



USAID | **EGYPT**
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CLEAN WATER FOR EGYPT

**EGYPT WATER POLICY AND REGULATORY REFORM
Program: Final Report**

September 2013

This publication was produced for review by the United States Agency for International Development. It was prepared by Chemonics International Inc.



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EGYPT WATER POLICY AND REGULATORY REFORM PROGRAM: FINAL REPORT

Contract No. EPP-I-00-04-00020-00

**Task Order No. 2 under the Integrated Water and Coastal Resources Management
Indefinite Quantity Contract (Water II IQC)**

Cover photo: A construction worker in Egypt's Beni Suef Governorate lays a water pipe that will help expand water services to new households in a growing community. The USAID Egypt Water Policy and Regulatory Reform Program developed systems for helping the Egyptian government better manage and monitor water and wastewater infrastructure projects.

Photo courtesy of the Egypt WWSS Program, September 2011

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EXECUTIVE SUMMARY

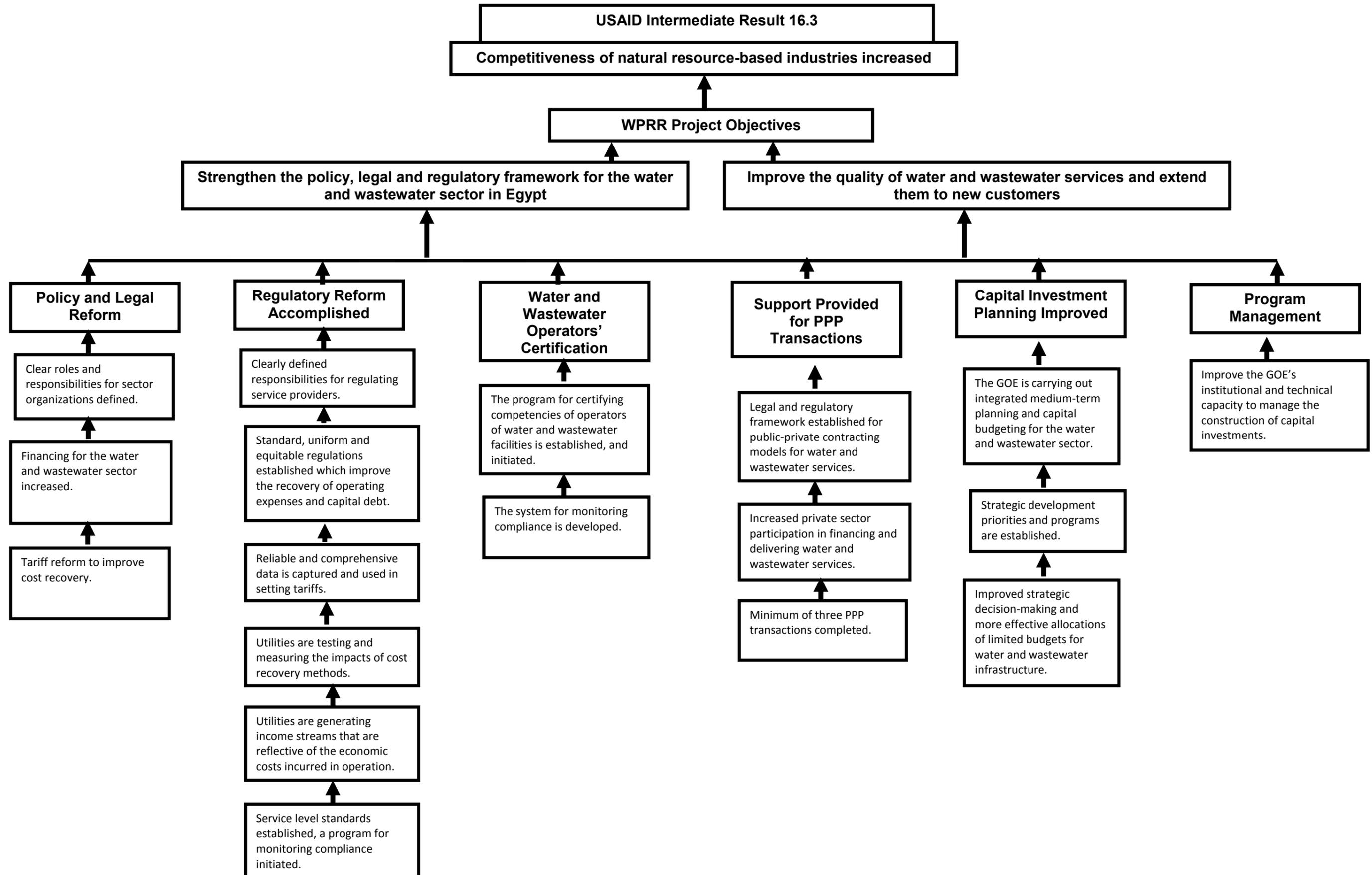
USAID has worked to bring clean, safe water to the Egyptian people for more than 30 years. Initial work focused particularly on wastewater infrastructure in Cairo and Alexandria. During the 1990s, USAID expanded its infrastructure activities with projects in the secondary cities and Middle Egypt and began funding utility institutional strengthening efforts with the water and wastewater authorities in Cairo, Alexandria, the secondary cities, and Middle Egypt. Notwithstanding the efforts to improve the financial conditions of the utilities, it became clear by the early 2000s that the performance of the utilities (organized as economic authorities) was not meeting the expectations of the government. By 2003 the sector suffered from a ‘crisis level’ financial situation requiring ongoing subsidies from the Ministry of Finance. Financial reports indicated an accumulated debt to the National Investment Bank that exceeded LE 7.3 billion and operating deficits in the 14 water sector utility economic authorities totaling LE 7.6 billion. Additionally, with the exception of the Alexandria Water Authority, none of the economic authorities were covering annual operating and maintenance costs.

To meet these challenges, the Government of Egypt (GOE), with assistance provided through the USAID-funded Water and Wastewater Sector Policy Reform (WWSR) program, initiated a major reform of the sector in 2004. Presidential Decree 135 established a water sector holding company, transforming the 14 largest utilities into subsidiaries of the holding company under local law 203. Presidential Decree 136 mandated a water sector regulatory authority. A second WWSR project, begun in 2005, provided broad-based technical assistance to the new Holding Company for Water and Wastewater (HCWW) and to the Egyptian Water Regulatory Agency (EWRA).

This support continued in 2008, when USAID launched the Water Policy Sector Reform Project (WPRR) to work with EWRA and USAID’s Water and Wastewater Sector Support Project (WWSS) to strengthen HCWW and its subsidiaries. The WPRR scope of work also provided for support at the ministry level to strengthen the policy, legal, and regulatory framework for the water and wastewater sector. Project staff and consultants worked with the Ministry of Housing, Utilities, and Urban Development (MHUUD) except for the period between August 2012 and July 2013 when the counterpart was the Ministry of Water and Wastewater Utilities (MWWU).

The WPRR scope of work was organized around six inter-related components, discussed in detail below and in annexes of this report. Under each component, the scope of work specified required tasks and deliverables that formed the basis for annual work plans and guided implementation. To foster GOE ownership of program activities and align them with broader sector objectives, the WPRR team coordinated closely with EWRA, MHUUD, and MWWU and their respective agencies, the USAID-funded WWSS program, and other donor initiatives in the sector. Political uncertainty and changing GOE objectives required flexibility regarding resource allocation and staffing, for example in de-emphasizing public-private partnership (PPP) work and prioritizing the national tariff study noted below. The WPRR results framework below highlights how WPRR’s six components addressed sector objectives.

WPRR Program Results Framework



Major Accomplishments

- *New Policies Approved.* In September 2010, MHUUD approved the water sector policies drafted by the WPRR program team. This policy document became the official set of MHUUD water sector policies.
- *National Tariff Study Completed.* The WPRR program team completed a national tariff study in February of 2013 which examined cost recovery in 20 water and wastewater subsidiary companies. The study used subsidiary billing data and financial statements to assess the potential impact of revised tariff structures and water and wastewater rates on subsidiary financial performance. EWRA is using the results of the study and forecasting tools developed by WPRR consultants to provide policy recommendations to the ministry regarding water pricing and subsidy requirements for the sector.
- *Tariff Application Piloted.* Following training from WPRR staff, the EWRA Tariff and Pricing Department piloted tariff applications with six subsidiary companies, assisting the companies to develop five-year financial projections and to complete cost-of-service studies.
- *Utility Licensing System Piloted.* The WPRR team developed a comprehensive utility licensing system and worked with EWRA to pilot the system with three subsidiary companies. The team presented the results of that activity on June 27, 2013.
- *Operator Certification Implemented.* MHUUD formally established a certification program for water and wastewater plant operators, lab analysts, and distribution/collection system engineers through an April 2010 Ministerial Decree. WPRR staff and consultants developed policies, procedures, a program framework, core competencies, examination question databanks, and management information systems required to operationalize the certification program. The Housing and Building National Research Center (HBNRC) administered the first three certification exams in July 2012, February 2013, and June 2013. Twenty-two of 45 operators who took the tests, passed. The minister awarded certificates on June 27, 2013.
- *Public-Private Partnerships Supported.* WPRR staff, consultants, and subcontractors provided environmental, engineering, and legal transaction support for three planned PPP transactions. The projects were suspended due to the January 25, 2011 revolution; however, prequalification documents, contracts, and tender documents developed under WPRR can be used for future water sector PPP transactions.
- *Capital Projects Prioritization Model Implemented.* The National Organization for Potable Water and Sanitary Drainage (NOPWASD) adopted the Excel-based capital projects prioritization model developed by the WPRR team. The model assigns weights to agency-specified indicators and prioritizes projects within a specific governorate based on available funding.
- *PRiSM Improved and Implemented.* With the MHUUD Program Monitoring and Evaluation Unit, WPRR developed PRiSM 2.0, which enhanced this program management information system developed under the USAID-WWSPR project. PRiSM contains project details on active and completed water and wastewater infrastructure projects. Construction agencies within the MWWU and MHUUD use PRiSM to generate project status reports for ministry officials.

Importance of High Level Governmental Support. Although the above accomplishments represent significant advancements for the water sector, not all expected results were achieved during the period of performance. As noted in the mid-term evaluation report (see discussion below), WPRR's program management plan changed over time with the last revision in 2011. The changing indicators left the program with limited time to achieve and collect results for each specific indicator. The WPRR experience provides valuable lessons learned and recommendations on key practices for designing and implementing activities in the evolving Egyptian water sector. One thing made clear through the WPRR experience and predecessor projects is that institutionalizing change requires support from the highest levels of government. The water sector policy, the water sector certification program, and the PRiSM program management system were all successful initiatives because the relevant minister embraced the activity and issued decrees necessary to achieve sustainability. This was not the case regarding WPRR initiatives such as licensing. The authority for EWRA to grant licenses rests with a draft water law, the passage of which continues to be delayed by political turbulence that interferes with the government's normal parliamentary processes and progress.

Effective Donor Coordination. Another key factor leading to successful implementation under WPRR was the high level of coordination among donors after the 2004 sector restructuring. Based upon this coordination, complementary programs were designed and funded. WPRR management emphasized continued collaboration and resource sharing with other projects and the government throughout implementation. By design, WPRR and WWSS staff worked together closely on the water sector certification program, the development of the construction management system, and the installation of the PRiSM program management system in the subsidiary companies. This relationship allowed both programs' activities to reflect the needs of the main counterparts: MHUUD, MWWU, EWRA, and HCWW. WPRR staff also worked closely with several GIZ, EU, and World Bank projects to optimize results.

The first collaboration with GIZ was around the development of water sector policies, with later coordination on integration of the operator certification program into the career path system developed by GIZ for the holding company. WPRR staff was deeply involved with two EU-funded EWRA technical assistance projects which operated during the course of the WPRR program. The WPRR team worked with the first EU project on the development of the tariff application system and on the development of indicators that became a part of the Annual Information Return (AIR) system. WPRR specialists worked with the second EU project on implementation of the subsidiary company tariff application program. Finally, WPRR staff trained the World Bank ISSIP project and the EU consortium IWSP staff on the use of PRiSM in monitoring construction projects implemented by those two projects.

Key Role of Stable Counterparts. Changes in counterparts and turnover in counterpart staff mid-program caused significant disruption to WPRR activities. While the creation of the new MWWU was a positive development for the sector, it was a challenge for the program team to respond to a new set of priorities during the last year of the contract.

Before the formation of the MWWU, the WPRR team completed a set of water sector policies and started on the development of the water sector strategy under the direction of the MHUUD assistant minister. The assistant minister solicited regular updates and provided guidance, direction, and approval of work completed. After a year of working on the water sector strategy in this fashion, the MWWU was formed and abruptly a new set of ministry personnel began serving as WPRR counterparts. The directions provided by the former MHUUD counterpart were not acceptable to the new counterparts. This caused a major disruption in the development of the water sector strategy. Recent political upheavals caused the MWWU to dissolve, and on June 30, 2013, the new cabinet of ministers merged oversight of the water and sanitation utilities departments back into MHUUD.

Additionally, EWRA has undergone significant personnel changes during the course of the program. The original staffing design for EWRA proposed compensation intended to attract and retain a small cadre of high caliber staff, with capacity building to be provided by WPRR and EU technical assistance teams. This staffing model has not been implemented, and turnover has undermined the effectiveness of capacity building efforts. For example, over the course of the program, two key members of the EWRA Tariff and Pricing Department were transferred to other departments and the manager of the department was relieved of his duties in June 2013. As this department was the focal point for many WPRR training activities and deliverables, these changes will have a deleterious effect on the ability of the department to carry out tariff work.

USAID Evaluation. To look more broadly at the sector as a whole and to assess the impact of USAID institutional support activities in the post-2004 period, USAID evaluated the WPRR and WWSS programs in February of 2012. An evaluation team from Washington, comprising Heather Skilling, Anthony Kolb, and Raouf Youssef, came to Egypt for two weeks and talked with all major project stakeholders. The primary purpose of the evaluation was to determine if each program should be extended through the option year, and to identify future programming opportunities for USAID in the water sector. The evaluation team recommended the option year be exercised for both programs and made the recommendations presented below.

USAID Evaluation Priority Areas:

- *Sector strategy/legal and regulatory framework.* Following receipt and review of the USAID evaluation report, the development of the water sector strategy continued to be a major focus of the program. Program staff completed 12 background studies and a draft strategy, all of which were revised based upon input from ministry officials.
- *Tariff studies and reform.* As was the case with the development of a water sector strategy, tariff studies were a major focus of the WPRR program. The national tariff study involving 20 subsidiary companies was completed by the end of 2012 and a report was submitted in February of 2013. In addition, tariff application pilot exercises were conducted with six subsidiary companies. The tariff application

exercise provided training to subsidiary company staff on the methodology for calculating tariff needs.

Recommended for Increased Emphasis:

- *Piloting of licensing/performance agreements.* As suggested by the USAID evaluation team, the WPRR program carried out a licensing pilot involving three subsidiary companies: Beheira, Gharbeya, and Alexandria Water. The purpose of the pilot was to test the licensing system developed by the WPRR team. By the end of May 2013 each of the three companies had completed the submission of required data and EWRA staff was carrying out an evaluation. A workshop was held on June 27 during which the results of the pilot licensing exercise were shared with representatives from all of the subsidiary companies.
- *Operator certification program.* The water sector certification program was fully developed by the WPRR program and officially adopted by the MHUUD. Since the USAID evaluation was completed, certification exams have been administered for three groups of treatment plant operators.



Laboratory technicians at treatment plants improved their skills and knowledge of water regulations through WPRR's certification programs.

Recommended for Reduced Emphasis:

- *Capital investment planning and project management support (PRiSM).* Very few program resources were devoted to the capital investment planning activity. However, because the MWWU minister indicated he would like to see NOPWASD adopt the WPRR capital project prioritization model, one WPRR staff member continued to work with the NOPWASD Planning and Follow-up Department on using the model to prioritize governorate projects. The WPRR program management team finished work on this activity in August of 2012. One program management staff member continued to work through June of 2013 to provide support for the new Ministry of Water and Wastewater Utilities.

- *Basic skills training for EWRA (English, MS Office, etc.).* No English language or software skills training were provided for EWRA staff during the option year.

In addition to these WPRR-specific recommendations, the USAID evaluation team made more general recommendations on potential future USAID support to the water sector. These included building the capacity of the HCWW to manage fixed amount reimbursement agreement (FARA)-based assistance contracts, linking capital budgets more closely with performance agreements, training HCWW staff to manage build/own/operate/transfer transactions, and emphasizing support to high-performing subsidiaries to incentivize performance within the sector. With the phasing out of institutional support programs however, a number of WPRR activities will be taken over and managed by EWRA and MWWU. To ensure the sustainability of these activities, the government will need to address a number of issues identified in this and other WPRR reports and studies and summarized above in the executive summary.

