



1. Project Data

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|--|---|--|-------------------------|
| Project ID P086865 | Project Name RY-Power Sector | | |
| Country Yemen, Republic of | Practice Area(Lead) Energy & Extractives | | |
| L/C/TF Number(s) IDA-41720 | Closing Date (Original) 31-Dec-2011 | Total Project Cost (USD) 75,000,000.00 | |
| Bank Approval Date 23-May-2006 | Closing Date (Actual) 30-Jun-2015 | | |
| | IBRD/IDA (USD) | Grants (USD) | |
| Original Commitment | 50,000,000.00 | 0.00 | |
| Revised Commitment | 44,565,340.00 | 0.00 | |
| Actual | 20,510,751.10 | 0.00 | |
| Sector(s) Energy Transmission and Distribution(99%):Other Energy and Extractives(1%) | | | |
| Theme(s) Infrastructure services for private sector development(50%):Corporate governance(25%):Urban services and housing for the poor(25%) | | | |
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2. Project Objectives and Components

a. Objectives

The original Project Development Objective (PDO) is stated in the Development Credit Agreement (DCA, Schedule 2) as: "...to relieve critical power supply constraints and enhance the overall technical efficiency and quality of electricity supply by supporting the borrower's power sector reform initiatives and strengthening the sector's corporate governance to improve the efficiency of Public Electricity Corporation (PEC)."

The revised PDO was "to increase electricity supply and delivery in an efficient manner." (Source: Project Paper, December 2, 2010 for Level I Restructuring. The ICR reported this Level I restructuring date was on January 11, 2011).



- 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

10-Jan-2011

- c. Components

Part A: Power System Strengthening and Efficiency Improvement (Estimate at appraisal: \$ 71 million; actual cost: \$ 36.19 million or 51 percent of appraisal). This had three subcomponents, which were revised through four project restructurings.

A.1. Generation (Estimate at appraisal: \$ 9.90 million; actual cost \$ 1.90 million or 19 percent of appraisal).

Design, supply and installation of a 160 ton per hour boiler at Al-Hiswa power station through civil work and technical assistance (TA). At the level II restructuring in June 2008, the boiler size was revised to a 250 ton per hour boiler.

A.2. Transmission (Estimate at appraisal: \$ 35.00 million; actual cost \$ 18.71 million or 53 percent of appraisal).

Design, supply and installation of new transmission lines, new sub-stations, expansion and upgrading of existing sub-stations in Hodeidah and Dhamar areas and related inter connected systems through civil work and TA.

A.3. Distribution (Estimate at appraisal: \$ 23.80 million; actual cost \$ 15.58 million or 65 percent of appraisal).

Supply of: (a) conductors; (b) underground cables and fittings; (c) overhead lines; (d) transformers and compact substations; (e) switchgears, lightning arrestors and fuses; (f) poles; and (g) 33/11-kV substations, all to selected sites for installation in governorates through civil work and TA.

A.4. Loss Reduction (Estimate at appraisal: \$ 2.14 million; actual cost \$ 0 million or 0 percent of appraisal).

Reduction of technical losses through meters, power system analyzers and reactive compensation equipment.

A.5. Pilot Schemes (Estimate at appraisal: \$0.16 million; actual cost \$ 0 million or 0 percent of appraisal).

Improving revenue collection and promoting efficient use of electricity through prepaid meters for pilot schemes. The Level I restructuring in January 2011 removed this sub-component A.5.

Part B: Capacity Building and Sector Reform (Estimate at appraisal: \$ 4 million; actual cost: \$ 1.85 million or 46 percent of appraisal). This had six sub-components, which were revised through four project restructurings.

B.1. Loss reduction study and an energy audit of the nationwide distribution system through the provision of technical advisory services.

B.2. TA for improving the financial management (FM) and audit control of PEC including inventory management.

B.3. TA for tariff strategy assessment including the impact of changes in the tariff on the poor. The Level II restructuring in April 2014 removed this sub-component B.3.

B.4. TA for the implementation of the sector reform program and in strengthening of PEC's corporate governance. Only this sub-component B.4. was included in the original PDO. The Level II restructuring in April 2014 cancelled this sub-component B.4.

B.5. TA for developing a system, allowing poor households to make instalment payments on connection charges. The Level I restructuring in January 2011 removed this sub-component B.5.

B.6. Strengthening PEC's institutional capacity through the provision of goods and training. The Level I restructuring in January 2011 removed this sub-component B.6. and amended Part B.4 sector reforms to include training hence eliminating the need for a separate sub-component on institutional reform (page 5, Project Paper December 2010).



B.7. TA for Electricity Master Plan Update. The Level II restructuring in June 2008 added this sub-component B.7.

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

Project Costs

Total project costs were estimated at appraisal to amount to \$ 75 million, of which physical and price contingencies were \$ 6.37 million and \$ 4.87 million, respectively. Actual project costs were estimated to be \$ 38.04 million or 51 percent of the estimated costs at appraisal.

Financing

The approved IDA credit was US\$ 50 million equivalent or XDR 35 million at appraisal. The IDA disbursed \$ 20.51 million equivalent or XDR 13.78 million (39 percent of the IDA at appraisal disbursed). IDA XDR 3.5 million (or \$ 4.89 million equivalent at an exchange rate on October 2, 2016) was cancelled at the Level II restructuring in April 2014. Therefore, the final share of IDA disbursement was 43.74 percent of the revised IDA credit of XDR 31.5 million due to the cancellation of XDR 3.5 million and the rest of the IDA credit (i.e., XDR 17.72 million) was undisbursed as the project closing. The GOY was expected to initiate a repayment process in September 2016 and the total amounts to be repaid was XDR 31.5 million. At appraisal, the Islamic Development Bank's (IsDB)'s financing was expected to be \$ 15 million. An estimated actual IsDB disbursement was \$ 13.1 million (87 percent of the appraisal).

Borrower Contribution

At appraisal, the Borrower's contribution, i.e., Republic of Yemen was expected to be US\$ 10 million. An estimated actual Borrower's contribution was \$ 7.01 million (70 percent of the appraisal).

Dates

The Board approval date was on May 23, 2006 with an original closing date of December 31, 2011. The project was restructured four times including one Level I restructuring and three Level II restructurings, with two extensions of the project closing date to December 31, 2014 and to June 30, 2015, respectively. The difference between cost at appraisal and actual varied considerably, as shown in subsection 2c above. The first three subcomponents of Part A decreased by 19 percent, 53 percent and 65 percent respectively, and the last two subcomponents decreased by 100 percent. Part B as a whole fell by 54 percent but available information does not provide cost reductions by subcomponent. A main reason for these reductions is the political crisis beginning in 2011.

Restructuring

The following details the reasons and key changes made for each project restructuring and closing date extension.

