



Report Number : ICRR0021490

1. Project Data

Project ID P111943	Project Name AF: ARTF - Power System Development		
Country Afghanistan	Practice Area(Lead) Energy & Extractives	Additional Financing P121939,P152975	
L/C/TF Number(s) TF-93513	Closing Date (Original) 31-Jul-2012	Total Project Cost (USD) 58,668,159.14	
Bank Approval Date 22-Oct-2008	Closing Date (Actual) 31-May-2017		
	IBRD/IDA (USD)	Grants (USD)	
Original Commitment	75,000,000.00	75,000,000.00	
Revised Commitment	75,000,000.00	75,000,000.00	
Actual	59,046,310.14	58,668,159.14	
Prepared by Ihsan Kaler Hurcan	Reviewed by Dileep M. Wagle	ICR Review Coordinator Ramachandra Jammi	Group IEGSD (Unit 4)

2. Project Objectives and Components

a. Objectives

In October 2008, the Afghan Power System Development Project Proposal was approved to be financed by the Afghanistan Reconstruction Trust Fund in two phases as funds became available. In March 2009, the Afghanistan Reconstruction Trust Fund Grant Agreement (GA) was concluded to finance Phase I of the project.

Original Objective:



According to the GA (p.4) the original project development objective (PDO) was: "to support the Islamic Republic of Afghanistan in increasing: (i) access to grid power; and (ii) the quantity of available power, for the consumers in the target urban centers of Pul-e-Khumri, Charikar, Gulbahar and Jabul-es-Seraj".

The project proposal document dated September 25, 2008 (p.1) included the same PDO, with one difference - urban centers of Aybak, Doshi and Khenjan to be financed in Phase II were cited in addition to the other four target urban centers.

Revised Objective (1):

According to the Amended and Restated Afghanistan Reconstruction Trust Fund Grant Agreement of July 2013 (GA-Rev1, p.4), including Phase II project activities, the revised PDO was: "to increase the number of electricity connections for the urban centers of Charikar, Gulbahar and Jabul-es-Seraj and Pul-e-Khumri in an institutionally efficient way".

Revised Objective (2):

The PDO was revised again in July 2015 at the time of Additional Financing. According to the Amended and Restated Afghanistan Reconstruction Trust Fund Grant Agreement of July 2015 (GA-Rev2, p.5), the revised PDO was: "to increase the number of electricity connections for the urban centers of Charikar, Gulbahar and Jabul-es-Seraj and Pul-e-Khumri and to improve the availability of electricity from Naghlu and Mahipar switchyards".

The Implementation Completion and Results Report (ICR, p.14) states that despite the revisions of the PDO, a split rating was not undertaken. The reasons are given as follows: (i) the PDO changes were merely technical restatements - whereas neither the project scope, activities financed or geographical coverage was modified; and (ii) because the outcomes were mostly related to construction and results that could only be measured upon completion of the works, little progress can be recorded until quite late in the life of the project.

However, although there was no major change in project activities or their geographic coverage, a split evaluation will be undertaken in this review due to the deletion of the second objective to increase the quantity of available power, which resulted in a less ambitious project (Bank Guidance-ICR for Investment Project Financing Operations, p.17; Guidelines for Reviewing World Bank ICRs, p.47). No split evaluation will be undertaken for the first objective to increase access to grid power because the revisions did not constitute a material change in the scope or ambition of the project.

In Section 4. Efficacy, project objectives will be evaluated as follows:

Objective 1: to support the Islamic Republic of Afghanistan in increasing access to grid power for the consumers in the target urban centers of Pul-e-Khumri, Charikar, Gulbahar and Jabul-es-Seraj;

Objective 2: to support the Islamic Republic of Afghanistan in increasing the quantity of available power for the consumers in the target urban centers of Pul-e-Khumri, Charikar, Gulbahar and Jabul-es-Seraj.



Revision to Objective 2 (July 2015): to improve the availability of electricity from Naghlu and Mahipar switchyards.

b. Were the project objectives/key associated outcome targets revised during implementation?

Yes

Did the Board approve the revised objectives/key associated outcome targets?

Yes

Date of Board Approval

28-Jun-2013

c. Will a split evaluation be undertaken?

Yes

d. Components

The project had three components to be financed in two phases, with a separate allocation of \$7.0 million for physical and price contingencies.

A. Distribution System Rehabilitation. *(Total appraisal cost: US\$38.0 million (Phase 1, US\$27.5 million; Phase 2, US\$10.5 million); Actual cost: US\$21.94 million)*

This component consisted of investments aimed at: (i) building a new medium and low voltage system; and (ii) rehabilitation and installation of missing parts of the low and medium voltage distribution system in areas where the distribution network already existed.

B. Rehabilitation of Transmission Switchyards. *(Total appraisal cost: US\$10.0 million (Phase 1, US\$0.0 million; Phase 2, US\$10.0 million); Actual cost: US\$15.75 million)*

Under this component project activities were to be carried out to rehabilitate transmission switchyards at Naghlu and Mahipar hydropower stations.

C. Institutional Capacity Building and Project Management Support. *(Total appraisal cost: US\$6.0 million (Phase 1, US\$4.0 million; Phase 2, US\$2.0 million); Actual cost: US\$21.35 million)*

This component included technical assistance activities aimed at (i) establishing a unit within the Ministry of Energy and Water (MEW) to promote energy efficiency and demand side measures, implementing selected energy efficiency and demand side pilots, and preparing and implementing a communication strategy for awareness among consumers; (ii) providing training to MEW staff in operation and maintenance of the distribution/transmission system; (iii) carrying out baseline studies and communication with stakeholders; and (iv) providing project management and implementation support for investments under the project.