Recommendations for Future Institutional Support Programs

Beyond capacity building, WPRR and its counterparts have identified a number of issues that must be addressed to ensure sustainability of WPRR achievements. With the creation of a new Ministry of Housing, Utilities and Urban Development, there is an opportunity to leverage the transition period to move forward the reform agenda. Issues for consideration in future institutional support programs include the following:

- *Establish an Independent Water Sector Regulator* - During the prior USAID funded project and the current WPRR program, USAID-funded project staff have emphasized that the water sector regulator needs to be independent of the ministry. EWRA operates as a department within MHUUD and the minister is the chairman of the board of directors. Under this arrangement, EWRA becomes more of a technical office within the ministry rather than operating as a true water and sanitation sector regulator.
- *Implement Best Practices in Tariff Design and Application* - Tariffs in Egypt are among the lowest in the world and must be increased. In 2013 the government started increasing tariffs, except for the 0 to 10m³ block, by LE 0.02 every billing period. This is a start. However, these have been unannounced increases. Tariff increases should be announced and justified. Additionally, the recommendations and findings from the WPRR tariff study must be carefully reviewed and relevant changes must be made to reflect current international best practices for tariff design.
- *Finalize and Pass the Draft Water Law and Strengthen EWRA* - The sector continues to operate without a fully developed legal framework and comprehensive water law. If adopted, the current version of the draft law authorizes EWRA to license subsidiary companies, which will ultimately lead to higher quality service and transparency. Full legal authority would also put EWRA on a better footing in interactions with the subsidiary companies. EWRA has significant problems receiving data from

subsidiary companies due in part to review procedures put in place by the HCWW. Examples are submission of AIR data and pilot license applications.

- *Implement the Tariff Application Process* - The tariff application process should be formalized and should be a primary tool for rate-making and utility-specific pricing. Through this process each subsidiary company sets targets through the development of business plans, develops estimates of the cost of meeting those targets, and estimates the revenue requirements for provision of the mandated service. Where tariffs are low and cannot be raised rapidly, the tariff application process allows the specification of the value of the subsidy required from the government for the domestic class and the cross subsidy between customer classes.
- *Sustain the Water Sector/Operator Certification Program* - A good start has been made on the implementation of a water sector certification program. To ensure sustainability, consideration must be given to the following:
 - Funding must be allocated to HBNRC for the administration of certification exams and the ongoing review and update of certification exam questions.
 - The certification exam questions should be reviewed and updated on a regular basis. This is the job of the Certification Technical Implementation committee. Exam question databanks must be continuously updated over time to replace questions and ensure that examinations align with the job requirements for certified positions.
 - As the administration of certification exams becomes routine, additional water sector positions should be added to the program. Possible positions include plant maintenance technologists, network technicians, and industrial waste treatment operators.
 - It has been reported that the holding company will create a system of incentives for operators who pass certification exams. This information needs confirmation, as a system of incentives will encourage the operators to study for certification exams and help attract qualified operators to ensure the sustainability of the program. Additionally, the holding company and its operating subsidiaries must be prepared to pay the fees associated with the administration of the exam.
 - Because the GIZ water sector technical assistance project (which includes a workforce development component) has been extended to 2015, consideration should be given to requesting support from that project for further development of the operator certification program.
- *Improve PPP Coordination* - Public-private partnership transaction support must be better coordinated. The roles of the Ministry of Finance PPP Central Unit, the transaction advisor, the ministry line agencies, and the transaction support teams must be clearly established. Ministry line agencies must do a better job of settling all relevant issues such as project location, land ownership, and technologies to be incorporated within the project, before the transaction teams start work. Changes in project scopes lead to significant costs and delays that can be avoided through improved planning and coordination. To this end, it is recommended that a PPP unit

be established in the Ministry of Housing, Utilities, and Urban Development. WPRR has developed all organizational systems required to create this department.

- *Support and Sustain the Application of PRiSM* - The PRiSM program management system represents a major improvement in the ability of the ministry to monitor water sector infrastructure projects. The sector has traditionally been plagued by budget overruns and schedule delays. If PRiSM is to have value however, ministry management must make clear to the agency project control units the importance of accurate monthly updates of project data. If project data is not updated on a monthly basis, decision-makers are not able to access timely, accurate information. This means the monthly update process must be actively managed and data entry units cannot be allowed to input data without an active review of accuracy.

I. POLICY AND LEGAL REFORM

Sector Challenges

Lack of Clear Policy Direction. During the first few years following the reforms of 2004, the focus in the water sector was on development of the newly formed regulatory agency and water and sanitation utilities. However, it soon became clear that reform of the sector would be an ongoing process. What was lacking was a policy direction for the ongoing reform process. By 2008, MHUUD recognized the need for three key pillars of the sector framework: a formal set of sector policies, a strategy for improving and expanding service delivery, and a comprehensive law governing the sector. MHUUD established a policy advisory unit and requested assistance from donors, notably GIZ and USAID, to support the development of this sector framework.

Growing Demands for Subsidized Services –The context for the development of the policy and legal framework was underscored by serious challenges and growing demand for services that have been compounded by political events since the January 25 revolution. A review of utility financial statements indicates, as would be expected, that at existing tariff rates, the operating subsidiaries of HCWW are not generating sufficient revenue to cover costs. As a result, the government must subsidize services beyond capital expenditures for new infrastructure, expansion, and rehabilitation. In fiscal year 2007/08 the total operations and maintenance (O&M) subsidy to water sector service providers was approximately LE 318 million. By FY 2011/12 this subsidy had ballooned to more than LE 800 million. It is not expected that subsidy allocations can be sustained and have been a major issue related to an IMF loan which the GOE is negotiating.

Low Tariffs Have Serious Consequences – Besides resulting in a need for operational subsidies, low tariff rates also have a negative environmental consequence in that they lead to overconsumption and wasteful practices. Water consumed by Egyptian citizens, as measured by liters/capita, exceeds international norms by a wide margin. While water losses are a component of the liters/capita figures, clearly excess consumption is a problem. Excess consumption results in excessive stress on existing water plants and the building of unnecessary new infrastructure. While a low tariff level is the major reason for excessive consumption and waste, consumer behavior, which has traditionally been ignored by water sector managers, is an area that must be addressed.

Operational and Workforce Performance Improvements – In addition to the problems resulting from low tariff rates, operational performance and workforce development are other critical elements that contribute to the financial health of the sector. Without reduction in non-revenue water (NRW), collection efficiency, and operational efficiency, tariff increases required to cover operating costs will raise significant affordability issues for low-income customers. This will likely jeopardize the political feasibility of future tariff approvals and, in turn, will diminish the likelihood of achieving the financial performance objectives of EWRA and HCWW. The USAID-funded WWSS program has

completed demonstration projects in several subsidiary companies which illustrate the possibility of achieving efficiencies in the areas of leak detection and reduction, energy use rationalization, and chemical use optimization.

Inadequate Wastewater Service Coverage – Service coverage, particularly wastewater coverage is not adequate and addressing the issue will require commitment at the highest levels of government. According to GOE figures only 11 percent of rural Egypt receives wastewater treatment service, while contributing 50 to 60 percent of the daily production of wastewater in the country. Thus about 9 to 10 million m³ of wastewater/day is produced but only 11 percent passes through a wastewater plant. The rest is discharged, untreated, into irrigation drains and non-drainage canals. This has an adverse effect on the raw water source for water treatment plants downstream and severely pollutes canals which provide irrigation water. This obviously has a negative effect on the health of Egyptian citizens as polluted canal water is used to irrigate agricultural products.

Activities and Methodologies

The focus of WPRR activities under Component 1, Policy and Legal Reform, has been development of water sector policy, a water sector strategy, and support for the development of a water law. As a first step, and in collaboration with the government policy advisory unit (PAU), WPRR staff completed a water sector policy document that was adopted by MHUUD in September 2010 and presented in a stakeholder workshop organized by GIZ. It was intended that the PAU would continue to lead policy dialogue and champion the strategy development process, however, the January 2011 revolution and the end of the GIZ policy support program disrupted progress. In October 2011, the MHUUD assistant minister organized meetings with WPRR to re-start the strategy development process. The expectation was that, given the political situation and unwillingness of decision-makers to approve major initiatives, WPRR staff and consultants would undertake the in-depth research necessary to guide strategy development, with direction from a ministerial committee that was established by formal decree in December 2011. To reflect the views and interests of a broad range of stakeholders within government, the committee included the heads of each MHUUD agency as well as representatives of the ministries of Finance and Irrigation and Water Resources, and the EU.



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Under the guidance of this committee, the WPRR team developed 12 background studies that provided detailed analysis of the constraints and opportunities related to: water quality and health standards, assets and service coverage status, the organizational structure of the sector, the legal framework for the sector, locally-funded initiatives, the Shorouk project, economic regulation for water services, lessons learned from regulation

of the Egyptian electricity sector, finance and pricing, affordability and protection of the poor, communication and demand side management, and human resource development.

In September of 2012, when the new MWWU was formed and became the official WPRR government counterpart, WPRR staff presented the status of the draft strategy to the new MWWU minister. Ministry staff provided guidance on required revisions and requested additional support specifically related to the issue of rural sanitation coverage. In response, the WPRR team developed two memoranda covering the financial requirements for completing wastewater coverage in all rural areas and the need to mount a public awareness program to involve community organizations in solving rural sanitation issues. The project team also continued to consult with key stakeholders, including NOPWASD, the Construction Authority for Potable Water and Wastewater (CAPW), HCWW, and GIZ.

In December of 2012 the first seven background studies were submitted to the ministry and USAID. The eighth was submitted in February of 2013. On April 17, 2013, ministry representatives expressed concern regarding the two studies which dealt with water quality and restructuring. This resulted in a request to revise and resubmit all 12 studies. Feedback from stakeholders was noted and the program worked to revise the water sector studies and overall strategy. This revision process was ongoing at the time of the printing of this completion report as political upheaval and security issues caused significant closures of the WPRR office and delays in completing the final deliverables.

The WPRR scope of work also called for input on revisions of the legal framework of the sector, and more specifically, assistance with the passage of a comprehensive water law defining the rights and obligations of entities engaged in water and wastewater service provision. By the start of the project, multiple versions of a law had been drafted by a ministerial committee with support from a prior USAID-funded project. WPRR advisors assisted with revisions, leading to the prime minister's approval of a final version that was scheduled to be presented to parliament for adoption before the 2011 revolution. In preparation for passage of the law, the WPRR legal advisor drafted executive regulations specifying how the law would be implemented, and worked extensively with EWRA managers to provide guidance on how EWRA would operate within the new legal framework. With the change in government, passage of the law became a lower priority. As of the end of the WPRR program, discussions continued regarding the water law; however, there was general agreement that it should be revised again to incorporate issues and goals identified during the strategy development process.

Accomplishments: Key Results and Impact

- *Water Sector Policy Document* – Sustainable institutional change is always difficult to accomplish. The fact that a water sector policy document was formally adopted by MHUUD in September 2010 constitutes a major project impact.
- *Water Strategy Background Studies* – The 12 water strategy background studies broke ground in areas which had not previously been given enough attention and analysis.

- *Water Law* - The executive regulations to the draft water law developed by the WPRR program can be expected to save considerable time and effort because when the water law is passed, the committee charged with developing the executive regulations will have a well-structured document to work with.
- *Water Strategy* – The 12 background studies are being presently revised to incorporate comments received from ministry officials, regulators, and water company officials.

Lessons Learned and Sustainability Plan

Political events led to major disruptions and turnover in counterparts that resulted in shifting priorities during the last year of the WPRR project. For example, after a year of working on the water sector strategy under the direction of the MHUUD assistant minister, a new ministry, MWWU, was created and a new set of personnel began serving as WPRR counterparts. The directions provided by the former MHUUD counterpart were



One water sector strategy study provided a comprehensive profile of sector assets.

not acceptable to the new counterparts, necessitating major revisions to previously completed studies.

Despite the setbacks, outside perspectives, either through local consulting firms or international assistance projects, continue to add value in fostering dialogue and building a body of evidence related to sector performance and goals for the future. The background papers prepared as part of the strategy development process provide a comprehensive assessment of sector performance and have helped government focus on the pressing needs to undertake tariff reform and invest in rural sanitation. The process of developing the papers has also helped underscore with government the importance of data collection mechanisms implemented by WWSS, WPRR, and predecessor projects.

Recent events, restructuring, and reintegration of the MWWU into MHUUD have complicated the task of policy and regulatory reform. Fortunately, the line staff at the main water sector agencies have been actively engaged in WPRR and WWSS activities and are positioned to build upon them with proper direction from senior ministry officials. While prior efforts to establish dedicated policy units within the ministry have not been successful, USAID and GIZ have been able to work closely at all levels within the ministry and related agencies to gradually move toward a unified vision for the sector.

Moving forward, the current GIZ technical assistance project has started coordinating issues that the WPRR team was working on, such as the water law and the sector strategy, and the EU is providing support to tariff issues referenced in Component 2 below. For all donors, including USAID, the sector strategy will provide a roadmap for future support to the sector, and will lead to improved donor coordination in planning activities that respond to GOE's documented goals and priorities. Therefore, ensuring adoption of a ministry strategy should be a primary objective for USAID assistance in the near term.

II. REGULATORY REFORM

Sector Challenges

As described in Presidential Decree 136 for 2004, EWRA was established as an agency within the Ministry of Housing, Utilities, and Urban Development, and began to staff up and carry out its mandate in 2006. The decree identified the objectives and role of EWRA in terms of regulating and monitoring the sector, but failed to provide the Agency with the authority and independence necessary to implement an effective regulatory regime. For example, the decree failed to give EWRA several important authorities such as:

- The mandate to calculate revenue requirements for service providers and set tariffs.
- The mandate to issue licenses for construction or for providing water and wastewater service.
- The mandate to resolve disputes between customers and service providers.
- The authority to set level-of-service standards for service providers. While EWRA has established the Annual Information Returns system, the agency has no authority to require submission of data from subsidiary companies, nor the authority to set a standard for each of the level-of-service indicators.

Economic regulation is a relatively new field in Egypt, and there has been little local capacity to staff EWRA and establish the systems necessary to effectively manage large sets of data and complex issues related to quality regulation and licensing.

On the utility side, a number of problems have been observed regarding the current water sector tariff structure. For domestic customers, standard tariffs are applied throughout the country, despite the fact that there are extreme variations in production costs due to geographic considerations, scale of operations, and market demography. From a global perspective, the tariff structures used by the water and wastewater companies to calculate customer water bills are unusual. The volumetric charge for water is calculated based on a “simple” (ratchet) increasing block tariff (IBT) with four or five blocks, whereby the customer gets charged for all consumption at the block rate of the final cubic meter consumed. This is coupled with a minimum charge that penalizes low-volume water users and a wastewater surcharge that is not reflective of the cost of service. In addition, there are multiple fixed charges across companies and the non-domestic customer classification system is unnecessarily complex and varies from company to company. These current practices send confusing and incorrect price signals that bear no relationship to the subsidiary company cost structure.

Activities and Methodologies

To meet the challenges articulated above, the WPRR scope of work called for a range of activities to be implemented with EWRA related to utility licensing, tariff reform, regulatory systems development, and organizational development support.

Activities and accomplishments within these main focus areas are described below.

Licensing. The licensing of water and wastewater service provider activities is the primary means for the regulatory agency to monitor utility performance and track compliance with legal and regulatory standards. Although until the draft water law is passed, EWRA does not have the legal authority to license water and sanitation utilities, WPRR staff developed a licensing system, based on international experience and the systems used in the Egyptian telecommunications and electricity sectors, and worked with EWRA to test the license application process. The licensing system consists of a license application, a licensing agreement template, and a set of rules and regulations around five service areas: administrative, technical, financial, environmental, and consumer protection.

Three pilot utilities were chosen to test the application submission and evaluation process: Alexandria Water, Gharbeya, and Beheira. Initially submissions from the pilot companies were delayed, primarily because of a concern on the part of the holding company regarding the submission of data to EWRA. After coordination with HCWW management, the pilot proceeded. By the end of May 2013, the three companies had submitted license applications and, in cooperation with EWRA, organized a workshop in June to present the results of the pilot and discuss lessons learned.

Tariff Reform. As a precursor to other tariff-related activities, WPRR designed and implemented a “Cost of Service” training course for members of the EWRA tariff and pricing department. The 18-month course provided in-depth instruction on pricing and tariff design and the role of the regulator in protecting the interests of both customers and service providers. WPRR also prepared a four-module self-study course to leave with EWRA to support ongoing study of tariff related issues.

When the 18-month training was completed in June of 2010, EWRA selected two companies, Beheira and Gharbeya, and worked closely with the economic analysis units within these subsidiaries to develop pilot tariff applications. The tariff application task requires water utilities to set targets through the development of business plans, develop estimates of the cost of meeting those targets, and to estimate the revenue requirements for provision of the mandated service. Where tariffs are low and cannot be raised rapidly, the tariff application process allows the specification of the value of the subsidy required from the government for the domestic class and the cross subsidy between customer classes. The tariff application is a series of steps by which the service provider submits a request to the regulator to adjust/specify the tariff required for the next three to five years based on agreed performance targets and the investment required to meet those targets.

Following the successful completion of the tariff application task in Gharbeya and Beheira, the tariff application task was expanded to four additional HCWW subsidiaries: Fayoum, Beni Suef, Minya, and Daqahleya. By July 2013, each subsidiary had submitted final tariff applications, with detailed analysis of revenue requirements and investments necessary to meet service delivery targets.

In parallel with the tariff application work, MHUUD requested a national tariff study to look at the impact of a simplified customer classification system and revisions to the tariff structure and rates. Three subcontractors, CVM LLC, Galardi-Rothstein Group, and CH2M HILL, fielded teams to carry out the study, which involved intensive data collection with 20 subsidiary companies. Building on previous work funded by GIZ in Fayoum, the three teams, along with EWRA, HCWW, and WPRR staff, analyzed billing and production cost data and developed modeling tools to test the impacts of various tariff structures and rate increases.

The results of the modeling showed projected cost recovery levels over a 10-year period for different rates of tariff increase. Cost recovery results for a 20 percent nominal tariff increase employing a two-block inclining block tariff are provided in Annex F to this report. Over the 10-year period three levels of cost recovery were tested: O&M; O&M plus depreciation; and O&M plus capital expenditure (CAPEX) financing. The table in Annex F shows that although seven companies would achieve 98 percent or greater O&M cost recovery, even with 20 percent annual increases, none of the companies achieve total cost recovery, and only six would achieve 50 percent or more of their O&M plus CAPEX financing costs.

