Jordan-Yarmuk surface water system), as well as the preservation of high value agricultural activities in the Jordan Valley.

Data collection methodology

For the purposes of baseline data collection, 550 farmers were roughly planned to survey (110 farmers in each of five differentially affected areas to determine crop production and returns for the previous year, along with measures of water supply from different sources. Using the data from these 550 farms, the independent evaluator will conduct more detailed power calculations to determine the appropriate sample size for annual tracking of the balance of water sources, production, and net profits at regular and more frequent (e.g. quarterly) intervals. It is understood that metering is very limited in the Jordan Valley, so the independent evaluator will rely on self-reports of water consumption and third-party ground-truthing from the JVA and other sources. The annual surveys will include questions on farmer characteristics (education, training, knowledge, relative influence, risk preferences, etc.), farm attributes (soils, canal location, etc.), farm equipment and use of advanced technology, inputs and production, animal husbandry, prices of agricultural products, and farm and non-farm sources of income.

Evaluation questions

1. **Impacts on water sourcing:** Does the combined WNP/WWNP/AEP result in increased irrigation with recycled wastewater? Does the volume of irrigation using conventional freshwater correspondingly decrease?
2. **Impacts on farming costs:** Does the combined WNP / WWNP / AEP lead to changes in farm input costs?
3. **Impacts on farm output:** Does the combined WNP / WWNP / AEP lead to changes in the value of farm output in affected areas?
4. **Impacts on asset value:** Are farm values affected by the WNP / WWNP / AEP investments?
5. **Overall impacts on farm welfare:** What is the net economic value of changes in irrigation?
6. **Impacts on compliance:** Does the AEP result in increases in the quantity of wastewater that meets effluent standards prior to discharge into the environment?

Component 3: Evaluation of impacts on the performance of Miyahuna-Zarqa

Objective

The impact design aims to measure the welfare changes among direct beneficiaries of the water and wastewater sector interventions included in the Jordan Compact. Yet one of the very important challenges facing the IE of this program stems from the very real possibility that most of the benefits may not be directly reflected in welfare changes among households and enterprises in Zarqa, nor among the farmers who may receive additional flows of treated wastewater for their irrigation activities. Indeed, many of the benefits of the investments may be captured by the local water utility, Miyahuna-Zarqa, or by other larger government institutions responsible for water delivery in Jordan the MWI. Benefits captured by these institutions could in turn lead to reductions in public debt in Jordan and free up capital for other productive economic activities.

Data collection methodology

Comparative utility-scale performance. The Monitoring & Evaluation Unit of MCA-Jordan is already collecting a variety of utility performance indicators at the level of the WAJ-Zarqa utility, and these are useful for the evaluation, to generate a more complete picture of the performance of the water and sewer networks under utility management, as well as operational efficiency, the degree of utility cost recovery, and overall financial sustainability, it was important to augment these measure with additional indicators. These proposed measurements are consistent with typical norms for utility management / monitoring best practice, as well as with the current reporting and analysis conducted by the Jordanian water utilities (Aqaba, Yarmouk and Miyahuna) currently reporting to the Project Management Unit (PMU) of the WAJ, responsible for privatization of water utilities.

Evaluation method

Element A: Augmented tracking of utility performance

Element B: Small number of basic engineering tests

Element C: Other data collection

Evaluation questions

1. **Impacts on utility cost recovery:** Does the net cost recovery of the utility improve due to the Compact, and is this related to service improvements?
2. **Service improvements:** At the utility level, are there measurable changes in service delivery quality trends in Zarqa relative to those of other municipal utilities in Jordan?

Special Studies

Either MCC or the Government may request special studies or ad hoc evaluations of Projects, Activities, or the Program as a whole prior to the expiration of the Compact Term.

6. Implementation and Management of M&E

6.1. Responsibilities

Both MCC and the GoJ via MoPIC have responsibilities under the Post-Compact M&E Plan.

MCC:

Post-Compact responsibilities of the MCC M&E Unit include:

- Contracting and managing independent evaluators;
- Ensuring evaluators conduct stakeholder review of evaluation reports;
- Contracting post-Compact data collection for evaluations;
- Contracting and managing an independent consultant in Jordan to monitor data collection and support Post-Compact M&E efforts to be embedded in MoPIC; and
- Providing guidance and training to the country on the detailed requirements for preparing the Annual Summary Report, as necessary and practical.