Revised Components



The project proposal document (p.8) included three components to be financed in two phases, due to limited availability of funds in the Afghanistan Reconstruction Trust Fund (ARTF) at project approval, with a total grant amount of \$60 million. The ARTF Grant Agreement (p.4) of March 2009 provided \$35 million for Components A and C. When additional funds became available through ARTF, \$25 million more was committed to the project, and Component B was included in the Amended and Restated ARTF Grant Agreement (p.4) of February, 2011.

When the project was restructured in January 2012, the following provisions were added to Component C: (i) provision of project management and implementation support for the project, the Emergency Power Rehabilitation Project (EPRP) and Kabul, Aybak, and Mazar-e-Sharif Power Project (KAMPP); and (ii) support for the preparation of a Central Asia South Asia Electricity Transmission and Trade Project (CASA-1000). Furthermore, technical assistance to be provided to MEW staff was expanded to include training in financial and procurement management, and technical areas related to energy sector, including energy efficiency.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost: The total project cost was originally estimated at US\$60 million including price and physical contingencies. After the approval of the additional financing in July 2015, the total project cost was estimated at US\$75 million. The additional financing was not utilized, and the actual cost stayed at US\$59.05 million at project completion. However, Component A's actual cost of \$21.94 million was roughly \$16.00 million below the cost estimated at appraisal because of the exclusion of three towns, namely, Aybak, Doshi and Khenjan, from Component A in Phase II (Please see First Restructuring below). The actual cost of Component B was around 60 percent higher than the appraisal estimate on account of cost over-runs in the rehabilitation of Naghlu switchyard. There was a very high cost deviation for Component C; whereas the cost estimated at appraisal for Component C was \$6.00 million, the actual cost was \$21.35 million. The main reason for this difference was the inclusion of consultancy services for two other power projects funded under ARTF and International Development Association (IDA), and the reliance on a project management firm for almost all aspects of project implementation due to weak capacity of the project implementation agency (Please see Second Restructuring below). For price and physical contingencies \$9.3 million was allocated during the First Restructuring and funds were reallocated to components B and C to cover cost increases.

Financing: The project was financed by the Afghanistan Reconstruction Trust Fund (ARTF), with parallel financing from the Government of India for the construction of a 220kV/20kV substation at Charikar to feed the distribution networks in Charikar, Gulbahar, and Jabul-es-Seraj. In line with the estimated project cost, the ARTF funding was set at US\$60 million at appraisal to be approved in two phases: \$35.00 million in Phase I in 2009 and \$25 million in Phase II in 2011. An additional \$15 million was approved in July 2015 to finance the procurement and installation of line-drops, which are connections from the main distribution line to each household, and meters boxes, and to cover the cost for the rehabilitation of Naghlu switchyard. As of February 2019, US\$611,733 for ineligible expenditures had not been refunded.



Borrower contribution: There was no borrower contribution planned at appraisal. However, the power utility *Da Afghanistan Breshna Sherkat* (DABS) used its own funds to procure and install line-drops and meter boxes, rather than utilizing additional financing. The amount of DABS contribution is not known to the project team.

Restructurings and Dates: There were five restructurings and one additional financing.

- **First Restructuring (Level 2 - February 1, 2011):** Balance \$25 million for Phase II was committed, and Component B was added to the grant agreement. Upon the request of the Government of Afghanistan, Aybak, Doshi and Khenjan towns were excluded from Phase II, since funding for these investments had already been secured from another donor (Letter to MEW dated October 13, 2010). Consequently, funds originally allocated to Component A decreased from \$38.0 million to \$24.4 million, and those allocated to Component B increased from \$10.0 million to \$19.0 million. In this restructuring, the project closing date was extended by 12 months from July 31, 2012 to July 31, 2013 to cover delays caused by issues of pole design, security, customs clearance, and budget release (Implementation Status and Results Report 5646, p.2).
- **Second Restructuring (Level 2 - January 19, 2012):** Prior to July 2011, this project and two other power projects, namely the Emergency Power Rehabilitation Project (EPRP), and Kabul, Aybak, and Mazar-e-Sharif Power Project (KAMPP), shared one international project management firm financed under the EPRP. In July 2011, the consultant demobilized and a new contract for the replacement firm to be funded under this project was approved by the Bank Regional Procurement Manager on January 5, 2012. Therefore, in this restructuring, the scope of Component C was modified to allow the signing of the consultancy contract for all three power projects, and also to cover the consultancy services and incremental costs for the preparation of Central Asia - South Asia 1,300 MW Transmission Line Project (CASA-1000). Technical assistance to be given to the staff of MEW was also expanded to cover essential project and contract management tasks (Restructuring Paper dated January 20, 2012, p.2).
- **Third Restructuring (Level 2 - November 13, 2012):** The Grant Agreement was amended to provide for the financing of international travel and subsistence for Afghan officials to attend meetings of the Intergovernmental Council, Joint Working Group and other ad hoc meetings required for CASA-1000 preparation in the Kyrgyz Republic, Pakistan and Tajikistan (Restructuring Paper, October 2012, p.4).
- **Fourth Restructuring (Level 1 - June 28, 2013):** A major restructuring, including the revision of the PDO, was needed in June 2013 because the original PDO was no longer achievable through the activities financed by the project, and the project had insufficient funds to cover all activities (Restructuring Paper dated June 28, 2013, p. 4). The project relied on activities outside the control of the project, such as the construction of a substation in Charikar funded by the Government of India, to increase the quantity of power in target urban centers. Moreover, the project activities to rehabilitate the switchyards at Naghlu and Mahipar hydropower plants did not contribute to the achievement of the objective, because electricity generated at these power plants could not be supplied to the target urban centers due to technical and regulatory reasons. Therefore, in this restructuring the objective "to increase the quantity of available power to the consumers in the target areas" was deleted from the PDO.