Through the course of this study, several findings emerged related to the financial health of the sector, including the fact that water and wastewater utilities will need to raise average tariffs dramatically to reach the long-run goal of financial self-sufficiency (cost recovery). With price increases, however, demand characteristics will change and this will have a significant positive impact on infrastructure needs and planning. Customers normally respond to higher prices by reducing their water use, and for a 20 percent nominal annual tariff increase this reduction in use approximately cancels out the increase in water use by new customers (population growth). As a result, tariff increases result in more stable water production over the 10-year study simulation period, an important potential benefit of tariff reform.

On a macro level, leaving tariffs at current low levels carries large risks to the Egyptian treasury. If tariffs are not increased (i.e., if they are left where they are today in nominal terms), the modeling results illustrate that water use grows rapidly. In this case, larger capital expenditures will be needed to meet the growing demand for water, and the resulting financial deficits will explode. This is a dangerous scenario for the water and sanitation sector. If subsidies are not available to pay for both the increasing O&M costs and capital expenditures that are needed to meet ballooning water use, then Egypt risks its municipal water and sanitation sector falling into a high state of disrepair. Repair and rehabilitation expenditures will have to be deferred because the water and wastewater companies will not have the resources to pay for them. Service and water quality will decline for connected households and firms. Capital will not be available for new water and sewer connections, and public health and environmental quality will deteriorate. The lack of water and sanitation infrastructure will increasingly become a constraint on economic growth and carry high public health risks.

It is also clear that improved financial performance of the sector cannot be achieved through tariff increases alone. Without decreases in non-revenue water, and improved collection and operations efficiency, the tariff increases required to cover operating costs will raise significant affordability issues for low-income customers. This will likely jeopardize the political feasibility of future tariff approvals and, in turn, will diminish the likelihood of achieving the financial performance objectives of EWRA and HCWW.

Lastly, perhaps the most obvious utility system performance issue impacting the potential efficacy of tariff reform relates to metering and billing practices. Among Upper Egypt subsidiaries, for example, there is considerable evidence from the WPRR study to suggest that billings do not reflect metered consumption of users.

Complementary to the national tariff study, and feeding into work on the water sector strategy, WPRR also engaged a consultant to look into issues related to subsidies for the sector and to what extent they benefit their intended target: the poor. It is often assumed that poor households use less water than non-poor households, and therefore the tariff block structure has been designed to benefit low-volume users. However, analysis found that 85 percent of the poor consume more than 10m³ (the threshold for the lowest tariff block in Egypt that is charged LE 0.23 per m³) and thus do not benefit from this “lifeline block.” At the same time, a majority of the non-poor (51 percent) fall into the 0-10m³ block and thus benefit from the most subsidized tariff block.

Regulatory Systems Development. To assist with EWRA utility oversight tasks, the WPRR team worked closely with an EU technical assistance team starting in 2009 to develop data collection templates to be used in gathering technical, commercial, and financial information from service providers (subsidiary companies). These templates were organized into the Annual Information Return (AIR) system, based on the system used by the water regulatory agencies in Scotland and Wales. Included in the AIR system are level-of-service indicators developed by WPRR staff. Level-of-service indicators include functions directly impacting customers (e.g. number/type of service disruptions.)

EWRA first requested AIR data from subsidiary companies in October 2009 and by December 2009 data had been received from all 23 companies covering fiscal years 2007/08 and 2008/09. EWRA reviewed the data and sent requests for clarifications to the companies as necessary. With the assistance of the WPRR program, EWRA used data from the AIR to establish baseline values for the original 15 level-of-service indicators (later increased to 20) for each of the companies. In July 2011, WPRR began working with EWRA to develop a web-based AIR system to allow for electronic submission of data by the subsidiary companies. The system was completed by November 2011, and was used for the FY2010/11 submission cycle.

The AIR system was one of many management information system databases that WPRR staff helped design and develop for EWRA to allow for paperless data collection and monitoring of utility performance. The following is a list of the WPRR-developed systems currently in use by EWRA:

- A financial performance monitoring system allowing the analysis of service provider financial results based on audited financial statement data,
- The online AIR submission, review, analysis, and reporting system (discussed above),
- A training database for internal EWRA tracking of professional development activities,
- A water/wastewater plant classification database (discussed under Component 3),
- A certification exam database (discussed under Component 3),
- An industrial waste monitoring database.

The WPRR information technology/MIS team also assisted EWRA with a needs assessment and competitive procurement for a finance and administration software package purchased through the 4S Company and with IT support throughout the project term. Major IT support tasks included designing and publishing the EWRA and ministry websites, designing and implementing data backup strategies, using direct attached storage backup devices, a re-design of EWRA server roles, an equipment need assessments, and provision of help desk services and training for the EWRA IT department.



A 4S Company specialist assists an EWRA specialist in entering data into the agency's finance and administration software programs.

Organizational Structuring. WPRR activities under this focus area included capacity building/training support and assistance to EWRA management in assessing organizational needs and department staffing structures. Based on interviews and staff surveys, a WPRR consultant developed and then presented restructuring options to EWRA management in October 2012. The WPRR team also drafted detailed job descriptions for 30 key positions based on a review of job titles, current job descriptions, and an analysis of qualification requirements and current capacity within the agency. In addition to the organizational structuring work conducted for EWRA, WPRR was asked in November of 2012 to propose an organizational structure for the now-defunct MWWU. That proposed organizational structure was submitted to MWWU in November of 2012, but was never adopted due to the subsequent merging of the function of that ministry into MHUUD.

Capacity Building. Formal capacity building and on-the-job training support was another major activity for the WPRR team, through direct training delivery, subcontracting for specialized courses, and external study tours. By the conclusion of the program, EWRA and ministry staff had participated in a total of 174 WPRR-sponsored training events, delivered through 2,001 trainings days. All training courses conducted by the WPRR

project are listed in the TraiNet table provided in Annex D to this report, with details on study tours presented in Annex G. Training seminars covered a wide range of topics, including: ISO compliance, basic principles of water and wastewater system operations (for non-engineers), Microsoft systems certification, leadership, utility licensing, and advanced utility rate analysis.

Lastly, the WPRR contract included a \$500,000 line item for EWRA/Ministry procurements. The table below summarizes completed equipment procurements as of August 31, 2013, totaling \$497,900. A full procurement report is located in Annex C.

| WPRR PROCUREMENTS FOR EWRA/MINISTRY | |
|--|------------------------------|
| Item Description | Total Procured (US\$) |
| EWRA MIS / IT | 231,100 |
| Special Purpose Equipment | 3,032 |
| Document Management and Archiving | 54,255 |
| Media Center and Conferencing | 5,681 |
| Lab Equipment | 3,096 |
| Library & Books | 5,786 |
| Vehicles | 171,349 |
| Service Contracts and Repairs | 12,686 |
| Shipping Costs | 10,915 |
| Total | 497,900 |

Accomplishments: Key Results and Impact

- The WPRR program work developed a complete utility licensing system and three HCWW subsidiaries and representatives of the other 22 utilities are familiar with the data to be submitted for licensing. Most importantly, EWRA staff understands the utility company licensing process and how data submitted by subsidiary companies is to be evaluated. When the draft water law is passed, EWRA will be ready to begin comprehensive licensing of subsidiary companies.
- Five staff members in the EWRA Tariff and Pricing Department are now fully capable of carrying out tariff work with subsidiary companies as a result of WPRR program assistance. The sustainability of EWRA tariff capability is ensured, as long as EWRA management keeps these staff members in place.
- The majority of utilities are now submitting AIR data to EWRA on an annual basis. This data allows service standards to be established and tracked.
- Following WPRR-financed training, three EWRA staff received the following Microsoft certifications:

- Microsoft Certified Technology Specialist (MCTS),
- Microsoft Certified IT Professional (MCITP).

Lessons Learned and Sustainability Plan

The national tariff study and capacity building support for EWRA Tariff and Pricing Department staff have significantly raised awareness of the looming crisis in the water sector related to tariffs and ballooning subsidies. Although the next steps depend on action at the highest levels of government, it is clear that leaving tariffs at current low levels carries large risks to Egypt's treasury and economy, with potentially severe environmental and health risks. If tariffs are not increased, water use will grow rapidly and higher levels of capital expenditures will be needed to meet the growing demand, and financial deficits will increase to grave levels. Alternately, increases in tariffs can be expected to reduce demand for water and so reduce the need for infrastructure expansion.

Tariff reform, however, is a politically sensitive issue, and the current political climate is not favorable for the degree of change required. The WPRR/EWRA tariff study outlined the following steps that should be taken in the near term to adjust the tariff structure and lay the groundwork for more equitable and transparent rate increases in the future:

- Eliminate the “simple block” (ratchet) tariff.
- Eliminate the minimum charge for 10 m³ per month.
- Simplify the existing IBT tariff structure.
- Apply a more consistent two-part tariff structure (fixed and variable).
- Raise the surcharge for wastewater services to at least 100 percent of the water rate for domestic and nondomestic customers.
- Raise existing tariffs gradually for each block/category to eventually cover a specified level of cost.
- Index the fixed and volumetric components of the tariff to the consumer price index, and automatically increase tariffs once a year to reflect inflation.
- Precede tariff increases with a comprehensive public education and awareness campaign.
- Require and monitor business plans from the utilities which aim to improve service through establishing and meeting efficiency targets.
- Conduct regular analysis of the effect of tariff increases and performance improvement measures on utility financial performance.

EWRA, HCWW, and the ministry continue to work toward a tariff policy and reform package, and improved financial performance of the sector will remain a priority for the incoming government due to the overall economic climate in the country. As such, the recommendations above will remain part of a sustained policy dialogue after WPRR ends. Other regulatory activities supported by WPRR, such as licensing and tariff applications are, however, at risk of being abandoned without further assistance from donors. As emphasized above, adoption of a sector strategy is a critical priority for work under this component as it will help define the role of EWRA as a regulator, giving the agency greater authority to enforce subsidiary performance standards. In the interim,

continued support to EWRA is needed, through other donors or future USAID initiatives, to ensure that the agency has the expertise and resources to push reform efforts forward after a new government and strategy are in place.

III. WATER AND WASTEWATER OPERATOR CERTIFICATION

Sector Challenges

Egyptian utility companies operate more than 2,600 treatment plants and wells throughout the country, capable of treating more than 31 million cubic meters of water and wastewater per day. The largest water treatment plants produce more than 1 million cubic meters per day, serving up to an estimated 5 million customers per plant. With these volumes, proper operation and maintenance of facilities is critical, and workforce capacity is an essential aspect of service delivery. Instances where plant technicians have not correctly assessed potentially dangerous situations related to water quality underscore the need to continuously train and evaluate utility personnel.

Since the establishment of HCWW in 2004, thousands of hours of training have been provided to subsidiary company staff on operations and maintenance of water and wastewater treatment facilities and laboratory analysis. However, a system for measuring and confirming the competency of utility personnel did not exist prior to the launch of the WPRR program. Further, while job descriptions were available for treatment plant and laboratory positions, an assessment of the required competencies for particular functions within treatment plants had not been developed. These factors led the MHUUD and USAID to include the development of a certification program in the WPRR scope of work, to be coordinated with WWSS and the holding company, to ensure that training activities would better prepare subsidiary technical staff to safely and effectively manage plant and laboratory operations.

Activities and Methodologies

Work under this component involved designing the institutional and operational framework for a certification program and testing system to be used by the ministry to measure the competency of utility personnel based on the job requirements applicable to their positions. As a starting point, the WPRR team visited each governorate to rate all treatment plants, eventually classifying water and wastewater treatment plants into four levels per category based primarily on size and complexity, with Level D being the simplest, smallest type of plant. Applying this framework, which was adapted for the Egyptian context from the system used by the Association of Boards of Certification (ABC) in the United States, the team next developed the core competencies (or job requirements) associated with operating each level of facility.

Following this initial work and the development of draft administrative procedures and policies for implementing a plant operation certification program, the WPRR team presented it to MHUDD for adoption. In April 2010, MHUUD issued Ministerial Decree 204 to formally establish the certification program. The decree also expanded the proposed program to include a lab analyst certification sequence, and USAID modified the WPRR contract to include the design of the certification program. The decree also defined the roles and responsibilities of EWRA, HCWW, and the HBNRC for oversight, training, and exam administration. On the same day the MHUUD minister issued

Ministerial Decree 205 forming a certification board to oversee and manage the water sector certification program.

The next major step in rolling out the program was drafting valid exam questions, and classifying them based on the degree of difficulty. To that end, WPRR engaged a team of subject matter experts to draft exam questions, using resource materials from California State University's Office of Water Programs in Sacramento, a recognized leader in certification examination development. The draft exam questions were then validated and classified by a technical implementation committee made up of EWRA and HBNRC staff and consultants, before being entered into the certification exam database system, developed by WPRR to automate the random selection of questions for exams.



EWRA staff, supervised by WPRR, enter exam questions into the certification exam database.

Upon approval of all exam materials and administrative



Level D wastewater treatment plant operators take a certification exam that covers core competencies of plant management on February 20, 2013.

procedures by the certification board, including adoption of a fee structure for exams, the first 75-question examination was administered to 15 Level D water plant operators at HBNRC on July 18, 2012. Prior to sitting for the exam, the 15 operators completed a two-week HCWW training course based on material developed by the WWSS program in Alexandria. However, only seven operators achieved passing scores on the exam. Dr. Nabil Abdel Salam, the head of the certification executive committee conducted an analysis of the results and delivered a presentation to the new minister of Water and Wastewater Utilities in October 2012. The minister told HCWW managers to review the training courses to ensure that they covered all of the required core

competencies. He further encouraged HCWW management to develop a plan to provide incentives for operators who pass certification exams. A second certification course was administered on February 20, 2013, for Level D wastewater treatment plant operators. Six of the 13 engineers who took the subsequent exam achieved passing scores. The third certification exam was administered on June 12, 2013, for Level C wastewater operators. Nine of the 17 operators taking the exam passed.

To support EWRA and HBNRC with administration and oversight of the certification program, the WPRR programming team developed a treatment plant classification database, an examination database, and a certification website. The plant classification database houses data on more than 2,600 treatment plants, to be updated annually by EWRA based on data provided by the utility. The examination database generates examinations by random selection of questions from a databank based on percentage of questions required for each of the competency subject areas, and includes functions related to scheduling examinations, registration of applicants, and analysis and reporting. The website for the certification program provides general information on the program including requirements for certification of plant and lab personnel.

Accomplishments: Key Results and Impact

The official adoption of the water sector certification program by the Ministry of Housing, Utilities and Urban Development, the enthusiastic acceptance of the program by the former minister of Water and Wastewater Utilities in October of 2012, and the successful piloting of three certification exams are major achievements. In addition, the development of more than 4,550 certification exam questions for treatment plant operators, lab analysts, and network maintenance engineers provides a significant foundation from which MHUUD can roll out the program to ensure that all treatment plants have certified personnel performing critical operations functions.

Lessons Learned and Sustainability Plan

Coordination with other organizations and projects significantly contributed to the development of the certification program. Prior to developing the program, WPRR staff worked closely with the USAID-funded Jordan Operations and Maintenance Training (JOMT) project to define the program requirements. It became apparent early on that much of the system would need to be developed from scratch to fit the Egyptian context, due to language and technical nuances specific to Egypt, however the JOMT policies and procedures and technical resources were instrumental in getting the program officially adopted within the first two years of the WPRR project. The WPRR team also worked with WWSS, GIZ, and the HCWW to vet program materials and incorporate the perspectives of utility operators and managers in the design of the program. Although opinions differed regarding the skills and competencies required to successfully operate treatment plants and laboratories, this coordination ensured that HCWW and subsidiary perspectives were included in the program design from the beginning.

With the basic structure of the certification program in place, WPRR staff used the option year period to focus on institutional commitments required for sustainability. The timing of project close-out in relation to political events makes it difficult to ensure that the planned next steps will materialize. HCWW is, however, well placed to support the program through its own complementary workforce development activities and by leveraging the support of other donor-funded programs. The implementing agencies – HBNRC, EWRA, and HCWW – are positioned to carry out the work themselves but outside support and oversight would increase the likelihood of keeping the program on the agenda of the new government in the near term. The following are priority actions

for the government to take over the next six to 12 months to fully roll out the program for all levels of operators, lab analysts, and network engineers:

- Because the Ministry of Water and Wastewater Utilities no longer exists and the certification program falls again under the management of the Ministry of Housing, Utilities and Urban Development, an effort must be mounted to educate the new officials and other new ministry officials on the elements and benefits of the program.
- The Housing and Building National Research Center needs to publish an annual schedule of certification exams so that water sector personnel are able to prepare themselves to take certification exams. The certification website developed by the WPRR project could be used to publish this schedule.
- The ministry should allocate an annual budget for the certification program to cover the cost of providing the subject matter experts needed for reviewing and updating of the question databanks.
- As the administration of certification exams becomes routine, additional water sector positions should be added to the program. Possible positions include plant maintenance technologists and industrial waste treatment operators.
- It has been reported that the holding company will create a system of incentives for operators who pass certification exams. This needs to be confirmed to encourage the operators to be certified and maintain the sustainability of the program.