MoPIC:

The MoPIC, with the support of MCC, is responsible for implementing the Post-Compact M&E Plan, as explained in this document. These responsibilities include:

- Serving as the primary point of contact for any questions from MCC, Implementing Entities (IEs), Evaluators, or other parties regarding M&E of the Jordan Compact;
- Coordinate the collection, cleaning, and reporting of all local data within the framework of the Post-Compact M&E Plan;
- Submitting to MCC an Annual Summary Report and quarterly post-Compact ITT on post-Compact activities in accordance with the reporting schedule;
- Checking data quality of agreed to indicators, ensuring that all reported indicators have proper documentation;

- Supporting the external evaluation teams procured by MCC to evaluate Compact activities;
- Reviewing and providing an official response to each evaluation and helping to coordinate the review of evaluation reports by other government agencies as necessary;
- Disseminating results, including organizing in-country presentations with stakeholders and posting evaluations on a government website;
- Identifying opportunities to apply the learning from evaluations to project design and implementation;
- Maintaining stable communications with MCC on topics pertaining to the evaluation of projects implemented by MCA-J; and
- Embed the independent consultant hired by MCC in MoPIC and provide him/her access to MoPIC's facilities.

6.2. Review and Revision of the M&E Plan

All revision to the Post-Compact M&E Plan will be mutually agreed upon by the MoPIC and MCC. Either party may suggest revisions to the plan. Within MCC, revisions to the Post-Compact M&E Plan will be shared with Department of Compact Operations colleagues for information and approved by the M&E lead; MCC sector leads will also be consulted before approving revisions.

In the case of future revisions, this section will summarize the changes between this original draft of the Jordan Post-Compact M&E Plan and any future revision. Any changes to indicators must be documented in Annex III of the M&E Plan.

The reviewed and approved Post-Compact M&E Plan should be publicly available through the Post-Compact section of the MCA-J website and MCC's website.

6.3. Coordination of M&E Data Gathering

The gathering of post-Compact monitoring and evaluation indicators will be carried out by former MCA-J stakeholders, many of whom provided the same data during the Compact and are familiar with the reporting procedures.

Data Collection for post-Compact indicators will be conducted by multiple in-country entities, including:

1. Miyahuna-Zarqa
2. Jordan Valley Authority
3. Project Management Unit
4. Department of Statistics

Templates for each stakeholders are provided in the Annexes.

7. M&E Budget

MCC is responsible for paying the independent evaluator for post-Compact M&E. The Post-Compact M&E budget is expected to be approximately 1.6 million for data collection and analysis for the final evaluations.

The MoPIC is expected to dedicate staff time to post-Compact M&E activities is It will facilitate the dissemination of interim and final evaluation findings via presentations and other modalities through which Compact results will be reported (e.g. brochures) as well as any data quality review that MoPIC undertakes.

8. ANNEXES

ANNEX I

See Excel template

ANNEX II

See Excel template

Jordan: Compact Outcome Indicators Annex I: Indicator Documentation Table									
CI Code	Indicator Level	Indicator Name	Definition	Unit of Measure	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information
Compact Wide Indicators: Goal, Outcome, and Process Level									
	Goal	Poverty rate in Zarqa Governate	Official poverty rate in Zarqa Governorate	Percentage		DoS Surveys	DoS	Other	It was found out that the amount of sampling error is 11% in Zarqa. This indicates the inaccurate representation by the sample, of the poverty rates at the said level.
	Outcome	Network water consumption per capita	For Zarqa Governorate: [Annual billed residential and non-residential (in m3)] / [population of governorate] * 1000 / 365 (l/c/d).	Liters per capita per day	Water Customers (Residential, non-residential)	Miyahuna IT Unit Quarterly report	Miyahuna-Zarqa	Quarterly	<p>This indicator focuses on effective supply of water increased through improvement in water delivery, extension of waste-water collection, and expansion in waste-water treatment.</p> <p>As of the M&E Plan revision approved in October 2016, the targets for this indicator are not expected to be achieved. This is because the original targets were set based on the assumption that population growth through the life of the compact would remain consistent with previous level of growth. However, the dramatic increase in population due to the refugee crisis has caused this assumption to no longer hold.</p>
WS-14	Outcome	Residential water consumption	The average water consumption in liters per person per day.	Liters per capita per day		Surveys	Independent Evaluator	Other	<p>Calculation based on annual water consumption where non-residential constitutes around 5% of the total water. Billed residential network water consumption + tankers, treatment shops, and bottled water (l/c/d). (Baseline Report)</p>
WS-10	Outcome	Operating cost coverage	Total annual operational revenues divided by total annual operating costs.	Percentage		Miyahuna-Z financial reports	PMU	Annual	<p>This indicator focuses on financial performance of the utility to make a determination if the utility is financially viable and can cover its costs. Calculation: $OPC = R/C$ where: OPC = Operational Cost Coverage R = Total Operational Revenue C = Total Operational Cost (including maintenance)</p>
	Outcome	Operations and maintenance costs	Total annual Miyahuna operational costs including maintenance.	US Dollars		Miyahuna-Z financial reports	PMU	Annual	<p>Please note, this indicator is the same as denominator for Operating cost coverage; however, it has been included as a separate indicator to easily track the amount spent by Miyahuna on operations (including maintenance).</p>

