



OFFICE OF INSPECTOR GENERAL

AUDIT OF USAID/PAKISTAN'S ENERGY EFFICIENCY AND CAPACITY PROGRAM

AUDIT REPORT NO. G-391-12-002-P
NOVEMBER 23, 2011

ISLAMABAD, PAKISTAN



Office of Inspector General

November 23, 2011

MEMORANDUM

TO: USAID/Pakistan Mission Director, Andrew B. Sisson

FROM: Office of Inspector General/Pakistan Director, Joseph Farinella /s/

SUBJECT: Audit of USAID/Pakistan's Energy Efficiency and Capacity Program
(Report No. G-391-12-002-P)

This memorandum transmits our final report on the subject audit. In finalizing the report, we considered your comments and included your response in Appendix II.

The report contains two recommendations to help the mission improve various aspects of the program. On the basis of information provided by the mission in response to the draft report, we determined that a management decision has been reached on Recommendation 1. A determination of final action will be made by the Audit Performance and Compliance Division when the mission completes planned corrective actions. Final action has been taken on Recommendation 2.

I want to thank you and your staff for the cooperation and courtesies extended to us during this audit.

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SUMMARY OF RESULTS

Pakistan suffers power blackouts of 4 to 16 hours per day because of severe supply shortages. To help address this problem, USAID/Pakistan initiated the Energy Efficiency and Capacity Program in March 2009. The mission awarded a 3-year, \$23.5 million contract to the International Resources Group to focus on training in the energy sector and on a variety of conservation activities throughout Pakistan, such as assisting industries with conservation plans. During the first year, the mission spent about \$2.1 million on these activities with modest progress as shown in the table below.

Progress Reported After the First Year of Implementation (Audited)

Expected Results	Targets	Actual Results
Industries with energy conservation plans	15	0
Companies evaluating energy efficiency	10	0
Energy companies upgrading equipment	300	0
Distribution companies implementing conservation strategies	4	0
Appliance labeling program implemented	One	None
Energy sector individuals trained	300	138

In April 2010, in response to a shift in U.S. Government strategy, the mission modified the program’s goal to focus on reducing energy demand through an activity to improve the efficiency of tube wells. This activity was designed to replace irrigation pumps used by farmers with more energy-efficient models. The activity offered farmers a subsidy equal to 50 percent of the cost of a new pump to replace 11,000 pumps over 2 years, thereby reducing energy demand in Pakistan by 45 megawatts.¹ The tube well program had a budget of \$18 million, \$15.3 million of which was to replace 11,000 pumps.² As of September 15, 2011, USAID/Pakistan had obligated \$14.9 million and spent \$10.2 million on the program.

USAID’s Office of Inspector General in Pakistan conducted this audit to determine whether USAID/Pakistan’s Energy Efficiency and Capacity Program was achieving its main goal of reducing energy demand.

As of September 15, 2011, the program was substantially short of its goal of replacing 11,000 pumps by March 2012 to reduce energy demand. Mission officials reported that farmers had replaced 963 pumps (9 percent of 11,000 planned). Replacing this number of pumps was not efficient. USAID’s replacement cost increased from the original estimate of \$1,400 to nearly \$8,500 each because contractor administrative fees were distributed over 963 pumps replaced rather than over the anticipated 11,000 pumps. We estimate that 1,500 pumps will have been replaced by March 2012 when the contract ends.

The major contributing factor to the lack of progress in achieving the program goal was problems with program implementation, including failure to address farmers’ reluctance to

¹ A watt is the unit of power at which energy is being used. For comparison, 45 megawatts would provide power to an average 45,000 U.S. households over the course of a year.

² The remaining \$2.7 million was for remote load management switches, which were ultimately removed from the program.

participate. A shift in high-level U.S. Government strategy in the latter part of 2009 to use local contractors and historic flooding in July 2010 also delayed program implementation (page 3).