IV. PUBLIC-PRIVATE PARTNERSHIPS

Sector Challenges

The Government of Egypt spent more than \$11 billion on water and wastewater plant construction during the past 25 years. International donors, mainly USAID, have contributed an additional \$ 4.5 billion in infrastructure development. As a result of this large-scale investment in the sector, MHUUD reported the following service coverage rates as of 2010:

- Water – cities: 100%
- Water – villages: 100%
- Wastewater – cities: 100%
- Wastewater – villages: 11%

Notwithstanding this progress, the National Master Plan completed in 2009 anticipates additional investments are needed to accommodate demographic growth and future economic activity. The forecast for the coming five-year periods covered is below:

| Water and Sanitation Investments for the National Master Plan | | | |
|--|---------------------|-------------------|-------------------|
| Implementation Phase | (Million LE) | | |
| | Water | Sanitation | Total |
| 2007-2012 Five Year National Plan | 11,009.05 | 15,045.91 | 26,054.96 |
| 2007-2012 High Priority Projects | 13,121.86 | 32,813.58 | 45,935.44 |
| Total High Priority Projects | 26,592.10 | 48,071.49 | 72,202.4 |
| 2012-2017 Planned projects | 12,697.59 | 20,011.31 | 32,708.90 |
| 2017-2022 Planned projects | 7,338.69 | 14,849.25 | 22,187.93 |
| 2022-2027 Planned projects | 8,759.68 | 11,482.74 | 20,242.41 |
| 2027-2032 Planned projects | 4,975.57 | 7,184.25 | 12,159.82 |
| 2032-2037 Planned projects | 2,266.55 | 8,487.56 | 10,754.11 |
| Total Planned Projects | 36,038.08 | 62,015.11 | 98,053.17 |
| GRAND TOTAL | 60,168.98 | 110,086.60 | 170,255.58 |

In 2006, the Ministry of Finance formed a Public-Private Partnership (PPP) Central Unit to promote, engage, and manage private sector participation in infrastructure development. Due to the pressing needs depicted above for new water and wastewater facilities, several water sector projects were approved as part of the PPP pipeline. The initial water sector

PPP for the New Cairo Wastewater Treatment Plant (WWTP), signed in 2009, provided lessons for future transaction design and implementation.

Activities and Methodologies

Under this component, the WPRR team provided transaction support for Ministry of Finance PPP unit, helped with project scoping for rural sanitation and desalination projects, drafted a PPP policy paper for MHUUD, developed a structure for a PPP unit in the ministry, and provided construction oversight for a major pipeline project.

Through a PPP policy paper, WPRR summarized the legal framework for PPPs in Egypt, and provided recommendations on possible PPP mechanisms and specific issues that should be addressed in implementing projects based on lessons learned from the New Cairo WWTP transaction. For example, the GOE was bearing most of the risk on initial transactions, which should be discontinued, especially for business risk related to sizing and demand capacity. The WPRR team also recommended clustering projects (e.g. small rural sanitation projects) or structuring capital expenditures so that investors are able to offer pricing that can compete with the cost of publicly financed infrastructure. Lastly, the policy paper stressed the importance of assessing the use of PPPs within the context of a well-designed capital investment plan for the sector before engaging the private sector to lower risks associated with changing terms of the signed contracts.

The WPRR scope of work also called for working with MHUUD to establish and support a ministry-specific PPP unit. The WPRR team developed position descriptions, standard operating procedures, and a proposed structure for the unit. However, the MHUUD assistant minister decided to postpone the formation of such a unit until after the water law was passed. After the new MWWU was formed, WPRR submitted recommendations on the overall structure for the ministry and proposed establishment of a PPP unit to guide water sector investments. As of the date of this report this recommendation has not been adopted.

PPP transactional support was a major WPRR program activity prior to the January 25 revolution, with WPRR staff, consultants, and subcontractors providing engineering, legal, and environmental expertise for two projects approved by the cabinet-level PPP Supreme Council, and a third project requested by the MHUUD. This support resumed somewhat in 2012, although the timeline for completing transactions extended well beyond the end of the WPRR program. MHUUD identified three PPP activities at the outset of the WPRR program: a 150,000 m³ per day wastewater treatment plant for 6th of October City; an upgrade to secondary treatment of the 1.2 million m³/day Abu Rawash wastewater treatment plant, and; the upgrade to secondary treatment and expansion of the 460,000 m³/day Alexandria West wastewater treatment plant.

Each of these projects had an overall transaction advisor who was contracted directly by the Ministry of Finance Central PPP Unit – KPMG for Abu Rawash and Ernst & Young for 6th of October and Alexandria West. Advisors were responsible for the overall transaction and specifically the financial aspects. WPRR provided advisors with engineering, environmental, and legal support.

The transaction advisory team, under the supervision of the PPP Central Unit, was responsible for the following for each PPP project (with all documentation in both English and Arabic):

- Feasibility study
- Public comparator study
- Legal due diligence study
- Information Memorandum
- Design of pre-qualification requirements
- Solicitation of expressions of interest
- Short list of potential bidders
- Development of an Invitation to Tender
- Development of contract documents
- Responses to request for clarification from short listed bidders
- Evaluation and recommendation of award
- Supervision of the process to financial close

A brief summary of the work carried out by WPRR for each of these projects is presented below.

6th of October Wastewater Treatment Plant

The 6th of October PPP project involved the design, financing, building, operation, and maintenance of a wastewater treatment plant, with an initial capacity of 450,000 m³/day. The planned location of the plant (adjacent to the existing plant west of 6th of October City) was established by the Construction Authority for Potable Water and Wastewater (CAPW). Ernst & Young was the transaction advisor. The MOF PPP Central Unit used World Bank loans to contract a DHV/Chemonics-Egypt team as technical advisor. The WPRR program team initially provided only legal and environmental services through subcontractors Nour Law Office (in association with Trowers and Hamlins) and ALDAR, respectively.

Unfortunately, several changes in ministry direction hampered the work of the transaction support teams and slowed progress of the transaction. First, the capacity of the proposed 6th of October plant was reduced from 450,000 m³/day to 150,000 m³/day. In addition, in April 2010, the location of the plant was changed from the eastern zone of the city to the western area adjacent to an existing wastewater treatment plan and, further, the MHUUD decided the proposed plant would only treat domestic wastewater, which would require the splitting of industrial waste from domestic waste coming from the service area. By April 2010 when these changes took place, the environmental and legal teams had done a considerable amount of work based upon the original specifications mandated by the MHUUD. As such, the WPRR team was required to modify the legal and environmental subcontracts to account for the requested revisions. The PPP Central Unit also requested that WPRR take over the engineering support tasks. Dr. Fikry Ghobrial, who had worked on the Chemonics-Egypt activity, continued to work on the project as the WPRR local

engineer with international support from WPRR subcontractor CH2M HILL's wastewater technologists.

Because the type of wastewater and the location of the plant had changed, a new set of technical reports had to be issued. WPRR subcontracted with the National Research Center to analyze samples from the new catchment area flows to inform the conceptual design, and the final demographic report was completed and submitted to the PPP Central Unit in November 2010. The final technical report was submitted in December 2010 and included projected demand, quality specifications, conceptual design, and capital and operating expense estimates. In addition, WPRR technical staff drafted the technical annexes to the draft contract, reviewed the non-technical annexes, and provided written comments to the transaction advisor. The technical report was approved by CAPW.

Eventually, the PPP Unit established a data room, carried out a pre-qualification evaluation, and short-listed 10 consortia for the transaction. At the time of the January 25 revolution, the ministry was in the process of arranging one-on-one meetings with interested bidders. In 2012, however, after the return to normal operating conditions, the transaction was canceled due to technical problems associated with the splitting of domestic from industrial waste.

Abu Rawash Wastewater Treatment Plant Secondary Upgrade

The Abu Rawash wastewater treatment plant is a primary treatment facility on the West Bank of the River Nile and serves Giza and other parts of the city west of the Muheit Drain. The primary effluent is discharged to the Barakat Drain, and ultimately is



Ariel view of the Abu Rawash wastewater treatment plant, which serves as the largest treatment facility on the West Bank of the River Nile.

discharged to the river. The primary effluent is not disinfected (disinfection was included in the initial plant, but the process was discontinued in the 1990s). Another wastewater treatment plant, Zenein, also located on the West Bank, pumps excess influent and treated sludge to the Abu Rawash plant. When the Abu Rawash upgrade and expansion project began in 2009, the plant had a rated capacity of 400 m³/day. However, the influent flows to the facility were regularly exceeding 900 m³ with much of the influent diverted to a bypass. An 800 m³ primary treatment expansion was underway at the time the upgrade project commenced. That expansion was subsequently completed. Together

with the existing plant, the expanded treatment facility will handle a total flow of 1,200 m³/day.

As in the case of the 6th of October PPP project, WPRR initially provided legal and environmental transaction support services and after the project was under way, was asked to provide engineering services as well. The first task for the Abu Rawash legal team was the review of the New Cairo project feasibility study and the drafting of a due diligence report which would focus primarily on two issues: (1) the legal basis for the CAPW to act as the client and sign a contract with the successful investor/contractor, and (2) confirmation of ownership of the land on which the project was to be developed. The environmental subcontractor was responsible for preparing the Environmental and Social Impact Analysis (ESIA).

On the technical side, the first step for the WPRR engineering team was to prepare a preliminary study based upon which a conceptual plant design was developed. That conceptual design provided the basis for capital (CAPEX) and operational cost (OPEX) estimates. Next, the WPRR team reviewed the prequalification requirements and assisted with the review of qualifications statements submitted by interested bidders. Based upon this review, five consortia were short-listed. However, a change in scope to add digestion/cogeneration to the design led to a second round of prequalification and the addition of two consortia to the list of prequalified bidders.

As with the 6th of October project, work on the Abu Rawash PPP transaction was also interrupted by the January 25 revolution. In March 2012, the GOE initiated discussions regarding reactivating the project and asked the WPRR team to revise the CAPEX and OPEX estimates taking into account the impact of inflation since the end of 2011. Those revised estimates were submitted, but it was not until December of 2012 that the MOF PPP Central Unit indicated that the Abu Rawash PPP project was to go forward and asked about the availability of assistance. CH2M HILL, a subcontractor to Chemonics under the WPRR program, was asked to assist and thereby provide the imprimatur of an international engineering company to ensure the credibility of the project with international investors. The Central Unit was informed that because of the impending closure of the WPRR program in September of 2013, only a technical review of data room technical documents by a CH2M HILL wastewater technologist could be provided. The Central Unit subsequently secured funds from the European Bank for Reconstruction and Development (EBRD) for funding a local engineer and legal team.

It is important to note that by the time the Abu Rawash project was reactivated, the decision was taken to remove the digestion/cogeneration from the project, returning the project to the original 2010 specifications. This, of course, required another prequalification exercise and the revision of all the data room documents. The local engineer, funded by ERBD, worked on the revision of the technical sections of the contract, the technical annexes to the contract, and the invitation to tender. All revised technical sections were reviewed and approved by the WPRR/CH2M HILL wastewater technologist in May of 2013.

As of the date of this report, political turbulence in Egypt had forced further delays in the project.

Alexandria West Wastewater Treatment Plant Expansion and Secondary Upgrade

The Alexandria West wastewater treatment plant, located in the west part of the Alexandria Governorate, originally had a capacity of 460,000 m³/day. The objective of this PPP project was to upgrade the plant to secondary treatment and expand the capacity to 680,000 m³/day. While the project was never formally approved by the Supreme Council for PPP projects, the ministry directed WPRR to carry out initial transaction support work in cooperation with Ernst & Young, the transaction advisor.

Work carried out prior to the revolution was complicated by the fact that squatters occupied land allocated for the expansion of the plant. This issue was discussed with CAPW and the Alexandria Wastewater Company on numerous occasions, but the problem was never solved. Notwithstanding these issues, the WPRR team completed a technical report of the feasibility of the project and submitted the Environmental and Social Impact Assessment. These tasks were completed through local subcontractors EnviroConsult and ALDAR, respectively. To secure data on the wastewater characteristics of the catchment area inflow, the WPRR program conducted a tender and contracted AIM for Engineering and Contracting to collect and analyze wastewater and sludge samples from the Alexandria Eastern and Western wastewater treatment plants for a period of one month. WPRR also provided legal support services through subcontractor Oteiffi (in association with Denton, Wilde, Sapte). Although the project was suspended in January 2011, a preliminary due diligence report was completed.

Water and Sanitation Projects Using Public Private Partnerships

In addition to work on the above transactions, WPRR was asked by MHUUD to assist with project scoping/design for potential PPP projects for desalination plants and rural sanitation facilities.

The initial request for assistance with desalination scoping came in October 2009. WPRR was asked to look at a project for the construction, operation, and maintenance of two desalination plants in the Sinai



A raw water pipeline being installed near a wastewater treatment plant in Cairo.

Governorate, and the North West Suez Gulf in the Suez Governorate using a PPP mechanism. The objectives of the government were to: 1) provide an environmentally safe water treatment facility and 2) implement the project through a PPP scheme to better allocate and manage resources. The project proposed to build plants with capacities of 35,000 and 70,000 m³/day, respectively, with construction phased over three years. Due to land issues, work ceased on the project but was initiated again in 2010 and 2012 with additional support provided by WPRR. Ultimately, the cost and timeline associated with implementing the transactions as PPPs were deemed prohibitive.

In the area of rural sanitation, WPRR subcontracted with three Egyptian firms to prepare PPP feasibility reports for three governorates: Qena, Beheira, and Daqahleya. The subcontractors looked at the configuration of villages in each governorate and proposed clustering schemes. A report on each governorate was prepared with proposed projects, technology to be used, criteria for selection of villages, and identification of clusters.



Google map showing the route of a raw water pipeline from the Nile to New Cairo plant.

Lastly, in 2009 the MHUUD asked WPRR to identify a conveyance technologist who, through a series of visits, provided oversight for a 30 km raw water pipeline construction project for conveying raw water from the Nile to the New Cairo water treatment plant. MHUUD also asked WPRR to provide an analysis of pre-stressed concrete cylinder pipes (PCCP) used by water/wastewater utilities in the United States for raw water, drinking water, and sewage versus the use of glass reinforced plastic pipes (GRP) that were being used on the raw water pipeline project. The WPRR conveyance technologist made four quarterly monitoring visits during 2010, and submitted a number of recommendations to MHUUD as well as a hydraulic study of the proposed system.

Accomplishments: Key Results and Impact

Although the transactions supported by WPRR have not reached financial closure due to delays caused by the January 25 revolution, the work completed by WPRR consultants and subcontractors provides well-researched templates for PPP tendering and contracting for water sector projects. Through analysis of lessons learned on the New Cairo wastewater treatment plant project, revised contract documents and annexes provide improved mechanisms for dispute resolution and align with the terms of the 2009 private sector participation law governing PPPs.

WPRR staff also produced a one-minute documentary film for MHUUD to present during the annual Global Water Intelligence Awards ceremony in Paris in April. MHUUD was nominated for a Global Water Award in the category of Public Water Agency of the Year, and was awarded second place.

Lessons Learned and Sustainability Plan

Public-private partnerships offer a mechanism for the GOE to fund new infrastructure and spread out capital expenditures over a long term. The Ministry of Finance PPP Central Unit is equipped to manage future transactions in coordination with line ministries. The unit has also been well-funded and has a good working relationship with donors and multi-lateral banks which may be able to provide technical expertise and financing for transaction costs.

In the water sector, NOPWASD and CAPW have significant experience with cost estimates and technical design for projects, which was invaluable to the WPRR team for validating data and cost estimates. However, these agencies did not have experience with PPPs, so expertise engaged through WPRR provided a needed complement and helped identify areas for improvement in the planning and tendering process. After the work on Abu Rawash, 6th of October, and Alexandria West, there is a much greater appreciation within the ministry, HCWW, and EWRA of the advantages and challenges involved with PPP work that will help inform future policy and planning regarding private sector engagement. The following are some of the key lessons learned:

- *The ownership of land must be resolved before PPP projects are initiated.* The ownership of land was a consistent problem. Significant time and resources are wasted when there are changes in project sites as technical, legal, environmental, and financial documents must be completely rewritten to the specifications of a new site.
- *The PPP transaction support efforts must be better coordinated.* There were times in the PPP project transaction support process where the various GOE departments did not agree among themselves. The most contentious issue was Abu Rawash sludge management. However, there were other technical issues that were not agreed upon by the government stakeholders. These issues cause major delays, and also result in additional costs for technical assistance and transaction support.

- Contractual controls related to wastewater PPP plant performance are very difficult to specify.* In Egypt, there are source control bylaws that dictate that the wastewater discharged to public collection systems meet certain minimum standards intended to protect wastewater treatment plants and ultimately the receiving water courses and sludge disposal/reuse routes. However, these statutes are seldom enforced. There is no source control authority within the holding company, CAPW, the Ministry of the Environment, or the Ministry of Water and Irrigation. An industry can discharge whatever it wants with little or no risk that its practices will be curtailed or a surcharge levied due to the contaminant levels of its wastewater. This situation is untenable to a PPP investor/contractor who is subject to a significant risk due to the practices of upstream dischargers that could easily compromise the ability to satisfy contractual obligations related to the quality of the plant effluent. It is expected that emergency provisions in the contract would be regularly employed by the investor/contractor to limit exposure when the contractor deems it impossible to treat the wastewater due to the presence of toxic constituents in the influent.
- Different payment mechanisms for PPP transaction support team members should be discouraged.* KPMG and Ernst & Young received modest retainers to work on PPP projects, with a ‘success’ fee paid when a successful service provider was contracted. Hence, they had an incentive to ensure that the project proceeded as a PPP and to get to this point with as little delay as possible. The other advisors were paid on a lump sum contractual basis. The very different compensation models often interfered in decision making, especially on the Abu Rawash project. It appeared that KPMG was biased toward a PPP contracting mechanism and that all decisions in the risk assessment and in the cost estimate leaned in favor of such an option. In addition, because so much of their compensation was dictated by ‘successful’ completion of the project, that factor seemed to lead to sub-optimal decision making. In hindsight, it would have been advisable for the GOE to appoint a technical expert to act as a quality control arbiter, specifically tasked with ensuring that the decision making process was proceeding and being completed in a manner consistent with the GOE’s best interests.