Despite the decision made in this restructuring to move Component B, i.e. rehabilitation of Naghlu and Mahipar switchyards, to the Naghlu Hydropower Plant Rehabilitation Project (NHPRP), this did not materialize due to delays in the preparation of the NHPRP. Furthermore, the allocation to Component C was increased to \$16.0 million to be used to finance international consultants to carry out all aspects of project management. Lastly, the project closing date was extended by 18 months from July 31, 2013 to January 31, 2015 to cover contract execution delays due to poor project management and quality issues.

- **Fifth Restructuring (Level 2 - January 27, 2015):** The project closing date was extended by six months from January 31, 2015 to July 31, 2015 to allow adequate time to respond to the Afghan Government's request for additional financing to cover the costs of additional works, such as meter boxes, line-drops and main circuit breakers, and cost and time over-runs. (Restructuring Paper dated January 27, 2015, p.4-5).

- **Additional Financing (July 29, 2015):** An additional \$15.00 million was approved by the ARTF Management to finance the procurement and installation of line-drops and meter boxes. Additional grant were to be used to finance activities in capacity building and implementation support to the power utility *Da Afghanistan Breshna Sherkat* (DABS), which was to take over the project implementation from MEW, and the cost of the rehabilitation of the Naghlu and Mahipar switchyards, too. PDO was also revised to include the works at the Naghlu and Mahipar switchyards as objectives, since Component B could not be transferred to the Naghlu Hydropower Plant Rehabilitation Project. A new indicator to monitor the switchyard rehabilitation works was added to the PDO indicators. Lastly, the project closing date was extended by 22 months from July 31, 2015 to May 31, 2017 to allow the procurement and installation of line-drops and meter boxes to connect households in target urban centers to the grid and the completion of the rehabilitation works at the Naghlu switchyard.

Disbursement Percentages

Following disbursement percentages will be used in deriving the weights to be applied to revised objectives in Outcome rating.

PDO	Disbursed Amount (\$ million)	Disbursement Percentage (%)
Original	33.72	57.1
First Revision	23.74	40.2
Second Revision	1.59	2.7
Total	59.05	

3. Relevance of Objectives

Rationale



Alignment with strategy: At project closing, the original and revised PDOs were consistent and aligned with the World Bank Country Partnership Framework (CPF) for Afghanistan for FY2017-2020. The project objectives correspond to CPF's Objective 2.3 to "improve access to electricity for households, business, and public services through additional power generation (with a focus on renewable energy)" (CPF, p.23). The project sought to address the development issue of lack of access to electricity, which is an obstacle for economic growth and human development, through the construction of medium and low voltage distribution lines in targeted urban centers. The project also sought to address the development issue of lack of power in the same urban centers, which can be linked to the strategic objective of increasing power generation; however, the project did not include any activities to achieve this objective.

Country context: The first objective to increase access to grid electricity was output-oriented, rather than outcome-oriented, which lacked the reliability and quality aspects of power supply. On the other hand, the second objective to increase availability of power was outcome-oriented; however, since the project design did not support the achievement of this outcome, this objective was deleted in the second restructuring. The revised second objective to improve the availability of electricity from Naghlu and Mahipar switchyards was also output-oriented, which was added to link the project activities under Component B to the PDO. Despite the objectives being at the output level, they were appropriately pitched for development status in Afghanistan as described in the CPF. Afghanistan has one of the lowest rates of electricity usage in the world, and overall only 30 percent of the population has access to electricity (CPF, p.23). On the other hand, the institutional capacity is still weak (CPF, p.23 and 42), and the security situation has been worsening in much of the country (CPF, p.43). The project tried to overcome these obstacles by hiring consultancy firms for both project implementation and monitoring and evaluation, as usual practice in fragile countries.

Previous sector experience: The project was conceived as a complement to the IDA-funded Emergency Power Rehabilitation Project (EPRP), which was approved in June 2004, and the ARTF-funded Kabul-Aybak-Mazar-e-Sharif Power Project (KAMPP), which was approved in 2007 (ICR, p.6). Both projects had the objectives to provide reliable and quality power to the consumers in the project areas, through the rehabilitation and expansion of distribution networks, and the rehabilitation of the Naghlu Hydropower Plant under the former one. Compared to the objectives of the previous two projects, the PDO of this project was less challenging, and it partially reflects the experience gained and the limited progress achieved in earlier engagements.

Rating

High

4. Achievement of Objectives (Efficacy)

Objective 1 Objective



To support the Islamic Republic of Afghanistan in increasing access to grid power for the consumers in the target urban centers of Pul-e-Khumri, Charikar, Gulbahar and Jabul-es-Seraj.

This objective was first revised in July 2013 from increasing access to grid power to increasing the number of electric connections. In the second revision in July 2015, the phrase "in an institutionally efficient way," which was added in July 2013, was deleted. Since the revisions did not result in a material change in the original Objective 1, a split evaluation will not be undertaken for this objective.

Rationale

Theory of Change for Objective 1

The project proposal document dated September 25, 2008, did not provide a detailed analysis of the causal chain linking inputs, outputs and outcomes. Some project activities, such as the rehabilitation of switchyards and the energy efficiency implementation in Kabul, did not support the achievement of the original PDO. The project objective to increase access to electricity was closer to the output level than outcome level. It was assumed that the construction and rehabilitation distribution lines would help prior investments in generation and transmission to achieve their full development impact (ICR, p.7). The original project design did not include the procurement and installation of line-drops and meter boxes, which constitute the final connection between the distribution line and individual households (Project Paper for Additional Financing, p.9). These activities were added to the project at the time of additional financing in July 2015, but the power utility, *Da Afghanistan Breshna Sherkat* (DABS), financed these activities from its own resources. Nevertheless, construction of distribution lines is a precondition to supply grid electricity to consumers, which would improve economic and social conditions in the short run, and help alleviate poverty in the long run through productive uses of electricity; however, given the activities of other donors in Afghanistan, it cannot be argued that without the project, these distribution lines would not be rehabilitated or constructed. Overall, a causal link can be established among project activities, outputs and outcomes for the first objective, but the theory of change for Objective 1 had modest shortcomings due to missing project activities and the objective being closer to the output level.