Some factors beyond the mission's control hindered program progress. In late 2009, U.S. Government strategy shifted toward greater involvement of Pakistani organizations in implementing assistance programs. As a result, the mission began reconsidering contracts with U.S.-based implementers and formulating details of such a transition. Then, in July 2010, Pakistan suffered devastating floods.

In addition, the audit found that the statement of work was substantially changed without a contract modification (page 5).

To address these problems, we recommend that USAID/Pakistan take the following actions:

1. Discontinue the tube well program under the Energy Efficiency and Capacity Program at the end of the contract period unless the mission develops an action plan to ensure program goals can be reached (page 5).
2. Modify the contract to address changes in the statement of work (page 6).

Detailed findings appear in the following section, and the scope and methodology appear in Appendix I. Management comments, without attachments, appear in Appendix II, and our evaluation of management comments is included in the report on page 7.

AUDIT FINDINGS

Program Goals Not Achieved

Tube Well Pilot. In April 2010, USAID/Pakistan modified the Energy Efficiency and Capacity Program contract to incorporate a pilot phase for the tube well activity. This activity required the contractor to replace 1,000 pumps by June 30, 2010, to determine the effectiveness and sustainability of replacing 11,000 pumps. USAID/Pakistan continued the pilot into October 2010, by which time the contractor had replaced 212 pumps with more efficient pumps (like the one pictured below). USAID/Pakistan then proceeded with the program to replace 11,000 pumps. This action substantially changed the statement of work without a contract modification (as discussed in the finding on page 5). The activity budget was \$18 million, \$15.3 million of which was to replace 11,000 pumps, with the ultimate goal of reducing energy demand by 45 megawatts throughout Pakistan.



At left a pump provided by USAID's tube well replacement activity operates on a farm in Punjab Province. At right irrigation water flows from the pump shown at left. (Photos by the Office of Inspector General, July 19, 2011)

As of September 15, 2011, USAID/Pakistan had replaced only 963 pumps and was significantly short of its goal to help reduce energy demand. The activity has reduced energy demand by 7 megawatts as compared with the anticipated 45 megawatts. The shortfall occurred because of problems in program implementation. Other factors included a change in mission strategy and severe flooding in 2010.

Program Not Implemented Effectively and Efficiently. According to USAID's Automated Directives System 201.3.11.2, USAID must demonstrate the feasibility of a prospective activity prior to obligating funds.

The mission implemented a pilot phase designed to demonstrate the effectiveness and sustainability of this activity, but the pilot phase indicated that program goals were likely too ambitious and would not be achieved.

In June 2010, the contractor prepared a report titled "Pilot Tubewell Efficiency Improvement Program – Lessons Learned." The report identified the following impediments to the activity's feasibility and sustainability:

- Farmers placed a higher-than-anticipated value on their existing pumps, which they must forfeit without compensation.
- Additional installation expenses such as masonry and electrical work were prohibitive for farmers.
- Falling water tables created uncertainty among farmers regarding the appropriate type of pump.
- Chinese pumps were available at lower cost than the subsidized pumps offered through the program.
- The regional energy distribution company, a key partner, did not fully support the program.
- Pump manufacturers felt the program was too short to justify investment in sales and service infrastructure.

To overcome farmers' reluctance to participate, the report recommended raising the subsidy to participating farmers from 50 to 75 percent of the pump's cost and offering an additional 10 percent compensation for old pumps.

Other implementation problems uncovered during audit work included USAID/Pakistan:

- Basing a budget on contractor-provided estimates of \$500 per pump. However, a more realistic estimate of the actual cost is between \$1,000 and \$4,000.
- Assuming 10 hours of daily pump usage per farmer to calculate demand reduction even though planning documents state that average usage is 7 hours.
- Allowing only 1 day for cement to settle during the installation process when it takes as long as 28 days.
- Considering Letters of Interest from farmers as a commitment to participate in the program. Only about one in eight farmers submitting a Letter of Interest ultimately participated in the program.