V. CAPITAL INVESTMENT PLANNING

Sector Challenges

The National Organization for Potable Water and Sanitary Drainage, NOPWASD, and the Construction Authority for Water and Wastewater, CAPW, are the two main government organizations responsible for planning, design, and construction of water sector infrastructure. These organizations develop five-year plans, funded by the state through the annual budget process, to allocate funding to other agencies in the sector and to specific projects.

In the past, annual budgets have not covered the infrastructure needs for any one year. NOPWASD and CAPW are therefore faced, on an annual basis, with the task of choosing which projects will be implemented using limited budget funds. Budgets may change during the course of a year and NOPWASD and CAPW modify plans with each new change in the budget. When budget amounts change, the organizations must choose the most appropriate projects to be added or postponed in line with government policy.

Historically it has not been clear how projects were selected for funding, and in many cases, political pressure prevails or individual managers within NOPWASD and CAPW make decisions based on ad hoc criteria developed within each organization. However, the system of criteria setting is neither documented nor standardized.

Activities and Methodologies

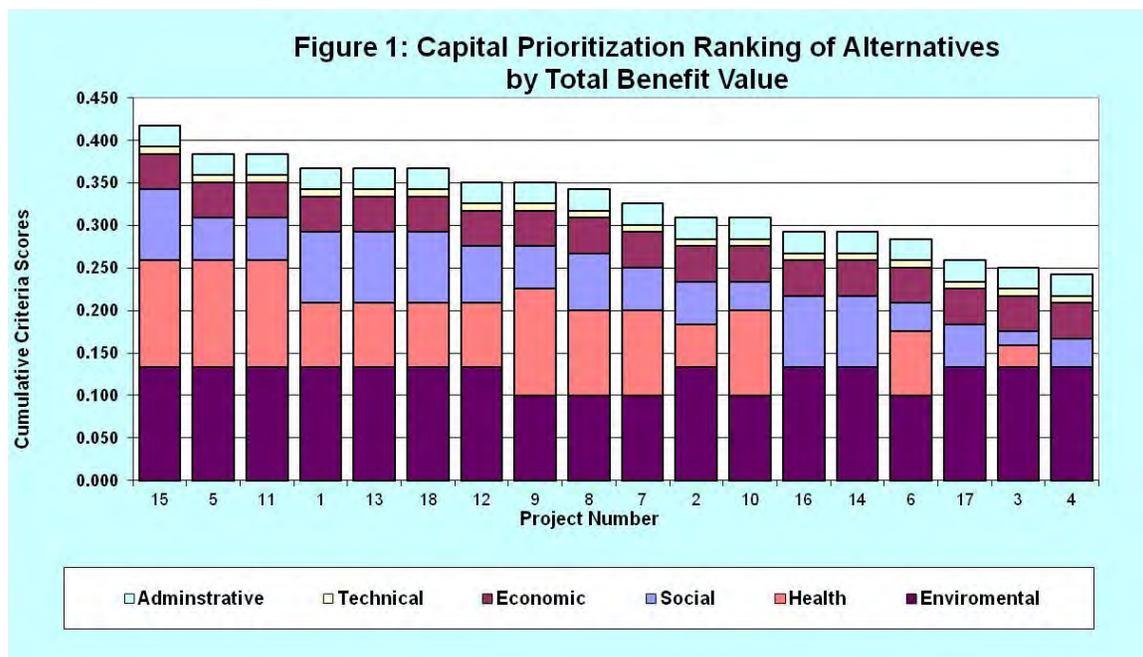
During the prior USAID funded project – the Water and Wastewater Sector Policy Reform Project (WWSPP) – a capital projects prioritization model/decision support tool was developed in coordination with CH2M HILL headquarters staff. The model is Excel-based and allows an integrated approach for medium-term investment planning and capital budgeting. The model is based on the Multi-Attribute Utility Analysis (MUA) methodology. MUA is a proven, analytical approach to prioritization that has been favorably reviewed by the United States National Academy of Sciences. Developed to rank alternatives based on benefits conveyed across multiple competing objectives, the model has been used successfully to aid decision-making on a broad range of public policy issues.

The model was subsequently upgraded by the WPRR program to accommodate a larger number of prioritization criteria and projects and to allow for grouping of projects by type or organization. The model requires agencies to develop and input appropriate project evaluation criteria and assign weights to organizational goals. After inputting these parameters, the agencies use the tool to score projects and rank them to feed into cost-effective capital improvement plans. The model enables decision-makers to evaluate multiple criteria that are measured in different units. All capital project parameters are evaluated on the same unit basis, which allows meaningful comparisons of alternative capital projects.

The following is an example of criteria used to prioritize wastewater treatment facility investments.

| CRITERIA FOR PRIORITIZING WASTEWATER TREATMENT FACILITY INVESTMENTS | | |
|---|--------|--|
| Type of Criterion | Weight | Description |
| Environmental | 90 % | Degree of underground water damage |
| Environmental | 80 % | Distance to nearest water stream (canal, drain, Nile) |
| Social | 70 % | Population density |
| Social | 60 % | Percentage of WW coverage |
| Economic | 50 % | Main village activity (agricultural, industrial, touristic) |
| Political | 50 % | Degree of local council involvement (in financing or facilitation) |

An example of the type of charts and reports produced by the model showing the ranking of projects and the score of each project based on the weighted criteria is presented in Figure 1. This example shows that, based upon the criteria chosen and the weighting of those criteria, projects 15, 5, 11, 1, 13, and 18 are those which have the highest priority.



After a ranking has been completed for a set of projects, the number of projects that can be funded can easily be calculated by adding the estimated cost for the highest ranked projects and comparing the total with the available budget.

In 2009, the WPRR team presented the model to MHUUD officials and agreed to upgrade the model to accommodate additional projects and incorporate the ability to group projects by agency. The project team also agreed to start testing the model through a pilot activity in Assiut and Sohag in coordination with the NOPWASD Planning and Follow-up Department. Through a series of meetings, WPRR and NOPWASD staff developed weighted criteria to input into the model and finalized the list of projects planned for the two governorates. In coordination with the WWSS program, the team collected and input data into the model on 21 projects in Assiut and 17 projects in Sohag. It immediately became clear that the data was not detailed enough and, as a result, there was not a clear ranking for projects.

In September 2010, again in coordination with the WWSS program, criteria were selected for water and wastewater projects in Menofiya. Data was collected on 10 wastewater projects and nine water projects. The WPRR team presented a report on the results of the prioritization pilot to the NOPWASD Planning and Follow-up Department. However, no further action or direction was provided by NOPWASD and the January 25 revolution interrupted project work. Then in September 2011, based on the political and economic changes in the country after the revolution and due to the constraints in GOE finances, NOPWASD indicated a need to allocate the limited resources to projects that had been started, but not completed, rather than funding new projects. The WPRR team adjusted the model criteria at that time to take into account this new mandate.

At the beginning of 2012, NOPWASD management indicated an interest in ranking the projects identified in the Beheira Governorate. Program staff made several visits to the NOPWASD Beheira regional office to meet with NOPWASD regional managers. The criteria data collection task was explained and regional office staff completed data collection. With NOPWASD, the WPRR team input the data into the model and results were sent to NOPWASD regional management for review. WPRR staff reviewed the results with NOPWASD and received positive feedback on the usefulness of the model.

In October 2012, a presentation on the model and results of the Beheira prioritization pilot was made to the newly appointed minister of Water and Wastewater Utilities. The minister requested that the model be applied on all NOPWASD governorate projects. Based upon that request, in April, 2013, the WPRR team met with the NOPWASD Planning and Follow-up Department and trained department staff on use of the model. The department decided to use the model for Menofiya and Matrouh governorate projects and will work directly with their regional office staff to collect detailed data on projects.

Accomplishments: Key Results and Impact

The Ministry of Water and Wastewater Utilities and NOPWASD have endorsed the use of the prioritization model for ranking potential projects where funding is not sufficient to finance all required projects. If results of the prioritization exercise are used in decision-making regarding project selection and funding in a consistent fashion, this will greatly improve the transparency and efficiency of sector investments.

Lessons Learned and Sustainability Plan

The prioritization model has proved to be a useful tool for NOPWASD in objectively ranking projects for implementation. However, the tool is only valuable when quality data is available and when decision-makers actively engage in establishing criteria and weighting factors based on the impacted service areas and changes in government policy. During the option year of the WPRR project, senior ministry officials showed increased commitment to data collection and project scoping required to effectively apply the model. This reflected a shift in how budgets are prepared and allocated, and was, in large part, due to the increased scrutiny of capital projects at the cabinet level and by the public. It is expected that there will be greater accountability in the budget process now, and this bodes well for the sustainability of capital investment planning support provided under WPRR, WWSS, and previous USAID activities.

Although there is a clear change in the funding process for capital projects, it is uncertain how the WPRR work on specific activities in this component will be impacted by the most recent changes in the government. Under the direction of the MWWU, NOPWASD was collecting data on 300 rural sanitation projects to develop a strategy for improving rural coverage, with the prioritization model as the main tool for organizing data for decision-makers. Without ongoing support and training for sector agency staff, especially when NOPWASD officials are reassigned to other agencies or positions, there is a real risk that the model will fall into disuse. The situation is further complicated by the fact that MWWU no longer exists and that NOPWASD again falls under the Ministry of Housing, Utilities and Urban Development and a new minister. The tool itself, however, is much less important than the overall approach to capital investment planning, which as discussed above, is trending toward a much more objective and transparent system due to budget constraints and public demands for improved and expanded service.

VI. PROGRAM MANAGEMENT

Sector Challenges

With growing demand for water and wastewater services, there is a continuous need to upgrade and expand facilities throughout Egypt. NOPWASD and CAPW are the primary construction agencies under MHUUD, with HCWW and subsidiaries also responsible for planning and initiating new infrastructure and rehabilitation projects to a lesser extent. The total annual capital expenditure by the ministry on capital projects before the revolution was in the range of EGP 20 billion (\$3.5 billion). Typically, more than 1,000 projects may be under construction at any one time, and monitoring and reporting on these projects has traditionally been a problem for MHUUD. As a result, construction delays and budget overruns have consistently been a problem.

The large volume of projects means that water sector construction agencies are issuing and managing a huge portfolio of contracts to local companies. It has been the case that each agency independently manages its own procurement activities, and the processes followed for procuring and delivering projects differs from agency to agency. This results in inconsistent methods, long procurement cycles, and non-standard contract agreements that are often unenforceable and cause contract delays.

Activities and Methodologies

WPRR Component 6 activities involved three tasks: (1) the development and enhancement of the PRiSM program management system, (2) the development of a standard contracting document system, and (3) training on the PROTAP program management system developed during the predecessor project. The majority of WPRR staff effort, however, was devoted to the further development and institutionalization of the PRiSM program management system. This involved upgrading the system, building the capacity of ministry staff to manage and use PRiSM, and providing information technology, equipment, and software for operating the system.

The Arabic interface, web-based PRiSM system was initially developed under the WWSPR project in response to a 2006 request from the MHUUD minister to improve the availability of data on projects being implemented in the sector. PRiSM was designed to manage and report on project data in an environment where sophisticated scheduling and financial systems are not available. PRiSM uses a simple interface for capturing project baseline data and monthly updates and includes its own engine for computing project performance indicators. The system supports multi-company, multi-program, and multi-currency data. Under WPRR, a team of programmers and system engineers worked with MHUUD to refine reporting needs and identify additional functional requirements as part of a 2009 assessment. Based on this assessment, the WPRR team implemented major enhancements and released PRiSM version 2.0 in October 2010. Details on PRiSM features and system architecture are provided in Annex H.

During the WPRR program, the program management team completed the following enhancements to the PRiSM program:

- Twelve new standard reports were developed and published for use by MHUUD agencies and HCWW.
- A contractor evaluation system for identifying qualified suppliers and manufacturers of construction equipment and supplies was added to the system. Based on meetings with CAPW and NOPWASD, a set of criteria for determining the importance of a project and number of citizens served was developed and established in the system. In addition, a function was provided in the system to allow evaluation of individual contracts based on the set criteria. Reports are available to list performance by contractor at an individual contract or aggregate contract level.
- A system for generating validation warnings was installed to draw attention to data anomalies. Creation of this system was an attempt to improve the quality of data being input by ministry teams.
- Complete contract life-cycle management functionality from contract award to contract close-out was programmed into the PRiSM system. The system now allows the saving of contract baseline data and the tracking of any scope and schedule changes to the baseline. A new report was added which shows changes to the baseline for each contract.
- The system was expanded to allow for tracking of contractor interim invoices and payments and reporting on payments through fiscal year end, and amount committed and paid since the start of a new fiscal year.
- A mapping capability was added to the system to make it easier to input project location data to the system for display in Google Maps.

Besides work on the PRiSM system itself, the WPRR program management team focused on the institutionalization of PRiSM within the ministry. The primary counterpart for program management activities was the Project Monitoring and Evaluation Unit (PMEU), and WPRR organized and delivered numerous training programs to build the capacity of the PMEU and other ministry staff on PRiSM and program management practices. Specialized training included a study tour for four senior members of the MHUUD PMEU team in May 2010 to visit three programs managed by CH2M HILL in Omaha, Nebraska, Cleveland, Ohio, and Seminole County, Florida. Participants were exposed to program management systems, best practices, and tools.

As a result of training activities, the PMEU and WPRR team were able to institute a number of oversight mechanisms to improve data quality and use of PRiSM as a resource for decision-makers including:

- Weekly progress and coordination meetings were conducted with the Agency Project Control Units (APCU) and the MHUUD Central Information Center (CIC). As a result of these meetings, data quality improved and the percentage of the projects

updated monthly increased from 50 percent during the WWSPR project to between 80 percent and 90 percent during the first four years of the WPRR program.

- Regular audits of projects were conducted to ensure that the data residing in PRiSM matched the reality of the situation on site. Eighty-seven (87) project audits were conducted by joint WPRR/MHUUD PMEU teams.
- Interface with other donor projects was accomplished, primarily with the World Bank and a European Consortium ISSIP and IWSP projects, to add reporting capabilities to align with internal reporting requirements for their small-scale construction activities.

When the new Ministry of Water and Wastewater Utilities was established in August of 2012, WPRR staff worked with ministry officials to form a new PMEU, but staff for the unit were not in place until February of 2013. Initially, one person was named and in April of 2013 two other engineers were identified. The WPRR program management team provided the necessary training to ensure these specialists were able to efficiently operate PRiSM and by April of 2013, the new MWWU PMEU was monitoring the monthly updates of project information. In addition, the new PMEU re-activated the project audit visits in May and June of 2013 and completed 15 audits during the period. As stated above, the situation regarding the ministry changed in July of 2013 with the closing of the Ministry of Water and Wastewater Utilities and the transfer of all MWWU functions and authorities to MHUUD.

As the WPRR program management team was about to finish their work in August of 2012, a handover plan for the task, including handover of the PRiSM system, was prepared. The plan outlined the importance of assigning IT/development staff to work with WPRR MIS staff to take over PRiSM system administration and maintenance. The handover plan also provides guidance to the PMEU regarding their role and responsibilities in managing PRiSM and coordination with the APCUs. Resources required for the sustainability of the program management system are also outlined in the plan. As of the handover of the PRiSM system to the Ministry of Water and Wastewater Utilities in June 2013, the program includes data for more than 4,000 projects.

To complement the institutional strengthening work related to PRiSM and improve overall project management systems within the MHUUD, the WPRR and WWSS contracts called for the development of a standard contracting document system. To that end, staff from the two projects, the USAID project officer, and ministry representatives held scoping sessions to outline the general requirements for the system. It was agreed that a set of standard contracting documents would be developed based on industry best practices, international standards, and local procurement laws covering all procurement life cycle activities. The standard contracting documents were developed using concepts and recommendations from *Federation International Des Ingenieurs Conseils* (FIDIC), the American Institute of Architects (AIA), Engineers Joint Contract Documents Committee (EJCDC), Construction Specifications Institute (CSI), and CH2M HILL standard contracting systems. The resulting documents were organized in three volumes:

Volume I: Contracting Documents

Volume II: Contracting Policies and Procedures Manual

Volume III: Construction Management Manual

Volume I included templates and examples of procurement documents for use in contracting design, studies, construction and construction management services, an advertising template, a pre-qualification document, invitation for bid documents, general and special conditions, evaluation tables, and an agreement form. Volume II included general definitions, project chartering, contracting methods, an evaluation process, dispute resolution procedures, an O&M manual template, and construction management indicators. Volume III covered the construction management process and includes responsibilities for construction management services and various forms and tools for use during the construction management activities.

Upon submission of these volumes to the ministry and USAID, the WPRR and WWSS programs delivered training to users from MHUUD agencies, HCWW, and subsidiary companies on contracting procedures and use of standard documents available in the system. In addition, WPRR and WWSS staff conducted six senior management workshops: ‘Fundamentals of Construction Management’, ‘Project Chartering and Contracting’, ‘PRiSM2’, ‘Risk Management and Project Planning’, ‘Standard Contracting Documents’ and ‘PM Task Accomplishments’.