First Level II Restructuring on June 28, 2008. Technical issues at the Al-Hiswa plant led to a request by the Government of Yemen (GOY) to increase the size of the boiler under the Generation Component. The GOY also requested an update of the Sector Master Plan to be included in the project. The amendment to the legal agreement made the following changes to the project: (i) Increase in size of boiler at Al-Hiswa Power Plant from 160 tons to 250 tons per hour; (ii) Addition of Master Plan and Update; (iii) IDA financing of the distribution component's contracts estimated at \$ 2.95 million; (iv) Reallocation of credit proceeds (Due to exchange rate variation between the XDR and US\$) Also, the level of IDA's co-financing for the goods category in the DCA needed to be revised to 100 percent from the original 24 percent, which was underestimated as it had taken into account the IsDB financing at project appraisal.

Level I Restructuring on January 10, 2011. The Bank assessed that the original PDO did not accurately reflect what the project would achieve realistically. The changes included: (i) revision of PDO; (ii) revision of the financial covenants in the Project Agreement to make them more attainable; (iii) modification or elimination of sub-components; (iv) extension of the closing date; and (v) amendment of the results framework and monitoring to reflect changes in the PDO, components and implementation schedule. The proportion of IDA that was disbursed before the revision of the PDO was 21.26 percent (\$ 4.36 million disbursed, source: the Project Paper 2010 page ii, the ICR pages viii and 27) of the total actual IDA historical disbursement of \$ 20.51 million (source: the World Bank Client Connection and internal system, the ICR page 39). Hence, the proportion of IDA disbursed after the revision was 78.74 percent.

Second Level II Restructuring on April 2, 2014. Since some activities of the project could no longer be implemented, the changes made included: (i) reduction of the total amount of the Credit from XDR 35 million or \$ 50 million equivalent, to XDR 31.5 million or \$ 45 million equivalent by cancelling of XDR 3.5 million; and (v) ; (ii) scaling down of the project; (iii) deletion of the financial covenants relating to the financial performance and stability of the Public Electricity Company (PEC) (the Project Implementing Entity), which were no longer attainable under the political and social environment conditions at that time; and (iv) amendment of the results framework.

Second Level II Restructuring on December 22, 2014. Since the project was judged to be partially completed by the summer of 2015, the closing date was extended by six months to June 30, 2015.



3. Relevance of Objectives & Design

a. Relevance of Objectives

The original PDO was "...to relieve critical power supply constraints and enhance the overall technical efficiency and quality of electricity supply by supporting the borrower's power sector reform initiatives and strengthening the sector's corporate governance to improve the efficiency of Public Electricity Corporation (PEC)."

The original PDO was relevant at project approval. The GOY showed its commitment to the power sector reform and strengthening the sector's corporate governance to improve the efficiency of PEC, which was among the priorities of the GOY's Power Sector Development Strategy (PSDS) that the Bank helped prepare. At the same time, the investment in the physical electricity supply infrastructure was imminent priorities for improving quality of supply and technical efficiency, requiring the major overhaul of several power stations, and reduction of transmission and distribution (T&D) losses. However, the framing of the original PDO was misleading, ambitious and restricted to only Part B.4 (as explained in sections 3b, 4 and 10a), which was only a small part of this project. "Supporting the power sector reform and strengthening the sector's corporate governance to improve the efficiency of PEC" (Part B.4) would not necessarily directly "relieve critical power supply constraints and enhance the overall technical efficiency and quality of electricity supply", which referred to the physical technical attributes of power supply infrastructure system. The investment in the physical electricity supply system infrastructure would be required to help "relieve critical power supply constraints and enhance the overall technical efficiency and quality of electricity supply". This original PDO was modestly relevant at the project closing because the GOY commitment to sector reforms soon declined after the publication of the PSDS and the project approval, and the Bank gradually removed references to reforms in the PDO, the results framework and the project components. From the Bank's strategic point of view, the power sector reform was not the immediate policy dialogue agenda at project closures due to the crisis in the country but still a pending agenda once the crisis is resolved (Yemen Country Economic Memorandum [CEM] 2015).

The revised PDO was to "increase electricity supply and delivery in an efficient manner." (Source: Project Paper, December 2, 2010 for Level I Restructuring. The ICR reported this Level I restructuring date was on January 11, 2011). It was substantially relevant at the first restructuring and at project closure. The revised PDO was more relevant, manageable and better framed than the original PDO as an Investment Project Financing (IPF) operation. The Country Engagement Note (CEN) for FY2017-2018 included activities for the FY17-18 "Restoring and Expanding Energy Access", an ongoing analysis in energy and local government capacity and continued poverty analyses in the energy sector. These activities were relevant to the revised PDO.

The most relevant and timely national strategic document at project closure was Yemen's Intended Nationally Determined Contribution (INDC) of the United Nations Framework Convention on Climate Change (UNFCCC) in November 2015. The energy sector was one of its three target economic sectors, promoting supply and demand side energy efficiency as well as renewable energy.

The country's per capita electricity consumption stood at 243 kilowatt-hour (kWh) in 2013, almost one-sixth of the regional average. The conflict significantly worsened quality of infrastructure and access to basic services. The public power supply capacity averaged 200–250 megawatt (MW), serving only Aden and Al-Mukalla intermittently, while the rest of the country, including the capital Sana'a, lacked access to energy sources and depended on individual sources of power (small generators or solar energy panels) (Yemen CEN, 2016).

The limited access to electricity undermined the competitiveness of firms. Yemen's "Getting Electricity" indicator from the World Bank Group Doing Business Indicators 2015 ranked as the worst in the region. The 2013 Enterprise Survey found political instability, poor electricity services, and corruption as the top obstacles that interviewed firms perceived in doing business in the country, whose perception increasing since 2010. The electricity sector cost the country about 6 percent of gross domestic product (GDP) annually through direct and indirect subsidies as of 2015. However, the country had neither affordable, reliable, nor sufficient electricity for economic growth and poverty reduction. Power outages averaged 4 hours a day among businesses in major cities in 2013 and over 8 hours a day in some firms in the first three months of 2014. Unreliable power supply was direr outside urban areas and rural areas had no electricity access (Yemen CEM, 2015).

Yemen faced a trade-off between exporting gas to maintain revenue and keeping gas to fuel electricity generation plants. However, an economic value of using gas domestically for electricity generation was approximately twice as high as that of exporting gas (Gerner and Tordo 2011, cited in Yemen CEM 2015)[1]. The energy subsidies distorted production toward energy-intensive industries and inefficient power generation. In 2013, 38 percent of subsidy payments went toward fuel oil and diesel purchases for the power sector, delaying the transition to nonhydrocarbon power generation; 32 percent of subsidy payments went toward diesel purchases used by industrial, commercial, agricultural, and residential consumers for electricity generation (World Bank 2013, cited in Yemen CEM 2015).[2]



- [1] Gerner, Franz, and Silvana Tordo. 2011. "Natural Gas: A Lifeline for Yemen." In *Natural Gas Markets in the Middle East and North Africa*, edited by Bassam Fattouh and Jonathan P. Stern, 519–30. Oxford, U.K.: Oxford Institute for Energy Studies.
- [2] World Bank. 2013. "Energy Subsidy Reform." Initial draft slides (October), Mimeo, Energy Team, World Bank, Sana'a, Republic of Yemen.