The program could have been better implemented if more realistic goals had been set and USAID/Pakistan had more closely monitored and addressed problems such as those described above.

In the latter part of 2009, there was a high-level change in emphasis in U.S. Government strategy toward greater involvement of Pakistani organizations in implementing assistance programs. As a result, the mission began reconsidering contracts with U.S.-based implementers and formulating details of such a transition. Then, in July 2010 Pakistan suffered devastating floods. These factors caused delays in program implementation.

Because of the problems described above, the effort required to sell and install each pump increased, exceeding the budget. USAID budgeted \$15.3 million to replace 11,000 pumps for \$1,390 per pump; USAID has spent \$8.1 million to replace 963 pumps for \$8,456 each.

The tube well activity is scheduled to end in March 2012. The mission is considering extending the program in hopes of replacing all 11,000 pumps. Therefore, we make the following recommendation.

***Recommendation 1.** We recommend that USAID/Pakistan discontinue the tube well program under the Energy Efficiency and Capacity Program at the end of the contract period unless the mission develops an action plan to reach program goals.*

Statement of Work Changed Without Contract Modifications

According to the contract, the contracting officer is the only person authorized to make or approve any changes in the requirements of the contract through a contract modification. In the event that the contractor makes any changes at the direction of any person other than the contracting officer, the change “shall be considered to have been made without authority.” Additionally, the designation letter for the contracting officer’s technical representative (COTR) stipulates that the COTR has no authority to direct the contractor, either in writing or verbally, to make changes to the contract statement of work or terms and conditions of the contract.

On three occasions USAID/Pakistan officials instructed the contractor to make changes in implementation, yet the contracting officer did not modify the contract to reflect these significant changes.

- On June 24, 2010, the contracting officer issued a letter instructing the contractor to terminate all non-tube-well activities except (1) demand-side management and energy rationing and (2) energy efficiency and conservation. Further, the contracting officer expanded the tube well program from the pilot project of 1,000 to replace 11,000 pumps. This expansion marked a substantial change to the statement of work.
- On June 29, 2010, the contracting officer issued a letter instructing the contractor to terminate all non-tube-well activities, including the two activities noted above.
- On October 13, 2010, the COTR issued a letter instructing the contractor to reinstate the two activities that the contracting officer had terminated in the instructions issued June 29, 2010.

Lack of oversight by supervisory contracting officials resulted in work being done that constituted a significant change without contract modifications. Contractor accountability is compromised when substantial changes are made without formal contract modifications.

We brought this issue to USAID/Pakistan's attention during the audit. USAID/Pakistan officials subsequently provided evidence on September 30, 2011, that the contracting officer had modified the contract. Therefore, the following recommendation is closed upon issuance of this report.

Recommendation 2. *We recommend that USAID/Pakistan modify the Energy Efficiency and Capacity Program contract to reflect changes in the statement of work.*

EVALUATION OF MANAGEMENT COMMENTS

USAID/Pakistan agreed with the two recommendations in the draft report. A management decision has been reached on Recommendation 1, and final action has been taken on Recommendation 2.

Recommendation 1. We recommend that USAID/Pakistan discontinue the tube well program under the Energy Efficiency and Capacity Program at the end of the contract period unless the mission develops an action plan to reach program goals.

USAID/Pakistan stated that it has developed a revised business plan to improve program deliverables and achieve the target goals. The mission is expected to approve the business plan by January 31, 2012. A management decision has been reached on Recommendation 1.

Recommendation 2. We recommend that USAID/Pakistan modify the Energy Efficiency and Capacity Program contract to reflect changes in the statement of work.

On September 30, 2011, the Office of Acquisition and Assistance modified the contract to address changes made in the statement of work. Final action has been taken on Recommendation 2.

SCOPE AND METHODOLOGY

Scope

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions in accordance with our audit objective. We believe that the evidence obtained provides that reasonable basis.