Lastly, although PRiSM was the primary focus for the WPRR program management team, in December 2010, USAID modified the WPRR scope of work to include limited support for upgrading the PROTAP system developed under the WWSPR project. The system was designed for use in tracking small projects under the 1,000 Villages program being implemented by the GOE. A steering committee from the MHUUD Central Development Agency (CAD) met monthly to identify required adjustments and enhancements for the system. These enhancements were completed in 2011, and the WPRR team provided training to CAD staff on the system.

Accomplishments: Key Results and Impact

Although the MHUUD minister requested the development of a program management system in 2006, it was not until 2013 that the WPRR program team saw the full acceptance of the PRiSM program. During 2013, the MWWU minister made it clear that PRiSM was to be the one and only source of data on the status of ministry projects under construction. On every trip he took to the governorates, he requested a PRiSM report on the status of water and wastewater infrastructure projects in that governorate.

Through regular enhancements and the overhaul of the system with the deployment of PRiSM version 2.0, the WPRR team created a robust system that met the demands of users at all levels within the ministry and helped influence project management practices in the supported agencies. Training for ministry and agency staff, on PRiSM and program management concepts, also upgraded oversight capabilities of monitoring and follow-up departments and led to more coordination between agencies and contractors. Although that minister and the ministry itself are no longer in place, MWWU staff who worked with PRiSM have been reassigned within the Ministry of Housing, Utilities and Urban Development so use of PRiSM can be expected to continue.

Lessons Learned and Sustainability Plan

The PRiSM program represents a major improvement in the ability of the ministry to monitor water sector infrastructure projects. However, if PRiSM is to have value, the monthly update process must be actively managed and data entry units cannot be allowed to input data without an active review of accuracy. During the early years of the WPRR program, data quality was a serious concern. Project managers in the governorates could simply update one element within a project and the system would indicate that the project had been updated in the monthly cycle. WPRR and the ministry PMEU learned from this experience and built validation checks and a more rigorous review process into the update cycle to make users more accountable for managing project data.

After the formation of the MWWU, the WPRR team helped establish a separate PRiSM server for the new ministry, leaving the original system intact for use by the Ministry of Housing. Now that the water sector has moved back under the structure of the Ministry of Housing, the re-integration of PRiSM into overall ministry operations should not pose a major challenge. The role of the PMEU was also more established in the MHUUD, so the institutional structure is in place to resume overall management of water sector projects.

One area of concern, however, is the ability of ministry IT staff to maintain and update PRiSM in the future. Due to changing counterparts during the last year of the program, planned training and elements of the PRiSM handover plan related to technical support were not fully implemented. World Bank and EU projects working with HCWW have been using PRiSM for their program management system, so there is a potential to tap into resources from those projects to continue supporting the programming and IT side of PRiSM. Alternatively, management of the system could be coordinated with the Ministry of Communications and Information Technology, which could ultimately make PRiSM accessible to a broader range of ministries. For USAID and the GOE, PRiSM offers a low-cost opportunity to continue improving data availability for capital investment projects, and moving away from the system now could have serious economic consequences and erase gains made in the ministry's ability to monitor and assess contractor efficiency and performance. USAID support could be provided through FARA-type assistance, or could be managed through a USAID-FORWARD contract with a local firm.

VII. PERFORMANCE MANAGEMENT

At the outset of the project, the WPRR team developed indicators and a performance monitoring plan (PMP) to track progress toward the expected results in the scope of work as required by the contract. Before this PMP was approved and finalized however, USAID directed the WPRR and WWSS programs to develop a joint PMP to provide a more comprehensive framework for assessing performance of water sector counterparts and project impact. The two teams worked together to develop a joint PMP, and used it as the basis for reporting in FY2010. During the months following the January 25 revolution, USAID recognized that higher-level reform objectives would be difficult to achieve given the political climate, and instructed the projects to split the PMP again, and in the case of WPRR, focus on indicators that related more directly to work with WWSS and the ministry rather than sector-level indicators regarding service provision and financial performance. The resulting project monitoring and evaluation system incorporated quantitative indicators of project outputs along with a communications strategy intended to qualitatively describe the institutional strengthening and improved systems put in place for EWRA and the ministry.

The WPRR team, with EWRA, MHUUD, and MWWU counterpart staff, made significant progress in all six component areas of the project, completing all tasks and the majority of deliverables in the contract. Certain deliverables, such as passage of the water law, were clearly outside of the project's manageable interest, although work undertaken on the strategy and the development of executive regulations contributed to the understanding of the issues that need to be addressed in the development of the legal framework for the sector.

Impact

The USAID evaluation team summarized the accomplishments during the base period as follows, recognizing that sustainability of activities depended heavily upon political will of the ministry and cabinet.

“WPRR helped bring transparency and monitoring capacity to capital management; it tackled the issue of tariff reform; and it introduced professional accreditation to the sector. These activities are all valuable for the long term viability and credibility of the sector.”
-USAID evaluation team

“The nature and duration of the WPRR project make it difficult to have a direct and short-term impact on the equality of and access to sustainable water and wastewater services,” the USAID evaluation report stated. “The project works to strengthen the framework for sustainable service – the capital investment process, the human resources, and the legal and regulatory environment. The Team believes that WPRR has delivered real results for the sector in its three primary areas of activity:

- PIR 1 Capital investment and program management improved;
- PIR 2 Enabling environment of water and wastewater services improved; and
- PIR 3 Capacity of staff in targeted institutions improved.

More specifically, WPRR has delivered a draft Water Law that will help clarify GOE objectives and delineate roles; it is drafting a strategy that will help implement the objectives.”

Areas where the project team was able to influence clear, long-term impact were related activities that were supported by minister-level action through issuance of decrees. In the case of the operator certification program and PRiSM, for example, formal protocols and dedicated funding demonstrated government commitment to taking over implementation of the programs after the WPRR project. For the operator certification program, this commitment was reflected through the decree that established the program and through the formation of formal committees to manage the technical, administrative, and training tasks related to delivering examinations and monitoring compliance with certification requirements. For PRiSM, the establishment of PMEUs in both the MHUUD and MWWU provided dedicated staff to program management activities and oversight of the system. The MWWU minister's reliance on PRiSM reports to stay informed on progress throughout the governorates also sends positive signals to agency and subsidiary staff about the importance of the system within the ministry.

On the regulatory side, the national tariff study initiated a substantial level of policy dialogue on pricing and the need for tariff reform. Although there was disagreement on the most viable way forward, EWRA, the HCWW, and subsidiaries developed a common appreciation of the severity of the financial situation in the sector, recognizing that the inability of subsidiaries to generate sufficient revenue through tariffs leads to capacity constraints, deterioration of service, and massive underinvestment in maintenance programs and new infrastructure.

While recommendations from the WPRR tariff study have not been adopted en suite, the policy dialogue surrounding the study has led the GOE to take action to adjust tariffs to close the gap between costs and revenues. However, at a time when government decision-makers are unwilling to make drastic changes out of fear of public reaction, the incremental rate changes being applied now are at least a positive sign that government is starting to address the social and economic issues in the sector.

VIII. FUTURE USAID AND DONOR WATER SECTOR ACTIVITIES

Through continuous support from USAID and other donors over the years, Egypt has made impressive strides in extending water and sanitation services to the majority of the population. Over the next decade, service quality and efficiency will become increasingly important, along with extending sanitation services to rural areas. The strategy work led by WPRR provides an in-depth look at the challenges facing the sector, but also lays out solutions and goals for meeting the growing demand for services and addressing utility financial constraints. The strategy documents are therefore a logical starting point for designing and coordinating technical assistance programs for the sector.

Assist and coordinate at ministry level. In the current context, there will certainly be a gap between WPRR and future USAID activities, however, when the climate is right, targeted assistance at the ministry level will be needed to facilitate revisions and consensus on an updated strategy. Although HWCC, EWRA, NOPWASD, CAPW and other water sector agencies contributed to WPRR research, the next phase of strategic planning must more directly involve the government stakeholders who will implement reforms. Coordination with the ministry, rather than through agencies, would likely be the most effective channel for bringing together sector stakeholders to develop action plans that truly reflect government priorities and that are accompanied by budget allocations necessary to implement them.

Build capacity to support service quality and efficiency. WWSS and WPRR worked with HCWW and EWRA respectively on developing performance standards and instituting systems for monitoring, utility performance. The program teams raised awareness of the need for improved data quality and accountability in the sector. The two management information systems supported by the projects, MARS and AIR, provide a platform for data collection, but future capacity building support is needed for agency officials on how performance data can be used to improve service and operational efficiency. There is also a need to structure incentives and enforcement systems for performance standards. This is a key area that USAID and other donors can shape based on international best practices.

Support PPPs and community participation for rural sanitation. Lastly, rural sanitation was high on the agenda of the government before and after the January 25 revolution, and this is an area where significant investment is required to reach universal coverage. In the WPRR strategy documents, PPP and community participation are two avenues for increasing investment in sanitation infrastructure at the village level, but there are also technical assistance needs within the HCWW and ministry construction agencies around integrating community systems into the national network for long-term operations and maintenance. If the GOE shows continued commitment to improving rural coverage, USAID and other donors could complement Egyptian investments, such as through capacity building for project managers, capital investment planning, transaction support, and co-financing for job-creation programs related to small-scale infrastructure. Given the magnitude of the investments required, coordination will be critical not only among government agencies, but among donors. This is an area where USAID would be well placed to support MHUUD.

ANNEXES

ANNEX A. CHEMONICS EGYPT STRATEGY WORK

The WPRR project started work on a water sector strategy in October of 2011. As a draft strategy was being developed, 12 background studies were commissioned by the project to support the strategy. Those background studies are as follows:

- Quality: Health standards
- Assets and coverage status
- Sector organization and restructuring
- Legal framework of the sector
- Local initiatives
- Shorouk project
- Economic regulation in the water sector
- Economic regulation in the Egyptian electricity sector
- Finance and pricing
- Affordability and targeting the poor
- HR development in the water sector
- Communication and demand side management

Each of these comprehensive studies has three sections: (1) current situation, (2) current challenges, and (3) recommendations.

Upon review of the studies in March 2013 by the Ministry of Water and Wastewater Utilities MWWU, the Egyptian Water Regulatory Agency (EWRA) and USAID, Chemonics-Egypt was subcontracted to incorporate this feedback into the 12 studies as well as the draft strategy. Chemonics-Egypt, in coordination with WPRR staff, took responsibility for the revision of the background studies and took steps which included:

- Developing a style guidance document and template;
- Coordinating closely with MWWU officials as the studies were being revised to ensure eventual acceptance;
- Conducting external quality control of the Arabic content; and,
- Translating each background studies for submission to the MWWU and USAID by the end of WPRR project.

WPRR made a final round of revisions based on MWWU, EWRA, on USAID comments.

As the background studies were being revised and approved, Chemonics-Egypt revised the draft water sector strategy coordinating closely with MWWU and EWRA officials. The revised draft strategy was completed through this interactive process, as well as a stakeholder workshop which was held for the purpose of getting final Ministry endorsement of the strategy.

ANNEX B. FINANCIAL REPORT

ANNEX C. PROCUREMENT STATUS REPORT

| Procurement Table - Draft 30 July 2013 | | | | | | | |
|--|---------------|---------------------------|---------------------------------|-----------------|------------------|-----------|-----------------|
| Line Item | Item Category | Item Description | Purpose of Procurement | Received by | Date of Receipt | Price USD | Comments |
| 1 | IT Equipment | Desktop X 20 | Newly Hired Employees | EWRA / IT Dept. | June 27, 2010 | 26,771 | 3 year warranty |
| 2 | | Laser Printer | IT Department usage | EWRA / IT Dept. | June 27, 2010 | 1,033 | 1 year warranty |
| 3 | | Deskjet Printer | Graphic Design useage | EWRA / IT Dept. | June 27, 2010 | 1,859 | 1 year warranty |
| 4 | | Supplies | Servers upgrade and spare parts | EWRA / IT Dept. | November 9, 2009 | 3,320 | |
| 5 | | Digital Cameras X 5 | EWRA teams site visits | EWRA / IT Dept. | June 27, 2010 | 1,935 | 1 year warranty |
| 6 | | Software | Antivirus | EWRA / IT Dept. | June 27, 2010 | 4,580 | 2 year license |
| 7 | | Laptop | EWRA Exective Manager usage | EWRA / IT Dept. | April 20, 2010 | 2,187 | Eng. Alfy |
| 8 | | iPad | EWRA Exective Manager usage | EWRA / IT Dept. | October 28, 2010 | 970 | Eng. Alfy |
| 9 | | Desktop Mac With Software | Graphic Design useage | EWRA / IT Dept. | June 27, 2010 | 5,237 | 1 year warranty |
| 10 | | Blackberry Cell Phone | EWRA Exective Manager usage | EWRA / IT Dept. | June 10, 2009 | 703 | 1 year warranty |
| 11 | | Software | Finance Team & IT Dept | EWRA / IT Dept. | April 28, 2011 | 8,475 | |
| 12 | | Laser Printer X 2 | Legal Dept. & Spare Printer | EWRA / IT Dept. | July 7, 2011 | 4,350 | 1 year warranty |
| 13 | | Plotter | GIS Dept. | EWRA / IT Dept. | July 7, 2011 | 2,425 | 1 year warranty |
| 14 | | Server X 1 | IT Department usage | EWRA / IT Dept. | June 7, 2011 | 5,015 | 3 year warranty |
| 15 | | Consumables | IT Department usage | EWRA / IT Dept. | March 17, 2011 | 3,700 | Toner |
| 16 | | Servers' Rack | IT Department usage | EWRA / IT Dept. | July 7, 2011 | 2,500 | |
| 17 | | GIS Software | GIS Dept. | EWRA / IT Dept. | April 1, 2012 | 10,000 | |
| 18 | | Software | IT Department usage | EWRA / IT Dept. | March 1, 2012 | 10,382 | |

| Line Item | Item Category | Item Description | Purpose of Procurement | Received by | Date of Receipt | Price USD | Comments |
|-----------------|---------------|-----------------------------------|------------------------------|-----------------|--------------------|----------------|-----------------|
| 19 | IT Equipment | UPS X 11 | IT Department usage / spare | EWRA / IT Dept. | April 24, 2012 | 2,706 | 2 year warranty |
| 20 | | Scanners X 2 | Archiving System | EWRA / IT Dept. | September 23, 2012 | 2,967 | 1 year warranty |
| 21 | | Laptops X 6 | EWRA Department Managers | EWRA / IT Dept. | March 5, 2012 | 7,933 | 3 year warranty |
| 22 | | Desktop X 10 | Newly Hired Employees | EWRA / IT Dept. | March 5, 2012 | 14,890 | 3 year warranty |
| 23 | | Consumables | IT Department usage | EWRA / IT Dept. | October 18, 2011 | 1,570 | |
| 24 | | Direct Attached Storage | Data Backup - IT | EWRA / IT Dept. | June 28, 2012 | 14,760 | 1 year warranty |
| 25 | | Server X 1 | IT Department usage | EWRA / IT Dept. | October 18, 2011 | 5,335 | 3 year warranty |
| 26 | | Desktop X 1 | GIS Dept. | EWRA / IT Dept. | March 5, 2012 | 1,514 | 3 year warranty |
| 27 | | Internal Telephone System Upgrade | Upgrade internal PBX system | EWRA / IT Dept. | July 31, 2012 | 9,642 | 1 year warranty |
| 28 | | Software | HR System | EWRA / IT Dept. | September 20, 2012 | 13,833 | |
| 29 | | Consumables | IT Department usage | EWRA / IT Dept. | March 27, 2013 | 5,573 | |
| 30 | | Desktop X 6 | Replacement of Old PCs | EWRA / IT Dept. | April 16, 2013 | 7,993 | 3 year warranty |
| 31 | | Laptop X 4 | Replacement of Old PCs | EWRA / IT Dept. | April 16, 2013 | 7,313 | 3 year warranty |
| 32 | | Server X 1 | PRISM for MWWU | MWWU/ IT Dept. | April 24, 2013 | 4,875 | 3 year warranty |
| 33 | | Consumables | IT Department usage | EWRA / IT Dept. | March 30, 2010 | 3,500 | Toner |
| 34 | | Internal Telephone System | EWRA Executive Manager usage | EWRA / IT Dept. | September 20, 2012 | 757 | |
| Subtotal | | | | | | 200,603 | |