Rating
Modest

Revised Rating
Substantial

b. Relevance of Design

The original PDO implied that "to relieve critical power supply constraints and enhance the overall technical efficiency and quality of electricity supply" would be achieved by Part B.4. i.e., "by supporting the borrower's power sector reform initiatives and strengthening the sector's corporate governance to improve the efficiency of Public Electricity Corporation (PEC)." Hence, the relevance of the project's design relative to the original PDO was modest because of the relatively small power sector reform and capacity building activities and a small funding allocation of less than 5 percent (less than \$ 4 million) of the originally estimated total project costs (\$ 75 million). Because the PDO "to relieve critical power supply constraints and enhance the overall technical efficiency and quality of electricity supply" referred to the physical technical attributes of power supply infrastructure system, it would be difficult to track the direct linkage between Part 4 and the PDO. In other words, it would be difficult to track how the institutional changes alone could directly improve the technical efficiency and expand and/or enhance the power supply infrastructure. On the other hand, it would be less difficult to track how the investment in the physical power supply infrastructure could improve the technical efficiency and expand and/or enhance the power supply infrastructure. Furthermore, the extent to which the causal chain in the project's results framework between the main investments and policy areas and intended outcomes "Improved overall efficiency of electricity supply in Yemen" (PAD page 43) were unclear and unconvincing because the project impact on the power sector was only one of several factors potentially impacting on the sector. Furthermore, intermediate results listed in in Part B were outputs (i.e., studies and assessment) (page 42, PAD), not the results. Exogenous factors such as the political crisis and unintended effects were not identified.

A combination of physical infrastructure investment and technical assistance (TA) for capacity building for sector reform was used in the predecessor Sana'a Emergency Power Project (SEPP, 1998-2005) in Yemen and a number of World Bank projects elsewhere. While it depends on the specific country context, the scope of reform support activities and expected achievements within a small part of an Investment Project Financing (IPF) would need to be realistically designed. In some cases, sector reform and corporate governance issues might have been better addressed by broader policy level interventions, since these issues stemmed from deep rooted causes and were of a much broader scope than the power sector.

The relevance of the revised project's design relative to the revised PDO was substantial because the causal chain in the project's results framework between the main investments and policy areas were clearer and convincing.

Rating
Modest

Revised Rating
Substantial

4. Achievement of Objectives (Efficacy)

Objective 1

Objective

Relieve critical power supply constraints and enhance the overall technical efficiency and quality of electricity supply by supporting the borrower's power sector reform initiatives and strengthening the sector's corporate governance to improve the efficiency of Public Electricity Corporation (PEC).

Rationale

No outputs or outcomes. The original PDO restricted the causal chain to only Part B.4 TA in the implementation of the sector reform



program and in strengthening of PEC's corporate governance (as discussed in sections 3a and b above). The implementation of B.4 was delayed due to some uncertainty on what exactly would be implemented and how the limited assistance could be well targeted to the most important issues until such agreement was reached in 2013, 6 years after effectiveness of February 2007. Due to the impending closure of the project, the component was cancelled during the Level II restructuring in December 2014 without producing any outputs or intermediate outcomes (page 46, the ICR).

Rating
Negligible

Revised Objective
Increase electricity supply and delivery in an efficient manner.

Revised Rationale

Outputs

Outputs were either dropped, unfinished or unimplemented by PEC. The following three indicators show notable output achievements.

- An estimated 80 percent of the reinforcement of the distribution network in 18 governorates was completed, with the target of Fully completed from the baseline of partially completed in some governorates.
- A loss reduction and energy audit study achieved the target of Study completed from the baseline of No study. However, the completed study had not been effectively utilized as intended. This study was expected to assess the impacts of Part A.4 on the physical investment on electricity distribution network's loss reduction but due to the implementation delay in Part A.4., this study could not assess the impacts of Part A. 4. loss reduction. The study was not fed into the design for a pilot scheme on revenue collection and electricity efficiency (Part A.5) as originally intended due to delays in finalizing a draft report. Furthermore, as the local contractor for the meters under Part A.5 was selected through single source, uncompetitive procurement and the meters, PEC financed the meters (page 42, the ICR). Eventually, Part A.5 was cancelled during the Level I restructuring on January 2011 (pages 16 and 45, the ICR and Project Paper December 2010).
- A study of financial management (FM), audit control, and inventory management was partially completed against the target of Study completed from the baseline of No study. The final report of diagnostic Phase I was completed by the consultant and was submitted to PEC at the end of September 2010. However, by September 2013, PEC was still reviewing the report. The follow-up phase II of the study which was supposed to develop recommendations for improvement was not initiated.
- The latest project progress report from January 2015 indicated that none of the tasks under the transmission component were fully implemented, against the target of total of 108 kilometer (km) of 132 kilovolt (kV) transmission lines constructed and operational from the baseline of zero km. However all tasks were making significant progress. Engineering design was completed for almost all the subcomponents, all civil works were under progress, 17 percent of excavations for transmission towers were completed, substations were at different levels of completion, and about 60 percent of the material had been delivered. The DNA suggested that some tasks/works under the transmission component were damaged partially or fully damaged due to the unrest. The generation component was not implemented and construction of the boiler was not begun by the time of project closure.

Nevertheless, procured equipment and materials and completed draft reports could be utilized after the project closing if they were not damaged, misplaced or misused.

Outcomes

While reliable data on the original PDO indicators was unavailable due to the crisis, the Damage and Needs Assessment (DNA, March 2016) indicated that no or deteriorating progress on all three outcome indicators (satisfactory quality of supply; terminal voltage less than 200V at less than 20 percent of measurement points; and average number of supply failures per week). As of June 30, 2015, Yemen's power sector was hardly functional, with most major cities and almost all rural areas without access to power supply beyond a few hours a day. Using fuel sales to electricity plants as an indicator, PEC's power generation in 2015 dropped by 77 percent compared to 2014. The DNA results indicated that the sector faced far more critical power supply constraints; lower technical efficiency; and lower quality of electricity supply than at the time of the project approval. The power sector reform progress stalled and the corporate governance of PEC showed no improvement.