Jordan: Water Network Project Indicators Annex I: Indicator Documentation Table									
CI Code	Indicator Level	Indicator Name	Definition	Unit of Measure	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information
Water Network Project Outcome Indicators									
	Outcome	Use of tanker water	Annual average quantity of tanker water consumed per person (l/c/d) in Water Network Project areas.	Liters per capita per day		Surveys	Independent Evaluator	Other	Baseline value for this indicator is taken from the DOS 2009 survey. Future values are taken from the Social Impact Evaluation. While the samples for the two surveys are similar, they are different.
	Outcome	Use of treatment shop water	Annual average quantity of treatment shop water consumed per person (l/c/d) in Water Network Project areas.	Liters per capita per day		Surveys	Independent Evaluator	Other	Baseline value for this indicator is taken from the DOS 2009 survey. Future values are taken from the Social Impact Evaluation. While the samples for the two surveys are similar, they are different.
WS-16	Outcome	Incidence of diarrhea	The percentage of individuals reported as having diarrhea in the two weeks preceding the survey.	Percentage	Age (Under age 5, 5 years and older)	Surveys	Independent Evaluator	Other	Baseline value and future values for this indicator is taken from Social Impact Evaluation.
	Outcome	Customer dissatisfaction with supply service	Percent of water utility customers "very dissatisfied" or "quite dissatisfied" with frequency, duration, and pressure of supply (average of the three dimensions) in Water Network Project areas.	Percentage		Surveys	Independent Evaluator	Other	Value for this indicator was updated based on the baseline final report where in Arabic "not very good" and "quite dissatisfied" is the same as "bad" and "very dissatisfied."
	Outcome	Customer dissatisfaction with water quality	Percent of water utility customers "very dissatisfied" or "quite dissatisfied" with potability of network water in Water Network Project areas.	Percentage		Surveys	Independent Evaluator	Other	Value for this indicator was updated based on the baseline final report.