| Line Item | Item Category | Item Description | Purpose of Procurement | Received by | Date of Receipt | Price USD | Comments |
|-----------------|-----------------------------------|---|---|-----------------------|-------------------|----------------|----------------------|
| 1 | Vehicles | Jeep Cherokee | Help in EWRA activities | EWRA / Administration | October 2, 2009 | 23,950 | |
| 2 | | Jeep Cherokee | Help in EWRA activities | EWRA / Administration | October 2, 2009 | 23,950 | |
| 3 | | Chrysler Town&Country | Help in EWRA activities | EWRA / Administration | June 15, 2009 | 33,000 | |
| 4 | | Chrysler Town&Country | Help in EWRA activities | EWRA / Administration | June 15, 2009 | 33,000 | |
| 5 | | Dodge Durango | Help in EWRA activities | EWRA / Administration | June 9, 2009 | 25,500 | |
| 6 | | Licensing | Help in EWRA activities | EWRA / Administration | November 11, 2009 | 11,000 | |
| 7 | | Licensing | Help in EWRA activities | EWRA / Administration | November 11, 2011 | 4,614 | |
| 8 | | Licensing | Help in EWRA activities | EWRA / Administration | November 11, 2012 | 3,798 | |
| 9 | | Vehicle repair | Help in EWRA activities | EWRA / Administration | May 18, 2013 | 11,371 | Jeep Cherokee repair |
| Subtotal | | | | | | 170,183 | |
| Line Item | Item Category | Item Description | Purpose of Procurement | Received by | Date of Receipt | Price USD | Comments |
| 1 | Document Management and Archiving | Network Infrastructure Enhancements / | EWRA Network Performance Enhancement | EWRA / IT Dept. | July 21, 2010 | 7,312 | 1 year warranty |
| 2 | | Network Infrastructure Enhancements / AC for Server Room | Server Room Enhancement | EWRA / IT Dept. | July 18, 2011 | 750 | |
| 3 | | Network Infrastructure Enhancements / Cabling Network | Cabling Network extension | EWRA / IT Dept. | August 1, 2011 | 6,400 | |
| 4 | | Color Copier | Document Management Center | EWRA / IT Dept. | | 31,500 | |
| 5 | | Fax | Document Management Center | EWRA / IT Dept. | August 12, 2009 | 405 | |
| 6 | | Paper Cutter | Document Management Center | EWRA / IT Dept. | May 7, 2012 | 5,596 | |
| 7 | | Binding Machines | Document Management Center | EWRA / IT Dept. | July 18, 2012 | 2,292 | |
| 8 | | Document Management Software | Document Management Center | EWRA / IT Dept. | October 30, 2009 | 30,000 | |
| Subtotal | | | | | | 84,255 | |

| Line Item | Item Category | Item Description | Purpose of Procurement | Received by | Date of Receipt | Price USD | Comments |
|-----------------|-------------------------------|-----------------------------|--------------------------------------|-----------------------|-------------------|------------------|--------------------|
| 1 | Lab Equipment | Turbidity Meter | Water Quality Dept. | EWRA / Water Quality | November 28, 2011 | 930 | |
| 2 | | Dissolved Oxygen Meter | Water Quality Dept. | EWRA / Water Quality | November 28, 2011 | 271 | |
| 3 | | Total Coliform Portable Lab | Water Quality Dept. | EWRA / Water Quality | November 28, 2011 | 1,875 | |
| Subtotal | | | | | | 3,076 | |
| Line Item | Item Category | Item Description | Purpose of Procurement | Received by | Date of Receipt | Price USD | Comments |
| 1 | Books | Finance Books | EWRA / Tariff | EWRA/ Tariff | February 8, 2010 | 1,890 | |
| 2 | | GWI | EWRA / Managers | EWRA / IT Dept. | February 8, 2010 | 1,895 | |
| 3 | | Legal Books | MWWU / Legal Dept. | MWWU / Legal Dept. | July 31, 2013 | 981 | |
| 4 | | Certification | EWRA / Operator Certification | EWRA / | August 15, 2013 | 2,000 | |
| Subtotal | | | | | | 6,766 | |
| Line Item | Item Category | Item Description | Purpose of Procurement | Received by | Date of Receipt | Price USD | Comments |
| 1 | Media Center and Conferencing | Video Camera | Media Center usage | EWRA / IT Dept. | February 1, 2012 | 1,241 | |
| 2 | | Sound System | Conference Room usage | EWRA / IT Dept. | May 23, 2012 | 4,440 | |
| 3 | | Video Camera | Media Center usage | EWRA / IT Dept. | July 9, 2012 | 1,525 | |
| 4 | | LED TVs | EWRA Exective Manager usage | EWRA / IT Dept. | February 21, 2013 | 1,507 | Dr. Mohamed Hassan |
| Subtotal | | | | | | 8,713 | |
| Line Item | Item Category | Item Description | Purpose of Procurement | Received by | Date of Receipt | Price USD | Comments |
| 1 | Shipping Costs | Shipping Dodge Durango | | | June 7, 2009 | 4,759 | |
| 2 | | Shipping 2 Jeeps Cherokee | | | October 2, 2009 | 3,225 | |
| 3 | | Shipping IT equipment | | | June 27, 2010 | 2,931 | |
| Subtotal | | | | | | 10,915 | |
| Line Item | Item Category | Item Description | Purpose of Procurement | Received by | Date of Receipt | Price USD | Comments |
| 1 | Service Contracts and Repairs | Elevator Repair | EWRA has no fund for elevator repair | EWRA / Administration | June 1, 2013 | 12,687 | |
| Subtotal | | | | | | 12,687 | |
| Total | | | | | | \$497,198 | |

ANNEX D. TRAINET TABLE WITH GENDER BREAKDOWN

| Program Name | Program Location | Program Status | Start Date | End Date | Activity | Males | Females | Total |
|---|------------------|----------------|------------|----------|--------------|-------|---------|-------|
| Designing and Implementing a Server Infrastructure | IC | Completed | 6/23/13 | 6/27/13 | WPRR Project | 2 | 0 | 2 |
| Customization Dream Weaver, HTML , CSS, java Script | IC | Completed | 6/23/13 | 6/27/13 | WPRR Project | 1 | 0 | 1 |
| PRiSM Training for NOPWASD | IC | Completed | 6/25/13 | 6/25/13 | WPRR Project | 4 | 3 | 7 |
| PRiSM Training for NOPWASD | IC | Completed | 6/18/13 | 6/18/13 | WPRR Project | 8 | 1 | 9 |
| Installing and Configuring Windows Server 2012 | IC | Completed | 6/9/13 | 6/13/13 | WPRR Project | 2 | 0 | 2 |
| PRiSM Training for NOPWASD | IC | Completed | 6/11/13 | 6/11/13 | WPRR Project | 9 | 2 | 11 |
| Developing Windows Communication Foundation Solutions with Microsoft Visual Studio 2010 | IC | Completed | 6/3/13 | 6/5/13 | WPRR Project | 3 | 0 | 3 |
| Implementing Forefront Threat Management Gateway 2010 | IC | Completed | 6/4/13 | 6/5/13 | WPRR Project | 1 | 1 | 2 |
| Designing and Implementing a Server Infrastructure | IC | Completed | 5/26/13 | 5/30/13 | WPRR Project | 1 | 1 | 2 |
| Governance & Financing for the Mediterranean Water Sector | TC | Completed | 5/27/13 | 5/30/13 | WPRR Project | 1 | 0 | 1 |
| Designing and Developing Microsoft SharePoint Server 2010 Application | IC | Completed | 5/20/13 | 5/25/13 | WPRR Project | 3 | 0 | 3 |
| Administering Microsoft Windows Server 2012 | IC | Completed | 5/19/13 | 5/23/13 | WPRR Project | 1 | 1 | 2 |
| Microsoft SharePoint 2010, Application Development | IC | Completed | 5/12/13 | 5/16/13 | WPRR Project | 3 | 0 | 3 |
| Installing and Configuring Windows Server 2012 | IC | Completed | 5/12/13 | 5/16/13 | WPRR Project | 1 | 1 | 2 |
| Occupational Safety and Health | IC | Completed | 4/1/13 | 4/1/13 | WPRR Project | 2 | 0 | 2 |
| The role of Legal Departments in companies Administrative structure | IC | Completed | 4/1/13 | 4/1/13 | WPRR Project | 2 | 0 | 2 |
| PRiSM training to HCWW | IC | Completed | 3/31/13 | 3/31/13 | WPRR Project | 12 | 10 | 22 |
| PRiSM Training to MWWU | IC | Completed | 3/27/13 | 3/27/13 | WPRR Project | 1 | 0 | 1 |
| CIP Model | IC | Completed | 3/25/13 | 3/25/13 | WPRR Project | 1 | 0 | 1 |
| legal authorities in the fight against crimes of public money | IC | Completed | 3/25/13 | 3/25/13 | WPRR Project | 1 | 2 | 3 |
| Egyptian international agreement to address crimes of illegitimate profit | IC | Completed | 3/20/13 | 3/20/13 | WPRR Project | 2 | 0 | 2 |
| General framework for tax developments and skills to prepare annual Tax Return | IC | Completed | 3/10/13 | 3/14/13 | WPRR Project | 2 | 0 | 2 |
| PRiSM to MWWU | IC | Completed | 2/12/13 | 2/12/13 | WPRR Project | 4 | 0 | 4 |
| The role of regulatory bodies in the fight against corruption | IC | Completed | 12/1/12 | 12/31/12 | WPRR Project | 2 | 0 | 2 |
| Certification exam data base training | IC | Completed | 12/18/12 | 12/19/12 | WPRR Project | 5 | 3 | 8 |
| Water Resources between Challenges & Solutions | IC | Completed | 12/19/12 | 12/19/12 | WPRR Project | 10 | 0 | 10 |
| Plant Classification Database training | IC | Completed | 12/11/12 | 12/12/12 | WPRR Project | 5 | 3 | 8 |
| Environment Conference | IC | Completed | 12/4/12 | 12/4/12 | WPRR Project | 3 | 3 | 6 |
| International Exhibition of Inventions | IC | Completed | 12/1/12 | 12/1/12 | WPRR Project | 10 | 0 | 10 |
| PRiSM Training | IC | Completed | 11/28/12 | 11/28/12 | WPRR Project | 3 | 0 | 3 |
| Environment Hazard Conference | IC | Completed | 11/27/12 | 11/27/12 | WPRR Project | 3 | 3 | 6 |
| PRiSM Training | IC | Completed | 11/21/12 | 11/21/12 | WPRR Project | 1 | 0 | 1 |
| Consumer Awareness Campaign | IC | Completed | 11/13/12 | 11/20/12 | WPRR Project | 8 | 2 | 10 |

ANNEX E. SUMMARY OF WPRR STAFFING

By April of 2009, the following full time professional and operations project staff were in place.

| Name | Position | Term of Employment |
|------------------------|-------------------------------|----------------------------|
| David Osgood | Chief of Party | December 2008- July 2013 |
| Eng. Samir Sayed Ahmed | Deputy Chief of Party | April 2009- September 2013 |
| Eng. Khaled Al Hasan | Program Management Specialist | April 2009- September 2012 |
| Eng. Pankaj Paterl | MIS Specialist | October 2009- July 2012 |
| Amany Abdel Wahab | Transaction Advisor | April 2009- September 2013 |
| Sherifa Said | Training Specialist | April 2009- June 2013 |
| Eng. Mostafa Saad | IT/MIS Specialist | April 2009- September 2013 |
| Mohamed Shehab | Legal Specialist | April 2009- September 2013 |
| Eng. Mamdouh Hassan | Process Engineer | April 2009- September 2013 |
| Eng. Amr Nassef | Project Controls Engineer | April 2009- September 2012 |
| Eng. Mostafa Aly | Project Controls Engineer | April 2009- June 2011 |
| Eng. Ahmed Nassar | Programmer | April 2009- June 2013 |
| Hany Metwally | Financial Controller | April 2009- September 2013 |
| Esraa Quassim | Financial Assistant | April 2009- September 2013 |
| Noha Sami | Office Manager | April 2009- September 2013 |

Other professional staff added to the team during the course of the project included the following.

| Name | Position | Term of Employment |
|-----------------|-------------------------------------|----------------------------|
| Walid Niazzy | Project Controls Engineer | July 2011- September 2012 |
| Samer Ismail | Programmer | April 2011- April 2012 |
| Nesreen Mostafa | Programmer | April 2010- February 2012 |
| Mai El Ghannam | Assistant Finance Specialist | March 2012- November 2012 |
| Ahmed Essa | Assistant Finance Specialist | December 2012- June 2013 |
| Alan Bright | Monitoring and Reporting Specialist | January 2011- October 2012 |

Short term staff who worked on the project are as follows:

| Name | Position | Term of Employment |
|-----------------------|---------------------------|------------------------------|
| Dr. Ahmed Ghoneim | Regulatory Economist | May 2009- August 2013 |
| Alyaa Awad | HR Specialist | December 2011- May 2013 |
| Dr. Lobna Abdel Latif | Strategy Specialist | October 2011- May 2013 |
| Dr. Ahmed Gaber | Strategy Specialist | August 2010- September 2013 |
| Mohamed Abdel Azim | Water Engineer | May 2009- July 2013 |
| Olfat Abdallah | Chemist | February 2010- August 2013 |
| Sayed Abdullah | Systems Design Specialist | January 2010- April 2013 |
| Samir Badawi | Senior Programmer | October 2009- September 2013 |
| Howard Sokoloff | Technical Reports Editor | July – September 2013 |

ANNEX F. RESULTS OF 20 PERCENT ANNUAL TARIFF INCREASE OVER 10 YEARS

| | | O&M | O&M+ Depreciation | O&M+ CAPEX Financing |
|----|------------------|------|----------------------|-------------------------|
| 1 | Beheira | 145% | 105% | 54% |
| 2 | Daqahleya | 141% | 113% | 56% |
| 3 | Alex Water | 132% | 122% | 94% |
| 4 | Gharbeya | 130% | 98% | 50% |
| 5 | Minya | 128% | 89% | 25% |
| 6 | Sharqeya | 99% | 72% | 37% |
| 7 | Red Sea | 98% | 82% | 47% |
| 8 | Beni Suef | 90% | 67% | 24% |
| 9 | Damietta | 87% | 65% | 37% |
| 10 | Cairo Wastewater | 79% | 58% | 25% |
| 11 | Luxor | 78% | 63% | 31% |
| 12 | Giza | 78% | 66% | 40% |
| 13 | Alex wastewater | 77% | 69% | 58% |
| 14 | Cairo Water | 71% | 67% | 54% |
| 15 | Assiut | 69% | 47% | 13% |
| 16 | Kafr ElSheikh | 67% | 52% | 28% |
| 17 | Sohag | 50% | 35% | 13% |
| 18 | Qena | 49% | 37% | 12% |
| 19 | Aswan | 39% | 33% | 20% |
| 20 | Matrouh | 36% | 28% | 14% |

ANNEX G. LIST OF STUDY TOURS

| <u>Study Tours Conducted by WPRR project to EWRA 2009-2013</u> | | | | | | | | | |
|--|--|----------------|------------|-----------|-----------|--------------|---------|-------|---|
| Program Name | Program Location | Program Status | Start Date | End Date | Activity | Males | Females | Total | |
| 1 | Designing Legislative, Institutional and regulatory frameworks for Successful PPP | US | Completed | 2/28/2010 | 3/13/2010 | WPRR Project | 2 | 0 | 2 |
| 2 | Governance & Financing for the Mediterranean Water Sector | TC | Completed | 5/27/2013 | 5/30/2013 | WPRR Project | 1 | 0 | 1 |
| 3 | NARUC Utility Rate School | US | Cancelled | 5/8/2010 | 5/15/2010 | WPRR Project | 0 | 0 | 0 |
| 4 | Program Managment | US | Completed | 4/30/2010 | 5/13/2010 | WPRR Project | 0 | 3 | 3 |
| 5 | Sustainable Development Network board meeting in Washington & Water Sanitation Regulators Function and Privatization | TC | Completed | 1/21/2010 | 1/23/2010 | WPRR Project | 1 | 0 | 1 |
| 6 | The 4th annual conference for ABC & Understanding the US Water Sector Certification Program | US | Completed | 1/23/2011 | 2/2/2011 | WPRR Project | 1 | 1 | 2 |
| 7 | Utility Regulation & Strategy and one day workshop on Practicing Leadership in Political Environment | US | Completed | 6/6/2009 | 6/21/2009 | WPRR Project | 1 | 0 | 1 |
| 8 | Utility Regulation & Strategy and one day workshop on Practicing Leadership in Political Environment | US | Completed | 1/9/2010 | 1/24/2010 | WPRR Project | 1 | 0 | 1 |
| 9 | Utility Regulation & Strategy and one day workshop on Practicing Leadership - Jan 2011 | US | Completed | 1/8/2011 | 1/23/2011 | WPRR Project | 3 | 0 | 3 |

ANNEX H. PRISM FEATURES AND SYSTEM ARCHITECTURE

PRiSM is an acronym for Program Management Information System and is made up of two main components: a project data management system and a reporting portal. PRiSM has been designed to manage and report on project data in an environment where no sophisticated scheduling and financial systems exists. PRiSM uses a simple interface for capturing project baseline data and monthly updates and includes its own engine for computing project performance indicators. The system supports multi-company, multi-program, and multi-currency data.

The PRiSM data management client uses the rich functionality of a Windows user-interface while accessing secured data on a remote server using web services. The PRiSM application can be set-up on any client machine by simply downloading the application from PRiSM web site over the Internet.

The data management system includes a rich set of reports but depends on regular project updates, follow-up and management. The PRiSM portal provides extensive capabilities for analyzing project and program performance, access to project documents and progress photos and provides map based interface for accessing and analyzing project data. The key architectural details and functionalities of the system are described below.

The current environment of the PRiSM system consists of:

| Server Side | Client Side |
|--|---|
| <ul style="list-style-type: none"> • One Dell PowerEdge R720 server. • Windows Server 2008 R2 Standard SP1 (64-bit) • Internet Information Server version 7.0 with .NET version 4.0 • 64-bit SQL server 2008 R2 • Microsoft Security Essentials as antivirus protection and firewall • SDSL 3 MB Internet connection | <ul style="list-style-type: none"> • Windows XP SP2 or later versions • .NET 4.0 • Silverlight version 4.0 • Internet Explorer 6.0 or later • PRiSM Windows Client |

The PRiSM data management system is a Windows Smart Client developed using VB.net language and a number of standard off-the-shelf .NET components. The application uses Microsoft's click-once technology for deployment through an Internet Information Server. The individual modules within PRiSM have been developed as separate assemblies which are dynamically added to a common shell and delivered to the user as a standard windows application. The modules within PRiSM are enabled or disabled based on the security permissions of the log-in user. The client code is digitally signed to disallow any modified code to access data on the server. Updates to PRiSM are downloaded upon launching of PRiSM software on the client machine.