Even if all project targets were achieved, the full contribution by this project may be limited because it covered only a part of the power sector in Yemen. This project disbursed 46 percent but only achieved small progress on very few indicators, and over 90 percent of Bank disbursements went to components that resulted in no commissioned infrastructure. This suggests that ceteris paribus, the counterfactual scenario of what would have happened without this project, possibly would not have made any difference. If there was no IDA credit, the borrower might have found alternative financiers to do a similar project if it was still a priority, but would have encountered the same exogenous factors such as the crisis, etc.

Revised Rating
Modest

5. Efficiency

Economic Analysis

The ex-ante analysis covered 90 percent or \$ 67.47 million of the project cost of \$ 75 million. The economic benefit of the project was derived from the incremental electricity delivered to consumers by increasing generation and transmission capacity and reducing losses in the system. A net present value (NPV) at appraisal at a discount rate of 12 percent was estimated to be \$ 41.4 million, and the economic internal rate of return (EIRR) of the project was 23 percent. The ex-post analysis covered 95 percent or \$ 36.19 million of the estimated actual total project cost \$ 38.04 million. By March 2015, the benefits from the generation and transmission components had not materialized as they were neither completed nor commissioned. Hence, the ex-post analysis only considered the benefits from the distribution component (A.3). The NPV at a discount rate of 12 percent was estimated to be - \$1.61 million and the EIRR of 7 percent. The positive EIRR was the result of the PAD's assumptions about the large impact of reducing distribution losses over the infrastructure's lifetime and the high willingness to pay (WTP) for electricity. It was not clear if the analysis assumed each residential consumer would have their own diesel generation, and if that was the case, such assumption would be unrealistic. The project contributed to only parts of the distribution network. In addition, separate estimates of technical and non-technical losses and attribution to the project would be practically difficult. The economic analysis (also financial analysis) did not seem to have included the major maintenance costs, which would have normally been required every several years. This would have resulted in a likely overestimate of the benefit.

Financial Analysis

Since the ex-ante financial analysis at appraisal (in the PAD) assessed the financial performance of the entire electricity sector, the ICR reconstructed the ex-ante analysis based on a simpler cost-benefit approach to assess the financial performance of the project instead of the sector. The reconstructed ex-ante analysis covered 94 percent or the financial capital cost \$ 70.8 million, including physical and price contingencies of the estimated total project cost (\$ 75 million) at appraisal, and assessed the revenues for PEC, from incremental electricity sales from the project, at the electricity tariff in 2005 of \$ 0.065/kWh. The NPV, at a discount rate of 12 percent, was - \$ 3.81 million and the financial internal rate of return (FIRR) was 1.2 percent. The ex-post analysis used the revised electricity tariff in 2015 of \$ 0.080/kWh and revised capital cost of \$ 38.8 million, which was slightly more than the estimated total project cost of \$ 38.04 million. The ex-post analysis considered the benefits from the distribution component as the other components were not completed. The NPV at project closing was estimated to be - \$19.55 million and the FIRR -4.6 percent. The results at completion, similar to the results at appraisal, were not favorable due to the subsidized electricity tariff and the outcomes of the project.

Even though the EIRR at completion was positive, the project disbursed 46 percent and only achieved small progress on very few indicators. Over 90 percent of Bank disbursements went to components that resulted in no commissioned infrastructure despite the extended project period of nine years from the original 4.5 years. This implies that the IDA funds were not used efficiently.

Efficiency Rating
Negligible

- 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 | ✓ | 23.00 | 90.00 <input type="checkbox"/> Not Applicable |
| ICR Estimate | ✓ | 7.00 | 95.00 <input type="checkbox"/> Not Applicable |

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

6. Outcome

The relevance of the original PDO was rated modest due to its focus on reform and governance issues that were neither major activities in the project design nor appropriate for a single IPF alone to handle and for the reality of GOY's governance and institutional capacity. The relevance of the revised PDO was rated high because of its narrower focus on investments. The relevance of the project's design relative to the original PDO was modest because the relatively small power sector reform and capacity building activities and the unclear causal chain in the project's results framework. The relevance of the revised project's design relative to the revised PDO was substantial because the causal chain in the project's results framework between the main investments and policy areas were clearer and convincing.

All activities generated virtually no tangible outcomes, no physical investment completed and no studies utilized or completed. The efficacy of the original PDO achievement was rated negligible due to overambitious focus on reform and governance issues that were not achieved. The efficacy of the revised PDO achievement was rated modest because the reform and governance issues were removed and limited output achievements were made.

The efficiency of the project is negligible. Economic and financial analysis resulted in negative NPVs. The over 90 percent of IDA disbursement to infrastructure resulted in un-commissioned infrastructure despite the extended project period of nine years from the original 4.5 years. This suggested an inefficient use of the IDA credits.

Per the IEG ICR Evaluator Manual, in this ICR review, this project is rated against both sets of objectives separately, for the entire duration of the project – not just the period for which each of the objectives was in effect. Ratings were valued on a scale of 1-to-6 (Highly Unsatisfactory to Highly Satisfactory) and weighted by the percentage shares of total disbursement at the time of Level I Restructuring on June 10, 2011. The ICR did not adopt the same approach because the ICR rated the project against the period for which each of the objectives was in effect. The assessment of Development Outcome is unsatisfactory as presented in the following table.

| | | Against Original Project Indicators | Against Revised Project Indicators | Overall |
|---|----------------------------|-------------------------------------|------------------------------------|----------------|
| 1 | Development Outcome Rating | Highly Unsatisfactory | Unsatisfactory | Unsatisfactory |
| 2 | Rating value | 1 | 2 | |
| 3 | Weight (% disbursed) | 21.26 percent | 78.74 percent | 100 percent |
| 4 | Weighted value (2x3) | 0.21 | 1.57 | 1.79 |

- a. Outcome Rating
Unsatisfactory

7. Rationale for Risk to Development Outcome Rating

Technical risk is low because the technical design is not complex. However, the risk to completion of the equipment and materials procured under the project for the power transmission and distribution infrastructure is very high due to the crisis, the damages to these equipment and materials and the uncertainty of the capacity and priority by PEC and GOY to attend to these assets. Even if the work may have been completed, the lack of sustainability of operation and maintenance is a very high risk due to the same reasons as for the risk to the completion.



Financial risk to the sustainability of the project is very high due to the poor financial performance of the PEC. Economic risk is high due to the country's fragile situation.

Social risk in terms of the strength of stakeholder support is unknown and the risk of negative social impacts and the lack of mitigations of such impacts is high due to the project's failure to contribute to the power supply and delivery. Environmental risk is modest due to its limited impacts.

Political risk remains very high and continuing security issues could potentially destroy all the procured materials and equipment's and some works in progress.

Risk to the GOY's ownership and commitment is very high, which had been already experienced during the project, lacking supportive policies and any budgetary provisions (page 20, the ICR).