Jordan: Water Network Project Indicators Annex I: Indicator Documentation Table									
CI Code	Indicator Level	Indicator Name	Definition	Unit of Measure	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information
Water Network Project Outcome Indicators									
WS-8	Outcome	Non revenue water	The difference between water supplied and water sold (i.e. volume of water "lost") expressed as a percentage of water supplied.	Percentage	Geographic (Network-wide, non-Compact DMAs, Compact DMAs)	Miyahuna NRW Dept. Quarterly report	Miyahuna-Zarqa	Quarterly	<p>The measurement of Non-Revenue Water in Zarqa is highly variable and prone to measurement error. NRW is composed of two key data sources: the amount of water entering the network and the amount of water leaving the network. In Q3 of 2014, Miyahuna-Zarqa installed inflow meters on their network and began measuring the amount of water supplied to the network in Zarqa. All the measured amounts of water supplied to Zarqa prior to the installation of those meters were estimates. These meters represent significant improvements in the quality of measurement of the inflow of water to Zarqa.</p> <p>Similar strides have not yet been made in measuring the amount of water leaving the network in Zarqa. Miyahuna-Zarqa measures an estimate of 80 percent of the customer meters in their network every quarter, which does not align with the monthly inflow measures. As a result, they use a combination of data, forecasting, and estimation to calculate how much water has left the network. In addition, there are often an unknown number of outflow points in any part of the network, making it extremely challenging to hydraulically isolate portions of the network to accurately capture NRW. This introduces significant measurement error and helps explain the sizeable variance in the NRW figure from quarter to quarter.</p> <p>Due to these well-known challenges in data quality, a baseline that is simply a measurement of NRW in one quarter will likely be inaccurate and could vary by as much as ten points the next quarter. To account for the variation and insure that the assessment of Compact results is not disproportionately impacted by measurement error, the MCC and MCA-J team believe that the best approach is to take an average of the quarters after the new inflow meters came online and the first portion of the MCC investment as operationalized.</p> <p>The baseline will be set to an average of the NRW numbers from a period after the 3rd quarter of year 3 and a year before Miyahuna started operating their first connection point (Q3 of Y4 is MCC's best estimate based on conversations with Miyahuna-Zarqa). If we average NRW from Q4 of Y3 to Q3 of Y4, we get a baseline of 61.56.</p> <p>While measuring network wide NRW remains challenging, it is possible to accurately capture the NRW in the MCC DMA's. As the MCC investment was designed to be hydraulically isolated, we can control the inflow, measure it, and then measure all the outflow points on the network within a defined period of time. In addition, this will enable us to directly measure the impact of the MCC investment in the portions of the network that we rehabbed. While many factors may affect NRW network-wide, this will provide an accurate assessment of the benefits of network rehabilitation by MCC in terms of commercial and physical losses. This exercise will require additional resources from Miyahuna-Zarqa and discussions are currently ongoing to determine the way to measure this indicator.</p>
WS-9	Outcome	Continuity of Supply	Hours of supply/week (during the summer).	Hours per week	Geographic (Network-wide, non-Compact DMAs, Compact DMAs)	WAI Zarqa administrative reports; PMC administrative reports	WAI Zarqa; PMC	Quarterly	<p>The original target of 70 hours of supply was a policy objective of the Government of Jordan and the basis for this target. With the influx of refugees into Jordan, we do not think it is likely that this target will be achieved with the Compact investments. This target was set when the population increase was projected to be 963,911 by 2020 in Zarqa. Zarqa currently houses 1.3 million people due to the rapid and unanticipated influx of displaced people due to the conflict in the region.</p> <p>In addition, the government struggles to accurately measure this indicator in Zarqa due to the same challenges that hinder accurately capturing NRW. The figure reported in the ITT is the planned hours of what supplied to Zarqa, not the actual number of hours supply. While capturing hours of supply network wide is highly challenging, MCC and MCA-J believe that we can capture hours of supply in the Compact DMA's during the same data collection exercise that is used to measure NRW in the Compact DMA's.</p>
Water Network Activity 2: Infrastructure Investment									
	Outcome	Average number of daily leak complaints received	Average number of daily leaks complaints received	Number	Geographic (Ruseifah, Zarqa)	Miyahuna Daily Maintenance Report	Miyahuna-Zarqa	Quarterly	
	Outcome	Average daily number of pending complaints	Daily average of pending complaints received	Number	Geographic (Ruseifah, Zarqa)	Miyahuna Daily Maintenance Report	Miyahuna-Zarqa	Quarterly	
	Outcome	Average daily response time in hrs for water complaints	Average daily response time, in hours, that it took the first maintenance team to respond to the complaint	Hours	Geographic (Ruseifah, Zarqa)	Miyahuna Daily Maintenance Report	Miyahuna-Zarqa	Quarterly	
	Outcome	Average daily number of "No Water Complaints"	Average daily number of "No Water Complaints"	Number	Geographic (Ruseifah, Zarqa)	Miyahuna Daily Maintenance Report	Miyahuna-Zarqa	Quarterly	
	Outcome	Average daily number of "No Water Quality Complaints"	Average daily number of "No Water Quality Complaints"	Number	Geographic (Ruseifah, Zarqa)	Miyahuna Daily Maintenance Report	Miyahuna-Zarqa	Quarterly	