Outputs

- At project closure, 737 km of distribution lines were constructed or rehabilitated against a target of 626 km.
- In the target cities of Charikar, Gulbahar and Jabul-es-Seraj in the Parwan province, the number of households with metered connections to the grid increased by 13,321. The target was 12,500 new household connections.
- In the target city of Pul-e-Khumri in Baghlan province, the number of households with metered connections to the grid increased by 6,987. The target was an increase in household connections to the grid by 5,500.

Outcomes

- Project activities resulted in an increase in the number of households connected to the grid in the targeted urban centers in excess of targets. The key indicator defined at appraisal was to measure the increase in



access by percent of households, but this indicator was replaced by the number of connections in the fourth restructuring.

The target cities of Charikar, Gulbahar and Jabul-es-Seraj are located in the Parwan province adjacent to Kabul to the north. These three cities are major urban centers of a fertile valley which is heavily farmed. The city of Pul-e-Khumri is located further to the north in Baghlan province. Although some residents of these urban centers had had access to electricity through diesel generators or solar photovoltaic panels (PV), the quality and reliability of electricity were low, and the cost of electricity was very high for diesel-fired generators. In order to increase access to reliable and cheaper grid-electricity, the target urban centers were to be connected to the North East Power System (NEPS), which was then under construction to expand the high-voltage power system in Afghanistan. Hence, the project's goal was to construct medium and low-voltage distribution lines between the high-voltage NEPS and the targeted urban centers.

Although this project was successful in increasing the number of household connections to the grid in excess of the targets, the objective was at the output level rather than outcome level. There is no evidence provided in the ICR, whether these newly grid-connected households enjoy the benefits of reliable and cheaper grid-electricity. The project team commented that these households now have access to grid-electricity, but there are still bottlenecks, such as overload in transformers, which should be addressed to achieve reliable and high quality power supply. There is also evidence in the ICR (p.24) that consumers complained about insufficient availability of power once they were connected to the grid. There was no survey conducted to evaluate the impact of the project on the local population's economic and social life.

Rating
Substantial

Objective 2

Objective

To support the Islamic Republic of Afghanistan in increasing the quantity of available power for the consumers in the target urban centers of Pul-e-Khumri, Charikar, Gulbahar and Jabul-es-Seraj.

Rationale

Theory of Change for Objective 2

The project design did not include any project activity to increase the quantity of available power for the consumers in the target urban centers. At appraisal, it was expected that the Government of India would finance the construction of a substation in Charikar to supply electricity from NEPS to the towns of Charikar, Gulbahar and Jabul-es-Seraj in Parwan province, and that the excess capacity at the existing substation in Pul-e-Khumri would supply electricity to the new connections in that town. When the PDO was revised in



July 2013, the decision of the Indian Government to finance the Charikar substation had already been delayed and there was no access capacity in Pul-e-Khumri substation due to increased load in that urban area (Restructuring Paper dated June 28, 2013, p. 6). Even if the Charikar substation was built and the excess capacity at Pul-e-Khumri substation was available, since these activities would be beyond the control of the project, it would not be possible to establish a causal link between the project activities and the achievement of this objective.

Furthermore, there is no causal link between the project activities implemented under Component B, i.e., the rehabilitation of switchyards at Mahipar and Nughlu hydropower plants, and the objective to increase the quantity of available power in target urban centers. Because of technical and regulatory reasons, the electricity imported from Uzbekistan and the electricity generated at Mahipar and Nughlu hydropower plants cannot be connected on the same system. Therefore, the electricity from Mahipar and Nughlu hydropower plants can be delivered to Kabul only, not to the targeted urban centers (Restructuring Paper dated June 28, 2013, p.6).

This objective was deleted in the fourth restructuring in July 2013.

Outputs and Outcomes

There was no output or outcome related to this objective. Therefore, the achievement is rated negligible.

Rating
Negligible

Objective 2 Revision 1

Revised Objective

To improve the availability of power from Nughlu and Mahipar switchyards.

Revised Rationale

Theory of Change for Objective 2 Revision 1

The major shortcoming in the theory of change was partly addressed in June 2013 and July 2015 by revising the PDO to match the project activities under Component B, rather than revising the scope of the project to achieve the original PDO. A strong causal link can be established between the rehabilitation of the Nughlu and Mahipar switchyards and the improvement of power from these switchyards, because the revised Objective 2 was closer to the output level.

Outputs



- The old and dilapidated switchyards at Naghlu and Mahipar are rehabilitated.

Outcomes

- The baseline for power outages caused by poor functioning of the Naghlu switchyard was 18. The project activities resulted in decreasing the number of outages to zero against a target of three.
- There was no indicator for the rehabilitation works completed at Mahipar switchyard. However, the ICR (p.16) reports that after the rehabilitation works at Mahipar switchyard, no power outage was recorded.

Afghanistan heavily relies on electricity imported from neighboring countries of Uzbekistan, Turkmenistan, Iran and Tajikistan. In 2015-2016, domestic generation at 1,007 GWh constituted roughly 20 percent of the total electricity consumed in the country. Ninety six percent of domestic generation is from hydropower, and Naghlu with an installed generation capacity of 100 MW and Mahipar with an installed generation capacity of 66 MW are the two largest hydropower plants in Afghanistan (Afghanistan Renewable Energy Development Issues and Options, June 26, 2018, p.15). As explained under Objective 2 above, these two hydropower plants supply electricity to Kabul, therefore, the rehabilitation of the Naghlu and Mahipar switchyards did not contribute to the achievement of the PDO until it was revised in July 2015 under additional financing.