Risk to other stakeholder ownership (e.g. from private sector/civil society) is unknown. For the private sector, as experienced during the project implementation, it would be difficult for the project contractors to return to Yemen to resume the unfinished work.

Risk to institutional support (e.g. from PEC; and related to legal/legislative framework) and governance is very high, which had been experienced during and prior to the project implementation.

Risk to natural disasters exposure is high but not specific to this project.

- a. Risk to Development Outcome Rating
High

8. Assessment of Bank Performance

a. Quality-at-Entry

The strategic relevance for the Bank was substantial. The project was a core element of the Bank's Country Assistance Strategy (CAS) FY2006–09, contributing to Pillar 1: 'Diversifying Growth through Better Governance and Better Delivery of Public Services'. However, the Bank's support to the energy sector since 2006 has been mostly unsuccessful, in part due a mismatch between the Bank's strategy and the governance and institutional capacity in Yemen. During the three-year period before the political crisis in early 2011, the Bank assisted the GOY in analyzing key issues and proposing actions to move the sector toward fiscal sustainability.

The Bank's approach was too ambitious, optimistic, inflexible and unrealistic. Almost all IDA credits were allocated to specific infrastructure investments with around 20 contracts that started procurement at around the same time. This situation implied an overwhelming task, especially given the limited flexibility to adjust to changing environments and priorities. The financial covenants negotiated with PEC and the GOY were unrealistic (as discussed in section 9.b) and the project design contained no concrete actions to achieve them. Other financial aspects including projection of PEC financial performance were optimistic and unachievable (e.g., expectation of turnaround of the financial status of PEC by FY2009 with the expected efficiency improvement, tariff adjustments and commissioning of Marib-2 gas fired power plant). The ex-ante economic analysis also lacked clarity (as discussed in section 5 above).

Technical aspects of the investment components were designed according to the technical needs of the sector, based on the sector planning and studies under the preceding Sana'a Emergency Power Project (SEPP, 1998-2005) and PEC's surveys. However, soon after effectiveness, technical problems in the Al-Hiswa plant emerged, and in response the project was restructured in 2008 to resize the boiler to be installed under the Generation Component Part A.1. This had resulted from damage to the existing boilers likely caused by the poor quality of water available due to the lack of an appropriate water treatment plant. This modification doubled the anticipated cost of the component from \$ 9.9 million to \$18.9 million, which could have been avoided if the water treatment plant quality and performance had been assessed and measures had been taken accordingly during the project preparation.

Poverty and social development aspects lacked analysis but were addressed by improving the quality of electricity service complemented by Part A.5. Pilot Schemes by facilitating poor families' management of their electricity usage and costs, including options such as load limiters and pre-payment meters; and development of a strategy to increase connections to poor, un-served populations through allowing connection fees to be paid on an installment basis. The social impacts of the project were designed to be monitored during implementation and social analysis would be integrated into the tariff study. Gender issues were neither analyzed nor specifically addressed at appraisal. Social and environmental safeguard issues were addressed adequately during preparation.



The Bank overestimated the GOY's commitments to the sustainability of policy and institutional reforms, such as the power sector reform, and the institutional capacity of the PMU, all of which were raised by peer reviewers during at the Concept Note Review Meeting in December 2003. The GOY's expressed commitment during project preparation did not translate into sufficient support for the PMU, and the reform momentum soon faded.

Arrangement for implementation were weak. Although some of the key PMU staff were from the completed SEPP and experienced with IDA procedures and guidelines, PEC and the GOY provided them with very limited resources and support.

The Bank's risk assessment and mitigation measures regarding insufficient implementation capacity, oscillating government commitment and the country's fragility were inadequate as they hindered implementation of the project. The Bank did not identify the risk of conflict despite the fragile country status. The changes in the GOY's commitment could have been anticipated especially as presidential and local council elections were approaching at the project appraisal and these elections delayed the effectiveness of the DCA.

The Bank failed to incorporate lessons learned into project design from previous operations on factors affecting regarding sequencing, risks, mitigation options, capacity shortcomings, and the political economy of the sector. For example, PEC's limited capacity was documented in the SEPP ICR (2005), which, for example, was noted during the Concept Review Meeting in December 2003 and the Bank's 2004 Country Procurement Assessment Review. The SEPP ICR noted the unrealistic financial covenants, insufficient attention to capacity building in PEC. In view of these lessons, the Bank could have proactively supported the PMU in hiring a procurement support consultant. The Bank processing of this project's concept to approval took 30 months, compared to an average 11 months of Bank operations in Yemen.

Quality-at-Entry Rating
Unsatisfactory

b. Quality of supervision

The Bank demonstrated its focus on development impact with their efforts to sustain close implementation support despite difficult country circumstances. The Bank maintained close and constant communications with the GOY throughout the implementation period including two or more supervision missions per year until 2011. Problems encountered were flagged and appropriate remedial action proposed. However, from 2011 onwards, the two periods of conflict negatively affected project implementation well beyond the official suspension periods. All nonessential Bank missions to Yemen were banned and all Bank staff were restricted from mission travel outside the capital Sana'a. This made monitoring the project's progress very challenging.

Candor and quality of the project performance reporting in the first three years after the Board approval were inadequate as the reports did not accurately reflect actual progress. Despite delays from the beginning and no disbursement, the Implementation Status and Results Reports (ISRs) rated the project Satisfactory or Moderately Satisfactory for the first 2.5 years on both progress towards the PDO and implementation progress. As a result, substantive corrective measures were made very late. After 2009, the project performance was rated Unsatisfactory or Moderately Unsatisfactory and PEC and the GOY were repeatedly exhorted to take action on procurement issues or to improve compliance with the DCA and Project Agreement.

The Bank restructured the project four times to adjust the project to changing circumstances and the more limited capacity of the implementing agency than that the Bank expected at the appraisal. Although the most of the procurements were at the early stage when the Bank team began to realize the implementation bottleneck, cancelling the procurement already started and preparing and initiating new procurements would have taken more time and resources than the existing ones which the Government maintained as priorities. This project had an opportunity to address the limited implementation capacity of the PMU and PEC through Part B.6. Strengthening PEC's institutional capacity through the provision of goods and training. According to the Mid Term Review Aide Memoire in May 2010, the training and capacity building fund allocation had remained largely unused by May 2010 and PEC management was interested in gas-to-power plant training for engineers, equipment for PEC's training center, utility modeling training as well as fiduciary aspects of project management. The PMU was asked to prepare with PEC a training program to submit to the Bank for consideration. However, subsequently, the Level I restructuring in January 2011 cancelled this Part B.6 and amended Part B.4 on sector reforms to include training hence eliminating the need for a separate sub-component on institutional reform (page 5, Project Paper December 2010). Eventually, Part B.4. was cancelled at the Level II restructuring in April 2014. At the project close, only 4.5 percent of IDA fund allocated for training category in DCA was disbursed (source World Bank Client Connection website).