Jordan: Wastewater Network Project Indicators Annex I: Indicator Documentation Table									
CI Code	Indicator Level	Indicator Name	Definition	Unit of Measure	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information
Wastewater Network Project Outcome Indicators									
	Outcome	Number of Complaints Received About Sewer Blockage	The annual number of complaints received by the Miyahuna maintenance department about sewer blockage.	Number	Geographic (Amman, Zarqa)	Miyahuna Daily Maintenance Report	Miyahuna-Zarqa	Quarterly	
	Outcome	Volume of wastewater collected	Total volume of wastewater collected through the sewer system and pumped via West Zarqa, East Zarqa and West Ruseifa pumping stations.	Cubic meters		Wastewater Dept. Quarterly Report	Miyahuna-Zarqa	Quarterly	This indicator focuses on quantity of wastewater collected from Zarqa Governorate
	Outcome	Percentage of water network subscribers with a wastewater connection	Zarqa Governorate wastewater subscribers as a percent of water subscribers. The assumption by Miyahuna-Zarqa is that each wastewater connection serves three water subscribers.	Percentage		Miyahuna IT Unit Quarterly report	Miyahuna-Zarqa	Quarterly	
WS-13	Outcome	Percentage of population connected to the wastewater network	Percentage of the population of Zarqa with a wastewater connection	Percentage	Population Growth (Forecasted)	Miyahuna IT Unit Quarterly report	Miyahuna-Zarqa	Quarterly	Indicator was added to more accurately capture the benefit stream forecasted in the ERR. Targets will be set using the ERR model. The new indicator will be disaggregated by forecasted population growth and actual population growth. The targets for this indicator were originally set based on forecasted population growth in 2009. This did not foresee the population explosion caused by the inflow of Syrian refugees into Jordan. The Compact's ability to meet this target is highly sensitive to this unforeseen population change and a disaggregation was added to provide the additional context required to measure the efficacy of the program in the face of this unforeseen population influx.
	Outcome	Total number of wastewater network subscribers	The total number of wastewater subscriptions in Zarqa and Ruseifa in the Miyahuna-Zarqa financial system	Number	Project type (MCC DMAs and non MCC DMAs) and population based (population per connection)	Miyahuna IT Unit Quarterly report	Miyahuna-Zarqa	Quarterly	

Jordan: As-Samra Expansion Project Indicators Annex I: Indicator Documentation Table									
CI Code	Indicator Level	Indicator Name	Definition	Unit of Measure	Disaggregation	Primary Data Source	Responsible Party	Frequency of Reporting	Additional Information
As-Samra Expansion Project Outcome Indicators									
	Outcome	Treated wastewater used in agriculture	Treated wastewater used for irrigation in Northern and Middle Jordan Valley as a percent of all water used for irrigation in Northern and Middle Jordan Valley.	Percentage		Information Dept. Quarterly report	MWI/JVA	Quarterly	Timeframe of reporting for this indicator is adopted to be aligned with JVA system (Q1: Nov-Jan, Q2: Feb-April, Q3: May-July, Q4: Aug-Nov) to be consistent with JV seasonal use of fresh water (summer and winter). The data will be reported in the Compact quarter which covers the last quarter of the JVA system. For example, Q1 of the JVA system will be included in the first quarter of each Compact year.
	Outcome	Quality of As-Samra effluent meets standard	Number of days during the past quarter when effluent does not meet the applicable standard set out in the As-Samra Project Agreement.	Days		PMU monthly report	PMU	Quarterly	
	Outcome	Volume of waste water effluent discharged from the As-Samra plant per year	Annual volume of wastewater treated to at least secondary level (measured as annual volume of wastewater effluent discharged from the As-Samra plant, million cubic meters per year).	Cubic meters		PMU monthly report	PMU	Quarterly	Volume of wastewater effluent discharged from the As-Samra plant equals to the Total inflow minus 2% as a sludge.
	Outcome	Agriculture use of treated wastewater	Agriculture land in the Middle and Northern Jordan Valley using treated wastewater for at least part of their irrigation water.	Hectares		Information Dept. Quarterly report	MWI/JVA	Quarterly	Baseline number was revised using JVA historical figures and definition.