A technical report of Energy Sector Management Assistance Program (ESMAP) titled "Beyond Connections – Energy Access Redefined" defines (p.73) the availability of electricity supply as "the amount of time during which electricity is available". The results framework did not include any outcome indicator measuring the duration of power supply in total number of hours per day, i.e. 24-hour period, nor in the number of evening hours when demand for power is generally the highest. On the other hand, the number of outages, which are directly related to the reliability of electricity supply, can be used as a rough proxy to measure the increase in electricity availability: a decrease in the number of outages corresponds to a higher availability of electricity supply. At the time of additional financing in July 2015, an indicator measuring the decrease in the number of outages at the Naghlu switchyard was included in the results framework. Although measuring the number of outages is a weaker indicator than the cumulative duration of outages, since there has been no outage in the system caused by malfunctioning in these two switchyards, it can be concluded that the cumulative duration of outages has also been zero. Therefore, the project was successful in achieving the revised objective to improve the availability of electricity from Naghlu and Mahipar switchyards.

Revised Rating
High

Rationale

The theory of change had major shortcomings, which led to two PDO revisions. The objective to increase access to grid electricity was substantially achieved. The project activities did not support the achievement of the second objective to increase the availability of power. The achievement is rated Negligible. The revised second objective was at the output level. Its achievement is rated High. Overall, the achievement of project objectives is rated



Modest. In calculating the Outcome rating in Section 6 below, original PDO and the revised PDOs will be rated separately, and disbursement percentages at the time of revision will be applied.

Overall Efficacy Rating

Modest

Primary reason

Low achievement

5. Efficiency

Economic Analysis

For Component A, it was assumed at appraisal that, without project, consumers in target urban centers would continue to consume only a few hours of grid electricity and other times rely on costly diesel-fired generators. With project, it was estimated that consumers would benefit from cheaper electricity imported from Uzbekistan and that the electricity would be more reliable and available for a longer time in a day. For Component B, under the "without project" scenario it was assumed that the continuation of outages in the switchyards caused by aging equipment and damage from war would force the utility to meet the system demand by expensive diesel plants, rather than by Naghlu and Mahipar hydropower plants. With project, outages would be fewer and cheaper electricity from hydropower plants would be supplied to the system.

Based on the findings of a survey conducted under Afghanistan Energy Study Program funded by ESMAP, it was assumed in the economic analysis at project closure that households would use electricity generated by solar panels if they were not connected to the grid, which is the "without project" case. For businesses, no electricity consumption was assumed in this scenario. Based on these assumptions, customers' willingness-to-pay (WTP) for electricity was calculated and used for economic analysis.

There were some other differences in assumptions used in economic analyses at appraisal and project closure. First, project proposal document at appraisal did not clarify what the calculation period was. At project closure, operating life of investments was assumed to be 25 years. Second, the operation and maintenance (O&M) costs were estimated to be 3.0 percent of the capital cost estimate at appraisal. At project closure, the O&M cost for distribution networks and switchyards were estimated at 2.5 percent and 1.5 percent of the relevant investment costs, respectively. Third, at appraisal, energy sales to new customers and additional consumption by existing customers due to increased availability of electricity were included in the economic analysis as benefits. At project closure, only the electricity consumption by new customers was included in economic analysis.

At appraisal, the economic internal rate of return (EIRR) and net present value (NPV) were calculated separately for Component A and Component B. These two components constituted 80 percent of the estimated project cost at appraisal, excluding physical and price contingencies. The EIRR and NPV for investments under Component A were estimated to be 42 percent and \$95.54 million respectively, and for investment under Component B as 28.0 percent and \$23.69 million, respectively. At project closure, EIRR and NPV were



estimated for 76 percent of the project cost distribution system expansion in the communities of Charikar, Gulbahar, Jabul-es-Seraj and Pul-e-Khumri, switchyard improvements at Naghlu and Mahipar, and 50 percent of the cost for the project management consultants at 39.2 percent and \$172.5 million, respectively.

Operational and Administrative Efficiency

The project implementation period was estimated to be three and a half years (42 months) at appraisal. This was not a realistic estimate given the scope of work, the fragile country status of Afghanistan and the low project implementation capacity of both MEW and DABS. Due to reasons explained in Restructurings and Dates in section 2.e Comments on Project Cost, Financing, Borrower Contribution, and Dates, the project closing date had to be extended four times by a total of 58 months.

Furthermore, due to the problems in the theory of change and project design explained in section 4 Achievement of Objectives, the PDO had to be revised twice. The energy efficiency activities implemented in Kabul and the establishment of a related department at the MEW did not contribute to the achievement of the PDO. Worsening security situation in Afghanistan and subsequent ban on site visits adversely affected project implementation efficiency. The absence of line-drops, which connect the distribution line to individual households, in the original project design led to the issuance of additional financing of \$15.0 million in July 2015. But because DABS financed the procurement and installation of line-drops from its own resources, the additional funds were not utilized and the project closed with an undisbursed amount of \$15.9 million.

Overall, despite high EIRR and NPV values estimated at project closure, the efficiency of the project is rated Modest due to problems in the design and implementation of the project which significantly reduced efficiency.