The Bank's adequacy of supervision inputs and processes were inconsistent. The Bank did not closely supervise the Capacity Building and Reform Components. Preparation of procurement documents for the studies took very long and the Bank did not always keep close track of procurement implementation status in the ISRs and aide memoires. For example, the tendering documents for Part A.2. Transmission went



back and forth between the Bank and the PMU from November 2007 until June 2009 when they were issued to prequalified suppliers (footnote 2, page 16). The Bank's follow up on consultants' outputs to the PMU was insufficient, so that they often did not receive feedback for months or even years. Regarding the coordination with IsDB, the last TTL explained that IsDB procured equipment and their project closed early. Given the crisis situations, communication between the last TTL and the IsDB was limited to emails communications.

The ICR did not report the Bank's role in ensuring adequate transition arrangements for completion and regular operation of supported activities after the credit closing. The Bank's portfolio in Yemen remained suspended as of October 2016 and the Bank has suspended disbursements under the Yemen portfolio since March 11, 2015. The Bank was developing an updated understanding of the options for energy access as part of the reconstruction and recovery of Yemen.

Quality of Supervision Rating

Moderately Unsatisfactory

Overall Bank Performance Rating

Unsatisfactory

9. Assessment of Borrower Performance

a. Government Performance

The poor performance of the power sector was not solely an outcome of the conflict and the crisis since early 2011. While these events exacerbated the problem, the roots of the problem laid in poor government oversight and performance, government monopoly, and the lack of a framework for private sector participation. Since around the time this project was approved in 2006, the power sector has shown little progress in expanding access and capacity to meet the growing demand. This was the result of the pervasive involvement of government agencies in the sector without a clear legal framework; the sector monopoly of the poorly performing state-owned integrated power company PEC with heavy government involvement; the chronic inadequate electricity pricing by the government; and the lack of a coherent, transparent framework to support private sector participation. The government never adopted a comprehensive approach to the fundamental problems of the sector. Instead, the decisions and actions taken to deal with sectoral issues were typically shortsighted and motivated by political considerations that may be perceived to yield short-term benefits, but undermine the prospect of the sector sustainability. As a result, the sector's performance was deteriorating, and government efforts to resolve the short-term crisis keep failing, creating a vicious circle. However, the progress by the GOY in addressing those issues has been limited.

The GOY's ownership and commitment to achieving the PDO were inconsistent with high turnover on the ministerial level and relatively low capacity on the deputy ministerial level. The GOY's commitments to reforms were weak, including improving the organizational performance and increasing decision-making autonomy of PEC. Readiness for implementation was inadequate since the GOY was slow to take action at important junctures, including ratifying the credit and taking remedial actions on the procurement processes. The GOY did not provide an adequate enabling environment. For example, the GOY's sector policies contributed to poor financial performance of the sector as the GOY and Ministry of Electricity and Energy (MOEE) did not allow tariffs to rise with PEC's costs, resulting in non-compliance with the financial covenants. The GOY's decision that all government projects would require an approval from the High Tendering Board for procurement processing at all stages of procurement delayed procurement under the project and affected timely resolutions of implementation issues. Information on GOY's relationships and coordination with donors/ partners/stakeholders, especially the co-financer IsDB was not available.

Government Performance Rating

Unsatisfactory

b. Implementing Agency Performance

PEC was the implementing agency. However, the PMU, fully financed by the PEC, would carry out all daily implementation activities responsible for implementation of all project components except those related to sector reform to be implemented under the guidance of the MOEE (pages 8 and 52, the PAD). The Program Agreement (PA) legally bounded that throughout the life of the Project, the PMU should be maintained within PEC with organization, staffing, qualifications and terms of reference satisfactory to the Association, to ensure the proper management of the Project (page 16, the PA).



Implementing agency, i.e., the PMU/PEC's commitment to achieving the PDO was demonstrated by the project's getting back on track in between 2013 and early 2015, when disbursement increased from \$ 6.3 million to \$ 20.5 million, despite the conflicts in the country, and IDA suspensions of disbursement. Many of the problems encountered during project implementation were beyond the control of the PMU/PEC, but in the years before the 2011 crisis, their slow actions to timely resolve critical procurement issues resulted in poor disbursement and unsatisfactory implementation performance. After the crisis, the PMU's actions were slow to hire a new engineering consultant, renegotiate contracts to attract suppliers back to Yemen, pay contractors on time, or resolve contractual disputes. This delayed implementation, tied up funds in unviable contracts with Letters of Credit (L/Cs), and led to significant funds cancelled or undisbursed. PEC did not comply with the main financial covenants set out in the PA. The self-financing ratio (SFR) and debt-service coverage ratio (DSCR) were considered unachievable within the time frame of the project when it was restructured in 2010, and thus removed. The break-even covenant was amended but was not achieved and thus removed during the restructuring in 2014. However, PEC's financial underperformance was driven primarily by the MOEE's policies and external factors such as the two periods of conflict.

Readiness for implementation, implementation arrangements and appointment of key staff were inadequate. The PMU lacked the capacity and faced significant operational challenges as the GOY did not fulfill its commitments to the project. New PMU staff was hired for the project. However, almost from the outset, the PMU faced staffing constraints; salaries were rarely paid on time; and the GOY did not contribute its share of financing to the project's contracts. During appraisal, it had been agreed that PEC would deposit an equivalent of four months' operating budget to a PMU account to be opened at the Central Bank of Yemen. However, while an account was opened, the transfers were often delayed and subject to deductions (sometimes up to 50 percent). As a result, many payments to contractors were delayed, and staff salaries were rarely paid on time, sometimes with many months delay. Especially after 2011, staff were not provided with enough offices and some project documents had to be stored at staffs' personal homes; the high-level project steering committee which was formed upon request by the Bank to address delays was dysfunctional most of the time (for reasons that were not transparent to the Bank); and the supporting documents for some of the project's assets, which were in the possession of PEC, were not shared with the PMU on time when the PMU requested for them. The ICR could not identify the reasons for the problems between the PMU and PEC.

Information on the PMU and PEC relationships and coordination with donors/ partners/stakeholders, especially the co-financer IsDB was not available. Information on transition arrangements for completion and regular operation of project supported activities after the project was not available in the ICR and other documents.