The PRiSM client application interacts with the PM database through a secured web service running on the PM server. The data stream between the client and server is compressed to maximize the use of a limited Internet bandwidth and provides enhanced performance. The web service accesses data on a SQL server, located on a separate

physical server, behind the firewall. The SQL server resides on a different sub-net and hence external users cannot see the server or have an access to it.

User management and security is centrally managed at the PM server. PRiSM uses an ASP.Net Membership for authenticating users and managing access to the data web service. The ASP.Net Membership database has been extended to include additional security features required for PRiSM. User management is carried out using a custom application restricted to access by only the server administrator. Upon successful log-in on the client side, the application retrieves user permission data from the server and accordingly enables or disables the functions within PRiSM.

The PRiSM reporting portal is a Silverlight application running over an Internet Information Server (IIS). Upon completion of monthly cycle, a Windows service captures all summary data for projects and stores them in a compressed file on the server. The Silverlight application after log-in checks with a WCF updating service for any updates and if so downloads the latest data file to the client machine and stores it in the user's isolated storage space. Once downloaded, all the data manipulation is done on the client machine with no traffic sent on the network. This also allows offline access to data.

Currently, PRiSM includes data for more than 3,000 projects which are updated monthly over the Internet.

PRiSM Data Management System

The PRiSM database has been designed to accommodate large numbers of programs, projects, contracts, and deliverables.

The Ministry of Water and Wastewater Utilities oversees two large agencies which execute new capital projects and 24 water and wastewater utilities (organized under the Holding Company for Water and Wastewater) which execute small capital projects as well as large number of R & R projects.

The following provides information on the set-up of projects in the system.

System codes are established at the beginning of the system and includes items which are relatively constant and are used to standardize data input. These include items like: Ministry basic information, Agency code and description, Agency regional office locations, project types, project sub-types, program nature, contract type, award type, contractor data, consultant data etc. The system is flexible and allows additions and updates to system codes as required.

A standardized high-level work breakdown structure (WBS) for each type of contract is set-up in the system. Examples of contract types include feasibility study and design and construction. Having a standardized high level WBS ensures project data is organized in a uniform manner and can be reported across projects. Underneath the standard WBS, the system allows flexibility to users to define and organize deliverables unique to each project. Project performance can also be summarized by high-level WBS nodes.

Programs. After initial data is set-up in the system, data about programs and projects are added in the system. Under each agency, the next levels of data are programs which may include a number of projects. Organizing data under program allows summarizing performance at program level. Programs can be further categorized by the program nature, which may be “New” or “Rehabilitation.”

Projects. Projects are defined within each program. Projects are related to a program and are identified by a funding number provided by the Ministry of planning. Project data includes basic project data, responsible project office, manager’s name, and project budget distributed over a five-year planning horizon. The system allows maintaining budgets in multiple currencies and from multiple funding sources. The system also allows adding location data about each project. The location data is used for reporting project performance data on maps.

Contracts. Under each project, contracts are defined. The system provides capability to maintain detailed information about each contract. For each contract, a baseline schedule showing major deliverables and contracted amount is shown and organized under standardized WBS based on the type of contract.

Review cycle and monthly processing

Every month, progress updates are made to each active contract by agency project control unit (APCU) staff. The updates are received from the field, reviewed by APCU staff, and entered in the system. In addition to cost and payment data, progress photos can also be updated in the system. All the input screens include a number of standard validations for checking input data. In addition, business rules are applied to ensure data integrity in the system. Some of the key business rules enforced in the system are discussed below:

After a project is successfully added to the system, it goes into an unapproved status by default. The system disallows addition of any contract to a project which is unapproved. The user with rights to approve projects selects the option to review unapproved projects and then selects a specific project to approve. The system takes user to the screen of detailed project data, and allows adding remarks and approve/disapprove.

After a project is approved, contracts can be added to project. When a contract is successfully added to the system, it goes into an unapproved status. The system does not allow any updates to baseline cost or schedule data for unapproved contracts. The user with rights selects an option to review unapproved contracts and then selects a specific contract to approve. The user must review basic contract data and each baseline item to approve or disapprove a contract.

After a contract is approved, monthly updates can be made to it. Upon successfully making a monthly update, the contract updates go into unapproved status. Any unapproved update is not accounted for in the performance report. The user with rights to approve updates must review all updates and approve them individually.

The system also uses a monthly cycle for update. Users are permitted to make updates for the previous month's progress from the 25th through the 15th of the following month. The period from the 15th through the 25th is set aside for review and corrections and on the

25th, the previous month is closed and updates to previous months are disallowed. Upon closing the month, key project indicator data are generated and stored in a monthly summary table. The summary table is used for generating trend reports.

PRiSM Reporting Portal

The PRiSM reporting portal is a Silverlight application which provides access to key performance indicators for programs and projects, project and contract details, project location data, and access to progress photos and documents.

The PRiSM dashboard reports three key indicators: SPI, CPI and BPI. The first two are standard indicators based on EVM and the third indicator shows a ratio between remaining budget and estimate to complete. By default, the system displays a summary of performance for all types of projects for all agencies. The performance can be analyzed by agency, by type of program, type and sub-type of projects, contractor, location and number of other parameters. Easy to access list boxes are provided for user selection of the above attributes. Upon appropriate selection, the system recalculates indicator values and displays new values. The circular gauges show the performance in fractions with color coding for three zones: green for safe, yellow for warning, and red for unacceptable performance.

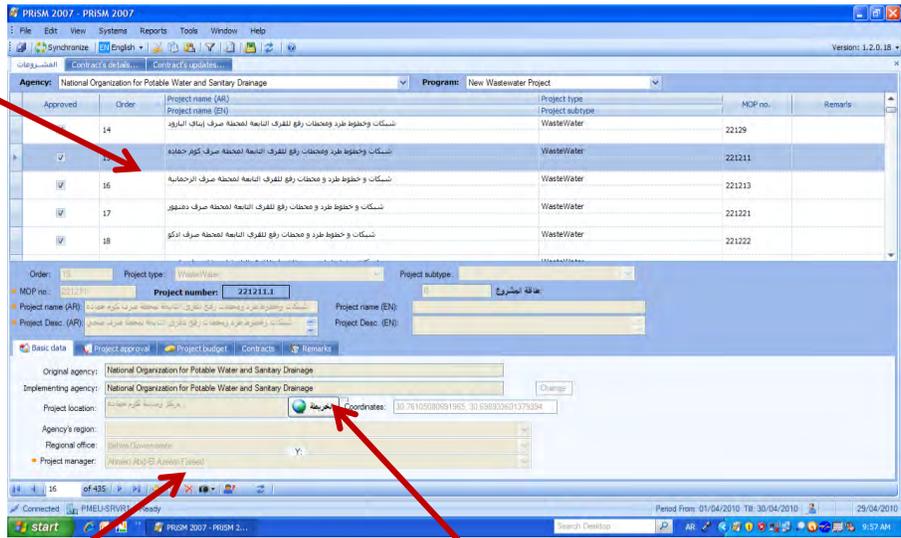
The detailed list of projects can be obtained by clicking a projects tab. The project list can be filtered by specific agency and type and sub-type of projects and locations. The data for each project is organized in tabs of general data, cost data, schedule data and milestones. The system displays performance for each project individually in terms of key indicators and trends data.

The portal also provides filtering of projects by pre-defined exceptions. This feature has been added to allow management a quick look at the types of data quality problems in the system.

A sampling of PRiSM data management and portal screens is provided below.

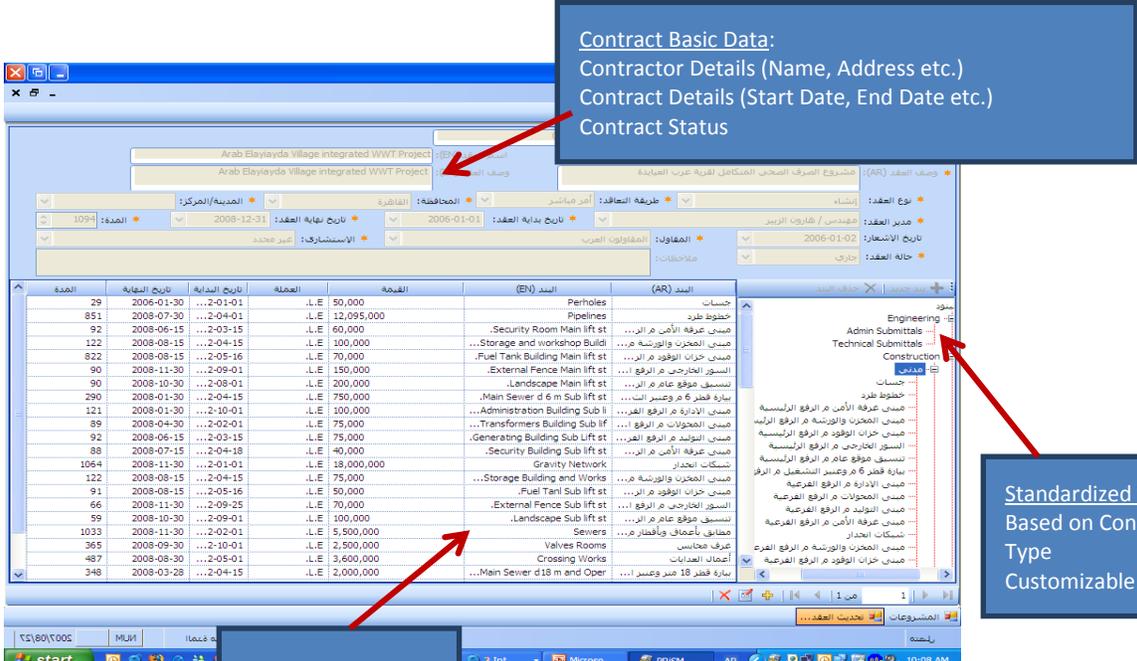
Sample PRISM Data Management Screens

Project List:
Project Number
Project Name
Agency



Detail About Selected Project:
Project Name, Type, Location, Start, End
Project Budget

Locating Project Using Google Maps
Coordinates added for Project Location



Contract Basic Data:
Contractor Details (Name, Address etc.)
Contract Details (Start Date, End Date etc.)
Contract Status

Standardized WBS:
Based on Contract
Type
Customizable by user

Detail Activity Data:
Cost and Schedule
Organised By WBS

Sample PRISM Portal Screens

الخريطة المشروعات العقود

الهيئة: الكل...
 النوع: الكل...
 هيئة التمويل: الكل...
 حالة المشروع: الكل...
 رقم المشروع: الكل...
 المقاول: الكل...
 % الإنجاز: من 0 إلى 100%

Go Reset

بحث إحصائيات قائمة

الخريطة المشروعات العقود

Drag a column header and drop it here to group by that column

| الحالة | التبويب الأصم | البدء الأصم | القيمة المصنفة | الباقى للتكملة | المنفوع | قيمة العقد | اسم العقد | رقم العقد |
|--------|---------------|--|---------------------|---------------------------------|---------------------------|--------------------------|---|-------------------|
| حاري | 21/06/2010 | 23/02/2008 | 0 | 1,786,481 | 18,063,307 | 3,311,990 | إحلال وتجديد بعض الوحدات بمحطة روض الفرج - القاهرة | 01-10181.1.1 |
| حاري | 24/08/2010 | 31/08/2008 | 0 | 85,217 | 1,619,118 | 1,392,000 | احلال وتجديد ورشة كهرباء محطة مياه شرقي | 03-10191.6.1 |
| حاري | 29/06/2012 | 31/05/1993 | 0 | 66,155,458 | 74,557,000 | 130,953,000 | عملية احلال وتجديد وتوسعة محطتي مياه دنشور و شبراخيت | 1184.1.1 |
| حاري | 24/02/2011 | 25/08/2010 | 0 | 64,074 | 363,088 | 698,243 | اعادة تأهيل محطة لاسر المرشحة | 1184-21.1.1 |
| مئتي | 30/01/2010 | 17/03/2009 | 0 | 0 | 1,168,876 | 983,650 | انشاء خزان مياه على بقرية نجوع المعادي سعة 150 م ³ | 20-1184.1.1 |
| مئتي | 06/05/2010 | 26/09/2009 | 0 | 0 | 398,837 | 402,182 | توصيل المياه للمناطق المحرومة بمنطقة الداروي ومنطقة ساحل سليم | 20-1184.12.1 |
| مئتي | 24/07/2010 | 07/09/2009 | 0 | 1,151,877 | 1,260,690 | 1,260,690 | توصيل المياه للمناطق المحرومة بمنطقة اويجج (منطقة اويجج - قرية النوية - المسع | 20-1184.13.1 |
| مئتي | 29/06/2010 | 01/02/2010 | 0 | 0 | 214,897 | 328,090 | نق وتنفيد عدد (7) آبار ارتوازية بالقاسون الودي | 20-1184.19.1 |
| مئتي | 11/12/2009 | 17/03/2009 | 0 | 0 | 7,477,049 | 7,603,209 | تأهيل محطات المياه المرشحة التقالي بدائرة محافظة أسبوط | 20-1184.3.2 |
| حاري | 16/05/2010 | 17/05/2008 | 0 | 74,209,899 | 27,616,288 | 101,621,392 | اعادة تأهيل وتوسعات محطة مياه القئين | 20256.1.1 |
| حاري | 12/10/2010 | 12/03/2009 | 0 | 3,941,618 | 13,281,000 | 17,400,000 | مشروع الصرف الصحي المتكامل لقرية كمرة | 2034.17.1 |
| حاري | 31/05/2010 | 23/05/2009 | 0 | 5,493,687 | 1,327,882 | 6,815,300 | الصرف الصحي المتكامل لمناطق كفر الطو - أرض الجيزة - تودجروج | 2034.27.1 |
| حاري | 27/04/2011 | 27/10/2009 | 0 | 38,599,201 | 274,845 | 38,797,707 | صرف 9 عزب بشبرا الخيمة | 2034.28.1 |
| حاري | 30/06/2010 | 31/05/2009 | 0 | 316,592 | 10,236,463 | 10,133,623 | الصرف الصحي للحي السادس بقرية الهجاجة | 2034.29.1 |
| مئتي | 15/03/2008 | 27/04/2002 | 0 | 0 | 64,118,081 | 65,586,331 | ص من المكس | 20361.2.1 |
| مئتي | 30/08/2008 | 31/07/2006 | 0 | 0 | 70,104,690 | 71,982,233 | توسعات محطة أرض العيش | 20361.7.1 |
| مئتي | 28/04/2008 | 27/06/2006 | 0 | 0 | 63,012,068 | 60,779,166 | اعمال محطة معالجة خورشيد و الزاوية | 20362.3.1 |
| مئتي | 30/01/2008 | 28/04/2002 | 0 | 0 | 131,103,428 | 131,446,938 | اعمال خطوط الطرد ومحطة الرفع بمنطقة خورشيد و الزاوية | 20362.3.2 |
| حاري | 19/08/2010 | 18/08/2008 | 0 | 155,834,905 | 128,133,617 | 204,841,080 | ص من منطقة الملاحة والمناطق المحيطة بمستشفى الطب النفسي بالمعمورة (2) | 20362.5.1 |
| مئتي | 03/09/2008 | 18/10/2003 | 0 | 0 | 66,426,454 | 82,637,184 | صرف صحي طريق الملاحة والمناطق المحيطة بمستشفى المعمورة للطب النفسي | 20362.5.2 |
| | | أصدر بداية 7/14/1984 أكتوبر بداية 8/25/2010 | القيمة المصنفة 0 | الباقى للتكملة 9,117,301,780 | المدفوع 27,351,885,376 | القيمة 23,733,663,953 | | عدد العقود 338 |

الهيئة: الكل...
 النوع: الكل...
 هيئة التمويل: الكل...
 حالة المشروع: الكل...
 رقم المشروع: الكل...
 المقاول: الكل...
 % الإنجاز: من 0 إلى 100%

Go Reset

بحث إحصائيات قائمة

ANNEX I. SUMMARY OF WPRR REVENUE RESULTS

| Water and Wastewater | | | |
|---|-----------|-----------|-----------|
| Statement | 2009/2010 | 2010/2011 | 2011/2012 |
| Number of Companies | 23 | 23 | 23 |
| O&M cost recovery from bill revenues | 80% | 81% | 71% |
| O&M cost with depreciation recovery from bill revenues | 58% | 60% | 54% |
| Total costs (without depreciation) recovery from bill revenues | 61% | 64% | 61% |
| Total costs recovery from bill revenues | 47% | 50% | 48% |
| O&M cost recovery from total operating revenues | 95% | 91% | 77% |
| O&M cost with depreciation recovery from total operating revenues | 69% | 68% | 77% |
| Total costs (without depreciation) recovery from total operating revenues | 72% | 73% | 66% |
| Total costs recovery from operating revenues | 56% | 57% | 52% |
| O&M cost recovery from total revenues (excluding subsidy) | 114% | 108% | 89% |
| O&M cost with depreciation recovery from total revenues (excluding subsidy) | 83% | 80% | 68% |
| Total costs (without depreciation) recovery from total revenues (excluding subsidy) | 86% | 86% | 77% |
| Total costs recovery from total revenues (excluding subsidy) | 67% | 67% | 60% |
| O&M cost recovery from total revenues (including subsidy) | 133% | 123% | 101% |
| O&M cost with depreciation recovery from total revenues (including subsidy) | 97% | 92% | 77% |
| Total costs (without depreciation) recovery from total revenues (including subsidy) | 100% | 98% | 87% |
| Total costs recovery from total revenues | 78% | 77% | 68% |