Efficiency Rating

Modest

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

	Rate Available?	Point value (%)	*Coverage/Scope (%)
Appraisal		0	0 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	39.20	76.00 <input type="checkbox"/> Not Applicable

* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome



The Relevance of Project Objectives is rated High. Under split rating, the achievement of the original project objectives is rated Modest. Since the Efficiency is also rated Modest, the Outcome of original objectives is rated Moderately Unsatisfactory. The achievement of the first revised project objective is rated Substantial. Since there was no change in other ratings, the Outcome rating of the first revised objective is Moderately Satisfactory. Similarly, the achievement of the second revised objectives is rated Moderately Satisfactory and the Outcome rating is Moderately Satisfactory. To derive the Overall Outcome Rating, the disbursement percentages are used to calculate the weight of each Outcome rating. Per ICRR Guidelines, the Outcome of the project is rated as Moderately Unsatisfactory. The calculation is given below.

	Original objectives	Objectives after first revision	Objectives after second revision
Relevance of Objectives	High		
Efficacy			
Objective 1:	Substantial	Substantial	Substantial
Objective 2:	Negligible	N/A	High
Efficacy	Modest	Substantial	Substantial
Efficiency	Modest		
Outcome Rating	Moderately Unsatisfactory	Moderately Satisfactory	Moderately Satisfactory
Outcome Rating Value	3	4	4
Amount Disbursed (US\$ million)	33.72	23.74	1.59
Disbursement (%)	57.1%	40.2%	2.7%
Weight Value	1.713	1.608	0.108
Total weights	3.429 (rounds down to 3)		
Overall Outcome Rating	Moderately Unsatisfactory (3)		

a. Outcome Rating
Moderately Unsatisfactory

7. Risk to Development Outcome

The technical and financial viability of the state-owned utility *Da Afghanistan Breshna Sherkat (DABS)* stands out as a major risk to the development outcome. Despite steady improvements in its financial performance since spinning off from the MEW in 2009, DABS still faces significant challenges, such as overstaffing, under-qualification of staff, weak customer management, billing and collection, etc. Staff's lack of technical qualification is a major issue to not only operate and maintain a modern power system, but plan and



implement new power investments. In order to meet rapidly increasing demand for power in the country, DABS technical and financial institutional capacity need to be strengthened. To this end, along other donors, the Bank has been supporting the institutional capacity strengthening of DABS through technical assistance, such as the DABS Planning and Capacity Support Project.

A recurrence of domestic conflict in Afghanistan, or economic and political instability can result in a deterioration of the power infrastructure, including the development outcome achieved under this project. Afghanistan is classified as a fragile state. After decades of armed conflict, the country faces major challenges in establishing sustainable economic and political stability. Recent escalation in insurgency-related violence increased the fragility of the economic and political environment. A recurrence of armed conflict can not only cause physical damage to the power infrastructure, but also result in a decline in the government's commitment to power sector investments. Economic and political instability can cause government's priorities to shift away from the power sector.

8. Assessment of Bank Performance

a. Quality-at-Entry

The PDO was substantially relevant to the Bank strategy, and the project was expected to supplement the Kabul, Aybak, Mazar-e-Sharif Power Project to provide electricity to the people of large urban areas with potential to accelerate economic growth along the North East Power System (Project Proposal Paper, p.7), but the project's theory of change had significant flaws to achieve these objectives. First, the project design did not include any activity which could result in an increase in the quantity of power available in the target urban cities. Second, the rehabilitation of the switchyards at Naghlu and Mahipar, which were much needed in order to evacuate power from the two largest hydropower dams in Afghanistan, did not have a causal link to the achievement of the original PDO, since the power from these hydropower plants can only be supplied to Kabul, due to technical and regulatory reasons. Third, the energy efficiency activities implemented in Kabul under Component C, did not contribute to the achievement of the PDO. Therefore, two PDO revisions were needed to match the project objectives with project activities, but these resulted in the objectives to become "output level objectives" rather than "outcome level objectives".

There were also shortcomings in technical designs; for example, the line-drops were not included in the scope of work, which affected project implementation from 2012 through project closure in 2017. This also necessitated the issuance of a \$15.0 million additional financing, which could not be disbursed. The monitoring and evaluation (M&E) arrangements were not sufficient to capture the achievement of the original PDO. Indicators were designed to measure project outputs, rather than project outcomes. Safeguards analysis was restricted to environmental concerns, and whether land acquisition or resettlement would be necessary was to be decided during project implementation by conducting a Social Assessment. Project implementation was almost entirely outsourced to a project management firm, which had been a common practice in Afghanistan due the weak capacity of the project implementation agencies. However, this kind of implementation arrangement minimally contributes to the



strengthening of the institutional capacity of project implementation agencies, and it can also lead to very high payments to consultancy firms, as was the case in this project.

Overall, the Quality-at-Entry is rated Unsatisfactory.

Quality-at-Entry Rating

Unsatisfactory

b. Quality of supervision

The supervision missions were regularly held almost twice in a 12-month period, but site visits were not allowed due to security concerns starting in 2014. Therefore, the project team had to rely on data provided by the project management firm. The Implementation Status and Results Reports prepared after each supervision mission were detailed and candid about the shortcomings in implementation and achievement of objectives, as were the project restructuring papers. However, the project team's focus was mostly on the implementation progress. This manifested itself in the difference between the development objective (DO) ratings and implementation progress (IP) ratings in the Implementation Status and Results Reports (ISRs). Between 2013 and 2016, DO ratings were moderately satisfactory or satisfactory, while IP ratings were unsatisfactory or moderately unsatisfactory. The delay in the rehabilitation of the switchyards was the main cause for low IP ratings, but since these activities did not support the achievement of the objectives, DOs were rated higher due to the progress made in the construction and rehabilitation of distribution lines under Component A. This discrepancy in ratings also shows that there was a major attribution issue between the project activities and the achievement of project objectives. The project team tried to correct this attribution issue by revising the PDO, which resulted in lowering the PDO to the output level, rather than revising the scope of the project to achieve the original PDO. Despite the project team's focus on project implementation, the project closing date had to be extended by a total of 58 months, more than the original project implementation period of 42 months. Safeguards compliance improved as a result of a new Environmental and Social Management Framework (ESMF) adopted in 2015 as part of additional financing. The project team found shortcomings in financial management, which were noted during project implementation and after project closure. The ISRs included detailed discussion of the issues and actions to be taken to correct them (ISR dated November 16, 2016, p.2), and the project team followed up the implementation of those measures during supervision missions and through correspondences. Overpayments were successfully recovered from subsequent invoices. Upon the request of the project team, MEW recruited a financial specialist to reconcile payments to the contractors with the contracts, which was a major financial management issue (ICR, p.24). As of February 2019, all the financial issues were solved, but an outstanding balance of US\$611,733 was not still refunded by the Government of Afghanistan.