Implementing Agency Performance Rating
Unsatisfactory

Overall Borrower Performance Rating
Unsatisfactory

10. M&E Design, Implementation, & Utilization

a. M&E Design

Monitoring and evaluation (M&E) was not properly designed to collect, analyze, and provide decision-makers with methodologically sound assessments because of lack of specificity in some of the indicators. The PDO "Improved overall efficiency/quality of electricity supply in Yemen" in Annex 4: Results Framework and Monitoring (page 42-, PAD), which was different from the PDO in page 4 of the PAD and DCA, was concise but not clearly specified into project specific PDO indicators (outcome indicators, page 43, PAD) due to the following reasons. The PDO indicators referred to the physical efficiency performance of Yemen. Part A. was the investment in the physical electricity supply infrastructure system but covered only a part of Yemen. Although more than 90 percent of the project costs were allocated for physical infrastructure at project appraisal, and the project covered relatively small part of the total power system and PEC's investment plan for 2006–10 comprised investments totaling \$ 1.76 billion, of which the project was to finance a mere 4 percent. Some of the Part B covered Yemen, such as power sector reform, but Part B was all TAs, many of which were studies and capacity building and thus the contribution to the PDO indicators would be indirect. Furthermore, the PDO indicators stated in page 4 in the PAD were inconsistent with those in Annex 4. The indicators were measurable in terms of numbers, timing, and location but many of the indicators might not be fully attributable to the project (e.g., all PDO indicators, transmission and distribution loss indicators).

The proposed data collection methods and analysis were mostly inappropriate for the purpose due to the attribution issue. Sampling methods were not explained. Data on the PDO indicators were to be collected by the PMU by conducting customer satisfaction surveys but it would be difficult for the customers and PMU to isolate the project contribution from others that affected the values of indicators. Data for Part A were to be collected by the PMU from supervisory control and data acquisition (SCADA), measurement at substations and fault reports, which would be



adequate for the purpose except for the transmission and distribution loss because the project covered only part of the network. The PMU was responsible for collection on data on Part B, which a consultant was to actually collect from distribution and finance departments and surveys on affordability. Handling of comparators to understand attribution along the logical results chain was not documented in the PAD, ICR or other documents. The baselines were documented in the PAD.

Since most of the indicators were system level data that many electric utilities would collect as common practice (although the timeliness and accuracy would be uneven in many other utilities elsewhere), the M&E design was well-embedded institutionally but did not measure some of the specific performance of the project. An assessment of the capacity of the PMU/PEC to timely collect these data were not available in the PAD, the ICR and other documents. The reliance on the consultant and the PMU also would not ensure the sustainability of the M&E system unless the consultant and/or PMU were to have provided on the job training to the PEC to collect data, which IDA could have financed, but at the project close, only 4.5 percent of IDA funds allocated for the training category in DCA was disbursed (as discussed section 8.b.).

b. M&E Implementation

After the Level I restructuring in January 2011, the PDO and the project's results framework and monitoring were revised to better reflect the project and measure the performance. However, the revised PDO indicators could have been clearer but an exception was PDO indicator 4 on "distribution losses in the project area reduced." Yet, due to the network nature, if other factors contributed to the distribution loss in the project areas, the project would need to take into account the other factors' contribution to the achievement of distribution loss. The project contributed to only part of the distribution network. The last TTL clarified that all other PDO indicators were specifically referred to the project financed generation plant and transmission infrastructure.

Mostly due to the crisis situations and the capacity of the PMU, data collection was disrupted and the PMU encountered difficulty in functioning effectively and efficiently. After the conflict in 2011-2012, an engineering consultant contracted by the PMU in January 2013 monitored and produced regular, detailed updates on progress on the implementation of the Generation and Transmission Components. For the Distribution Component, after the crisis in 2011, the PMU did not receive periodical reports from PEC's regional subsidiaries on the detailed progress in the various governorates and no longer undertook spot checks. No evidence was available of sound methodology, independence of analysis, quality control and the data reliability and quality. Part of the M&E system could subsequently be sustained as they were system level utility data that could be collected once the crisis abated.

c. M&E Utilization

The M&E findings did not inform strategic redirection and resource reallocation utilization by the Bank in the first years as the PDO indicators were not used to inform the project ratings or to trigger corrective actions. M&E utilization improved after the Mid-Term Review, which candidly assessed the status of implementation, and led to the subsequent Level II restructuring which aligned PDO, results framework and project components. But shifts in the project's direction and outcome that led to the Level I restructuring could not be attributed to the M&E activities. M&E did not focus on assessing whether the theory of change within the project causality logic was sound and whether this led to any reframing of strategy, especially in connection with the Level I restructuring. The third party monitoring firm provided information that was used to inform the subsequent restructurings when the Bank was not able to travel to the project sites. No information was available in the ICR and other documents as to the extent the M&E findings were communicated to and/or used by the client and other various stakeholders, including the IsDB, to inform decisions. The findings of M&E did measure outcomes, as opposed to simply inputs or outputs, but lacked the clarity on attribution.

M&E Quality Rating
Modest

11. Other Issues

a. Safeguards

Environmental Safeguards

This project fell into the environmental screening category "B", per the Bank's safeguard policy on Environmental Assessment (OP 4.01). Accordingly, PEC financed and prepared a limited Environmental Impact Assessment (EIA) and a detailed Environmental Mitigation Plan.



The EIA addressed issues, including (a) an environmental audit of the Al-Hiswa power plant; (b) international standards for height of transmission lines distance from habitation and livestock, etc.; and (c) proper hazardous waste disposal for equipment.. When the capacity of the boiler for the Al-Hiswa power plant was increased as part of the Level II restructuring in June 2008, an addendum was prepared for the EIA with an updated emission dispersion modeling. The environmental safeguard policy was complied with during the implementation and the ISRs consistently rated the safeguards as satisfactory. The ICR neither provided an evidence that the project completed the planned mitigation activities nor findings of any independent review of safeguards implementation or monitoring reports.

Social Safeguards

This project was applicable to the Bank safeguard policy on Involuntary resettlement (OP/BP 4.12) because of the likelihood of compensation for land used for the transmission line and for reduced land use to ensure safety. The Al-Hiswa plant as well as all substations and distribution lines were located on existing lands owned by PEC. A Resettlement Policy Framework (RPF) was submitted in April 2007 as a condition for project appraisal, and disclosed to the public. The overhead transmission lines required small land acquisition for the transmission tower footings. The RPF was complied with in these acquisitions, and no resettlement issue was raised during the implementation. The social safeguard policy was complied with during implementation and the ISRs consistently rated the safeguards as satisfactory. The ICR neither provided an evidence that the project completed the planned mitigation activities nor findings of any independent review of safeguards implementation or monitoring reports. The last TTL clarified that no visit to the distribution sites was allowed or possible and that small land acquisitions for the transmission line work were very minor and the areas were not populated.

b. Fiduciary Compliance

Financial Management

The project's institutional financial management (FM) arrangements and communications with the Bank deteriorated during project implementation. The PMU maintained the minimum required FM staffing throughout most of the implementation period, including, an accountant, and an internal auditor. However, the PMU was without a financial manager for a long time during 2008-2009. The PMU had planned to hire a second or third accountant during periods of heavy FM workload but did not pursue this plan despite the Bank's urging, for reasons that were not transparent to the Bank.