Jordan: Compact Program Goal and Outcome Indicators

Annex II: Table of Indicator Baselines and Targets

Indicator Level	Indicator Name	Unit of Measure	Indicator Classification	Baseline (2011)	Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact Target
					2012	2013	2014	2015	2016	
Compact Wide Indicators: Goal and Outcome Level										
Goal	Poverty rate in Zarqa Governorate	Percentage	Level	11.2 (2005)						
Outcome	Network water consumption per capita	Liters per capita per day	Level (Average)	65	65	67	70	83	96	96
Outcome	Network water consumption per capita (Residential)	Liters per capita per day	Level (Average)	57	57	59	62	73	88	88
Outcome	Network water consumption per capita (Non-residential)	Liters per capita per day	Level (Average)							
Outcome	Residential water consumption	Liters per capita per day	Level	62.3 (2009)		64	67	79	89	89
Outcome	Operating cost coverage	Percentage	Level	87	81	83	98	100	100	100
Outcome	Operations and maintenance costs	US dollars	Level	\$ 24,818,472	\$ 25,946,585	\$ 26,651,655	\$ 32,433,231	\$ 35,253,512	\$ 38,073,793	\$ 38,073,793

Jordan: Water Network Project Indicators
Annex II: Table of Indicator Baselines and Targets

Indicator Level	Indicator Name	Unit of Measure	Indicator Classification	Baseline (2011)	Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact Target
					2012	2013	2014	2015	2016	
Water Network Project Outcome Indicators										
Outcome	Use of tanker water	Liters per capita per day	Level	4.7 (2009)			Monitoring Only	Monitoring Only	1.2	1.2
Outcome	Use of treatment shop water	Liters per capita per day	Level	0.4 (2009)			Monitoring Only	Monitoring Only	0.2	0.2
Outcome	Incidence of diarrhea	Percentage	Level	3.1 (2014)			Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only
Outcome	Incidence of diarrhea (Under age five)	Percentage	Level	9 (2014)				8	7	7
Outcome	Incidence of diarrhea (5 years and older)	Percentage	Level	0.87 (2014)			Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only
Outcome	Customer dissatisfaction with supply service	Percentage	Level	34 (2009)				30	26	26
Outcome	Customer dissatisfaction with water quality	Percentage	Level	60 (2009)				48	40	40
Outcome	Non revenue water	Percentage	Level	61.6	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	46.56	46.56
Outcome	Non revenue water (MCC DMAs only)	Percentage	Level	61.6	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	19.3	19.3
Outcome	Non revenue water (non MCC DMAs)	Percentage	Level	61.6	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only
Outcome	Continuity of Supply - network wide	Hours per week	Level	36	36	36	48	57	70	70
Outcome	Continuity of Supply - in MCC DMAs	Hours per week	Level	36						
Outcome	Continuity of Supply - in non MCC DMAs	Hours per week	Level	36						

Jordan: Water Network Project Indicators
Annex II: Table of Indicator Baselines and Targets

Indicator Level	Indicator Name	Unit of Measure	Indicator Classification	Baseline (2011)	Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact Target
					2012	2013	2014	2015	2016	
Water Network Project Outcome Indicators										
Water Network Activity 2: Infrastructure Investment										
Outcome	Average number of daily leak complaints received	Number	Level Average	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only
Outcome	Average number of daily leak complaints received - Ruseifah	Number	Level Average	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only
Outcome	Average number of leak complaints received - Zarqa	Number	Level Average	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only
Outcome	Average daily number of pending complaints	Number	Level Average	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only
Outcome	Average daily number of pending complaints - Ruseifah	Number	Level Average	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only
Outcome	Average daily number of pending complaints - Zarqa	Number	Level Average	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only
Outcome	Average daily response time in hrs for water complaints	Hours	Level Average	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only
Outcome	Average daily response time in hrs for water complaints - Ruseifa	Hours	Level Average	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only
Outcome	Average daily response time in hrs for water complaints - Zarqa	Hours	Level Average	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only
Outcome	Average daily number of "No Water Complaints"	Number	Level Average	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only
Outcome	Average daily number of "No Water Complaints" - Ruseifah	Number	Level Average	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only
Outcome	Average daily number of "No Water Complaints" - Zarqa	Number	Level Average	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only
Outcome	Average daily number of "No Water Quality Complaints"	Number	Level Average	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only	Monitoring Only

Jordan: Wastewater Network Project Indicators
Annex II: Table of Indicator Baselines and Targets