Despite some shortcomings, the Quality of Supervision is rated Moderately Satisfactory taking into consideration the project team's efforts to improve project implementation in very difficult country conditions.



Quality of Supervision Rating

Moderately Satisfactory

Overall Bank Performance Rating

Moderately Unsatisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

M&E design had significant shortcomings. The objectives were clearly defined, but the theory of change, as discussed under Efficacy and Quality-at-Entry sections above, was not sound. Only the project activities related to the rehabilitation and construction of distribution lines were to lead to the achievement of one of the original objectives, i.e., to increase access to grid power. There was no project financed activity which could result in an increase in the quantity of power available in the target urban centers; therefore, the indicator monitoring the increase in power supply in MWh was irrelevant. There were no indicators for the project activities related to the rehabilitation of switchyards at Naghlu and Mahipar. The PDO level indicator, i.e. increase in electricity access in target urban centers in percentage of households, was a measurable indicator, but there was no baseline or target available. The indicator for energy efficiency activities; i.e., initiation of the energy efficiency promotion activities in Afghanistan, was not specific, measurable nor relevant to the achievement of the PDO. These M&E design shortcomings were expected to be addressed during project implementation (Project Proposal Document, p.8). The project management unit within the MEW was responsible for project monitoring, but the unit's M&E responsibility was defined as reporting financial and physical progress of the project. Data collection methods and analysis were not defined in the M&E design.

b. M&E Implementation

In June 2013, the PDO was revised to make it compatible with the project activities, rather than revising the project scope to achieve the original PDO. New indicators were introduced which were specific, measurable and relevant. Baselines and targets were also defined in this restructuring. Irrelevant indicators related to increase in the amount of power supply and energy efficiency activities were deleted. Yet, it was only in the second revision of the PDO that an indicator, only for Naghlu switchyard, was added to the M&E framework to monitor the outcome of switchyard rehabilitation. There was no indicator for the outcome of the rehabilitation works at Mahipar switchyard. Due to the low capacity of the project management unit in the MEW, the M&E was contracted out to a project management firm, which performed poorly and demobilized in 2011. Although there were some improvements in M&E after the inclusion of supervision to the contract signed with the new project management firm, the M&E implementation became almost impossible after discontinuation of site-visits due to security concerns starting from 2014. The problems in M&E implementation were partially



addressed through the hiring of local engineers by DABS towards the end of the project and data collection was made possible through an ARTF-financed third party monitoring (TPM) mechanism and limited site visits by the project team (ICR, p.15).

c. M&E Utilization

By June 2013, it had become apparent that the achievement of PDO was not possible within the original project design, because there was no sound causal link among project activities and the project outcomes. As mentioned in the previous paragraph, rather than changing the scope of the project to achieve the project outcome, the PDO was revised to make it compatible with the project activities. Available limited data was used to monitor and evaluate the progress in project implementation and achievement of project outputs, which were also project objectives. An additional financing in the amount of \$15.0 million was processed in July 2015 based on the estimates of the project management firm, but this amount could not be disbursed (please see Operational and Administrative Efficiency under section 5. Efficiency). Hence: M&E Utilization was of a low order.

M&E Quality Rating

Modest

10. Other Issues

a. Safeguards

The project was classified as Category B under OP/BP 4.01 (Environmental Assessment), and no other safeguards policy was triggered at appraisal, but a Social Impact Assessment was to be carried out during implementation to determine whether land acquisition would be needed or not (Project Proposal Document, p.17).

Environmental Assessment OP/BP 4.01: At appraisal, no significant adverse impacts were expected and the existing Environmental and Social Management Framework (ESMF) already in place for similar projects funded by ARTF was to be used during the implementation of the project. Although safeguard instruments were available, there were issues in complying with the environmental safeguard policy. The ICR (p.23) states the reasons as (i) limited capacity of MEW; (ii) poor performance of the initial project management firm, which did not assign a qualified member of staff for safeguards; and (iii) limited supervision by the Bank's project team to project sites because of security concerns. Inappropriate storage of equipment, dumping of debris and leaking transformers were observed during Bank supervision in 2014. It is reported that compliance with environmental safeguard policies improved after the adoption of a new ESMF at the time of additional financing in 2015. DABS appointed dedicated safeguards personnel and also a grievance redress mechanism was established. The new ESMF was disclosed through InfoShop on June 22, 2015 and in Afghanistan through DABS' website.