The PMU had an acceptable FM manual, which clearly showed the staff reporting system in the project and indicated the separation of responsibilities among FM staff. The PMU maintained an acceptable cash based accounting system, although a software upgrade requested by the Bank was completed only with several years of delay.

The PMU was required to submit two kinds of Annual Audited Financial Statements (AFSs) audited by an external auditor: (a) one for PEC as Continuing Entity and (b) separate Project Financial Statement (PFS). The PMU was also required to submit quarterly Interim Financial Reports (IFRs) to the Bank. Mostly, the PMU submitted reports on time and were acceptable. Exceptions included the following: (a) several unaudited IFRs were submitted (for example, Q1 2010–Q3 2010); (b) IFRs and especially PEC's AFSs were often delayed; (c) PEC's AFSs for 2014 and 2015 and the PFS for 2015 had not been submitted as of May 2016 due to the ongoing conflict.

No major FM issue was raised by the project's FM specialists in the ISRs and aide memoires. However, in the last received audit report for the year 2014, the auditor issued a qualified opinion on the PFS because of a potential ineligible expenditure related to the generation contractor and insufficient documentation of the progress of installations under the Distribution Component. PFSs raised a number of minor FM issues, such as overdue payments to contractors; suspension of L/Cs due to insufficient government of contribution; lack of systematic accounting for the government's contribution; irregularities in the project accounts on materials delivered; lack of ex-post reconciliation of fixed asset inventories; and so on. The ICR did not report what measures were taken to address them.

From the outset, PEC did not fulfill the financial covenants as the GOY's commitment to cost-recovery reforms soon waned after the Board approval of the project, and the Bank eventually removed them from the PS. Rather than reaching cost recovery, PEC's net loss increased from YR4.5 billion in FY05 to YR9.8 billion in FY06, and PEC did not reach cost recovery by the end of the project. PEC's poor financial performance was driven by delayed investments in loss reduction measures, delayed shift from heavy fuel oil (HFO) to natural gas (as discussed in section 3.a), a significant increase in the wage bill mandated by the GOY policy, and the need to procure expensive emergency power supply, especially after 2011.

Thirty nine (39) percent of the IDA credit at appraisal was disbursed. Including the cancelled IDA XDR 3.5 million (or \$ 4.89 million equivalent) at the Level II restructuring in April 2014, the final share of IDA disbursement was 43.74 percent of the net IDA credit of XDR 31.5 million. The ICR did not report corruption or misuse of funds associated with the project.



Procurement

Procurement, especially of the Generation and Transmission Components, was a major source of delay between 2007 and early 2011, due to a combination of insufficient procurement capacity and country risks. The PAD envisioned that most procurement decisions would be ready to be taken soon after credit effectiveness, but the first major contract was only awarded 3.5 years later. The delay were mainly due to the lack of capacity in PEC to prepare tendering documents and conduct bid evaluation according to Bank standards and procedures. The Bank team and the PMU expected that procurement of an engineering consulting firm to assist the PMU in procuring the contracts could begin before approval of the project. However, the GOY did not request funding from the Bank's project preparation facility or retroactive financing as the Yemeni law required a prior parliament approval, which was unlikely as the project was not yet fully defined.

Disbursement

In the last received audit report for the year 2014 the auditor issued a qualified opinion on the PFS because of a potential ineligible expenditure related to the generation contractor. Because the generation contractor failed to fulfill the contractual obligations for the project, PEC confiscated the advance payment bond amounting to \$ 1,898,938 for its own account at the Central Bank of Yemen, rather than deposited into the project's designated account, so as to reduce the cost of consultancy services. The IDA share (70 percent) of the advance amount was \$ 1,329,257. This potentially represents an ineligible expenditure. The issue was yet to be resolved as of May 2016, almost a year after project closure.

c. Unintended impacts (Positive or Negative)

Not applicable.

d. Other

Not applicable.

12. Ratings

| Ratings | ICR | IEG | Reason for Disagreements/Comment |
|-----------------------------|----------------|----------------|----------------------------------|
| Outcome | Unsatisfactory | Unsatisfactory | --- |
| Risk to Development Outcome | High | High | --- |
| Bank Performance | Unsatisfactory | Unsatisfactory | --- |
| Borrower Performance | Unsatisfactory | Unsatisfactory | --- |
| Quality of ICR | | Substantial | --- |

Note

When insufficient information is provided by the Bank for IEG to arrive at a clear rating, IEG will downgrade the relevant ratings as warranted beginning July 1, 2006.

The "Reason for Disagreement/Comments" column could cross-reference other sections of the ICR Review, as appropriate.

13. Lessons

Following lessons were drawn from the ICR's lessons learned.

1. Strong political and economic analysis and flexible measures on factors affecting implementation (including risks, communications, institutional capacity and political economy) can improve implementation and adaptation in contexts of fragility, conflict and violence (FCV) contexts. During preparation of this project, the Bank paid little attention to institutional arrangements and limited flexibility in the project design, which was inadequate for the country's situation. This project was implemented during crises, but the Bank used traditional procedures. Back-up mechanisms could be specified in the operational manual, for example, back-up arrangements for communications, flexible procurement measures, virtual or reverse missions, etc. Communications were also problematic in this project (e.g.,



the Bank was not informed of the reasons for (i) not hiring an accountant; (ii) poor relationships between the PMU and PEC; (iii) the dysfunctional high-level project steering committee).

2. Financial covenants of tariff and financial performance of the FCV countries' power sector in a single IPF alone may be challenging. Similar financial covenants in other countries also failed (e.g., Cote d'Ivoire, etc. and even relatively more advanced countries such as Vietnam). PEC and the GOY could never fulfill the financial performance covenants. The Bank's leverage was limited. The size of the project was very small compared to PEC's overall investment needs and its annual losses.

3. Monitoring of investments in FCV countries can be effective if planned systematically, especially if the investments are implemented in many different jurisdictions. The monitoring of the Distribution Component was weak due to the dispersed investment locations. One solution to such a situation could be a third-party monitoring contractor, such as the one hired by the PMU for the Generation and Transmission Components. The Bank had a similar arrangement in FY2013 to monitor the progress of other projects outside of Sana'a on behalf of the Bank task teams who were not allowed to travel due to the security situation. A project could include the systematic monitoring capacity building activities of the implementing agency.

14. Assessment Recommended?

No

15. Comments on Quality of ICR

This ICR was very detailed, well researched and candid. The ICR could have included information and analysis of the co-financier IsDB to have a more comprehensive picture of the project. Minor inconsistencies were found in the ICR (e.g. this ICR noted that the CEN was for FY16-17, but in fact the date was for FY17-18).

- a. Quality of ICR Rating
Substantial