Indicator Level	Indicator Name	Unit of Measure	Indicator Classification	Baseline (2011)	Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact Target
					2012	2013	2014	2015	2016	
Wastewater Network Project Outcome Indicators										
Outcome	Number of Complaints Received About Sewer Blockage	Number	Level	8,500	8,500	8,500	7,000	6,000	2,000	2,000
Outcome	Number of Complaints Received About Sewer Blockage - Amman	Number	Level							
Outcome	Number of Complaints Received About Sewer Blockage - Zarqa	Number	Level							
Outcome	Volume of wastewater collected	Cubic meters	Level (Cumulative)	24 (2009)	24	24	25	27	31	31
Outcome	Percentage of water network subscribers with a wastewater connection	Percentage	Level	72 (2009)	72	72	73	74	82	82
Outcome	Percentage of population connected to the sewer system	Percentage	Level	72	72	72	72	79	85	85
Outcome	Percentage of population connected to the sewer system - forecasted population	Percentage	Level							
Outcome	Total number of wastewater network subscribers	Number	Level (Cumulative)	94,778	97,621	100,550	103,566	106,673	119,793	119,793
Outcome	Total number of wastewater network subscribers - connections in MCC DMAs	Number	Level (Cumulative)	0	0	0	0	2,480	2,629	2,629
Outcome	Total number of wastewater network subscribers - population per connection in MCC DMAs	Number	Level (Cumulative)					17,360	18,403	18,403
Outcome	Total number of wastewater network subscribers - connections in non MCC DMAs	Number	Level (Cumulative)							
Outcome	Total number of wastewater network subscribers - population per connection in non MCC DMAs	Number	Level (Cumulative)							

Jordan: As-Samra Expansion Project Indicators
Annex II: Table of Indicator Baselines and Targets

Indicator Level	Indicator Name	Unit of Measure	Indicator Classification	Baseline (2011)	Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact Target
					2012	2013	2014	2015	2016	
As-Samra Expansion Project Outcome Indicators										
Outcome	Treated wastewater used in agriculture	Percentage	Level	61	62.5	64	65.5	67.5	70	70
Outcome	Quality of As-Samra effluent meets standard	Days	Level	0	0	0	0	0	0	0
Outcome	Volume of waste water effluent discharged from the As-Samra plant per year	Cubic meters	Level (Cumulative)	65,000,000 (2009)	65,000,000	65,000,000	70,000,000	85,000,000	99,000,000	99,000,000
Outcome	Agriculture use of treated wastewater	Hectares	Level	13,700	14,000	14,400	14,800	15,200	15,900	15,900

Annex 3: Monitoring and Evaluation Schedule

Monitoring

Under the PCP, MoPIC is responsible for on-going monitoring of a small set of indicators. The Indicator Documentation Table in Annex1 provides a detailed definition of each indicator that includes unit of measurement, source of data, responsible entity, and frequency of reporting. All data should be aggregated by MoPIC and shared with MCC. The reporting schedule for MoPIC to MCC is the following.

Table 1. Monitoring Schedule			
Year	Quarterly Reports	Annual Reports	Stakeholders Providing Data
2017	September, December	December	Miyahuna-Zarqa, MWI, PMU, JVA
2018	March, June, September, December	December	Miyahuna-Zarqa, MWI, PMU, JVA
2019	March, June, September, December	December	Miyahuna-Zarqa, MWI, PMU, JVA
2020	March, June, September, December	December	Miyahuna-Zarqa, MWI, PMU, JVA
2021	March, June, September, December	December	Miyahuna-Zarqa, MWI, PMU, JVA

Evaluation

In addition to post-Compact monitoring, MCC will be publishing final evaluations after the Compact. MCC has contracted Social Impact to conduct the final evaluation surveys and produce independent post-Compact evaluations of all Compact activities. The expected schedule for survey and the presentation of evaluation results is the following:

Table 2. Evaluation Schedule			
Year	Surveys	Presentations	Stakeholders Involved
2017	May - October		UNHCR, Ministry of Health, Miyahuna-Zarqa
2018	June- August, September-October		Miyahuna-Zarqa, Miyahuna-Amman, JVA, PMU, Ministry of Health,
2019	--	April, August	Miyahuna-Zarqa, MWI, PMU, JVA, Ministry of Health, UNHCR, Donors, USAID