Involuntary Resettlement OP/BP 4.12: Although this safeguards policy was not triggered at appraisal, Implementation Status and Results Reports (ISRs) included a rating for OP/BP 4.12. The ICR (p.23) states that limited land acquisition took place prior to 2014 and affected people were compensated. During the processing of additional financing in July 2015, this safeguards policy was triggered and included in the project documents. In the Integrated Safeguards Data Sheet (p.3) prepared during additional financing, it was reported that there were some limited impact on crops and businesses, and very limited land acquisition for pole location and indoor or outdoor transformer stations during the rehabilitation and construction of distribution lines. According to the information provided by the project team, "[d]espite multiple follow-up, the Ministry of Energy and Water (MEW), the project's client, failed to share details, such as size of each affected parcel, information about compensation, consultation, etc. with the WB". The ICR did not provide information about the project's compliance with this safeguard policy at project closure.

b. Fiduciary Compliance

Financial Management

There were issues in the financial management of the project from the onset of the project. The ICR reports (p.24) these issues as late submission of unaudited quarterly financial statements, payments for ineligible expenditures, inadequate financial record keeping by MEW, transfer of funds from the designated account to a holding account in violation of the agreed procedures, excess payment to a contractor in the amount of \$300,000 and irregular expenditure claims by the project management firm. There were some improvements in the financial management of the project after the responsibility for the implementation of the project was transferred to DABS in July 2015. DABS' project implementation team included a financial specialist. Towards the end of the project, payments to the contractors were reconciled with corresponding contracts. Yet, financial management issues continued even after the completion of the project, such as late or no-submission of unaudited quarterly financial statements, and poor project cash book and bank book keeping (Supreme Audit Office Management Letter dated October 27, 2018, p.7). Although the project team followed up and resolved most of the financial management issues, as of February 2019, the Government of Afghanistan had not refunded US\$611,733 for ineligible expenditures (The World Bank letter dated February 28, 2019).

Procurement

Project team confirmed that all procurement of goods, works and services financed by the project had followed Bank procurement guidelines. There were four major investments contracts: two for the construction and rehabilitation of distribution lines and two for the rehabilitation of the switchyards. MEW had limited capacity to manage such a large, technically complex project including procurement. Additional financing provided in July 2015 for the procurement line-drops and meter boxes could not be disbursed since DABS utilized its own funds for the procurement. Late issuance of letters of credit and customs exemptions, and late payments to contractors caused by lack of coordination with the Ministry of Finance resulted in



implementation delays and additional costs, such as demurrage incurred by late clearance of goods from customs (ICR, p.21).

c. Unintended impacts (Positive or Negative)

None.

d. Other

None.

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Moderately Satisfactory	Moderately Unsatisfactory	Theory of change had significant shortcomings. Some project activities had no causal link with the achievement of the PDO. The project was successful in achieving the targets for new household connections, but these are simply output objectives. Efficiency is rated modest because of very long project implementation period and problems in design.
Bank Performance	Moderately Satisfactory	Moderately Unsatisfactory	Quality-at-entry is rated Unsatisfactory. Despite some shortcomings, the Quality of Supervision is rated Moderately Satisfactory, given difficult country conditions in Afghanistan. Hence, Bank Performance rating is Moderately Unsatisfactory.
Quality of M&E	Modest	Modest	---
Quality of ICR		Modest	---

12. Lessons



First lesson is derived from the ICR. The other two are taken from the ICR with some adaptation of language.

A poorly designed project is unlikely to produce good results. The original project development objective (PDO) was clearly defined and funds were secured from the Afghanistan Reconstruction Trust Fund (ARTF). However, there was a major mismatch between the project activities, expected outputs and outcomes. Some project activities, such as energy efficiency activities and much needed rehabilitation of switchyards in Naghlu and Mahipar, did not directly relate to the PDO. The flaws in theory of change and project design resulted in two PDO revisions making the PDO more of an output level objective, rather than an outcome level one.

In fragile countries, relying on third party for project management is necessary; however, if this is not properly designed and managed, it can be costly and ineffective in achieving project outcomes and strengthening institutional capacity in the country. Because of the weak capacity of the Ministry of Electricity and Water (MEW) to implement the project, a project management firm was contracted to manage the project activities. Not only did this prove to be very expensive, it also resulted in almost no local capacity strengthening, which is as important as building infrastructure in fragile or post-conflict countries, like Afghanistan. After the transfer of the implementation of the project activities to the utility, DABS, there was a rapid increase in the quality of delivery, as a result of the intensive training given in Dubai to the DABS staff in charge of project implementation. This kind of capacity building gained through project implementation would also increase the project implementing agencies' ownership of the project.

In fragile or post-conflict countries, where project sites cannot be visited due to security concerns, utilization of local engineers or third party monitoring (TPM), different than the project management firm, can improve project monitoring and evaluation (M&E). The project faced serious problems in implementation, supervision and data collection from the start. The project team's inability to visit project sites after 2014 due to security concerns weakened project supervision. However, after the hiring of local engineers by DABS, there was partial improvement in project supervision. Towards the end of the project, data could be collected thanks to TPM funded by ARTF. The project's results were evaluated against the data collected by TPM.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR successfully narrates a very complex project, and it provides a candid presentation of shortcomings in project design, implementation, supervision and M&E. The narrative is internally consistent and analyses are mostly supported by evidence. Complex project restructurings are sufficiently explained. Tables within



the main text are useful to understand and compare changes in allocations and actual costs. The ICR is broadly consistent with the OPCS guidelines.

On the other hand, the discussion of the theory of change is weak, and there is no reference to the theory of change in explaining how the ratings were reached. The ICR does not report the Involuntary Resettlement safeguard policy, which was included in the ISRs, and was also triggered at additional financing in July 2015. The ICR does not include a comparison of economic analyses conducted at appraisal and project closure or a discussion of administrative and operational efficiency. Section on fiduciary compliance could have benefited from a discussion on how the project team handled related issues. Lessons Learned are useful, but meant to have broader application which can be turned into recommendations for Bank project teams in particular and stakeholders in general. There are calculation mistakes in "Annex 3. Project Cost by Component".

a. Quality of ICR Rating

Modest