The purpose of this audit was to determine whether USAID/Pakistan's Energy Efficiency and Capacity Program was achieving its main goal of reducing energy demand to sustain Pakistan's economic growth.

The audit covered the Energy Efficiency and Conservation Program from March 2009 through September 15, 2011. The contract incorporating this program started on March 26, 2009, and is to end on March 26, 2012. As of September 2011, USAID/Pakistan had obligated \$14.9 million and spent \$10.2 million on the subject contract. The primary focus of the audit was the \$8.1 million spent on the tube well component.

We reviewed USAID policies and procedures such as Automated Directives System Chapters 200, 201, and 302 and supplemental guidance. We reviewed and analyzed financial reports, contracts, and project documentation. We interviewed officials with USAID/Pakistan and the implementing partner. Audit fieldwork was performed at the USAID/Pakistan mission and at the implementing partner's Islamabad program offices from July 2011 through September 2011. We also conducted site visits to USAID/Pakistan's satellite office in Lahore and to Nankana Sahib, Punjab Province, between July 19 and 20, 2011, and observed the operation of a new pump.

In planning and performing the audit, the audit team assessed controls used by the mission to manage the program and to ensure that USAID/Pakistan provided adequate oversight of program activities. These controls included maintaining regular contact with the implementing partner and reviewing project files. The contractor maintained detailed records, including digital photos, of pumps installed.

Methodology

To answer the audit objective, the audit team followed the following steps:

1. Determined the program's main goals.
2. Evaluated the appropriateness of indicators and targets.
3. Determined progress toward targets and goals.
4. Evaluated the cost-effectiveness of the program.
5. Assessed compliance with branding and marking.

To achieve these steps, the audit team reviewed the contract and modifications, USAID correspondence with the contractor, and weekly and quarterly program reports. The audit team interviewed staff from USAID, the contractor, and one subcontractor. The audit team met with

representatives of the Government of Pakistan and attended a meeting of several farmers and another meeting with pump manufacturers. The audit team made a site visit to Lahore and Nankana Sahib, Sindh Province, between July 19 and 20, 2011, and observed the operation of a pump installed with program funds as well as a demonstration of pre- and postinstallation inspection methods.

Security-related travel constraints precluded us from making more extensive site visits. Auditors reviewed and analyzed contractor data and interviewed contractors, farmers, and selected Government of Pakistan individuals. The controls observed during our site visit to Lahore provided auditors with reasonable assurance that the data obtained and reviewed are sufficiently reliable.

MANAGEMENT COMMENTS



USAID
FROM THE AMERICAN PEOPLE

PAKISTAN

MEMORANDUM

Date: November 10, 2011

To: Joseph Farinella
Director OIG/Pakistan

From: Karen Freeman /s/
Acting Mission Director

Subject: Management Comments on the Audit of USAID/Pakistan's Energy Efficiency Capacity Program

Reference: Draft Report No. G-391-12-00X-P

In response to the referenced draft audit report, please find below mission management comments on the two recommendations included therein.

Recommendation No.1: We recommend that USAID/Pakistan discontinue the tube well program under the Energy Efficiency and Capacity Program at the end of the contract period unless the mission develops an action plan to ensure program goals can be reached.

Management Comments:

Mission management concurs with the recommendation. The Office of Energy has developed a revised business plan to improve project deliverables and achieve the target goals. A document with the Business Plan has been submitted to the Front Office for approval, and is expected to be approved by January 31, 2012.

Recommendation No.2: We recommend that USAID/Pakistan formally modify the contract to address changes in the statement of work.

Management comment:

Mission management concurs with the recommendation. The Office of Acquisition and Assistance has already modified the existing contract to address changes made in the statement of work. The modification to the contract is attached as Annex A to the memo.

Hence, corrective action on this recommendation has been taken by the Mission. Therefore, we request closure of this recommendation upon issuance of the final report.

Annex A: Copy of the modification to the contract

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