



1. Project Data

Project ID P133184	Project Name ZM-Lusaka Transm. & Dist. Rehab.	
Country Zambia	Practice Area(Lead) Energy & Extractives	
L/C/TF Number(s) IDA-52600	Closing Date (Original) 28-Feb-2019	Total Project Cost (USD) 95,057,189.68
Bank Approval Date 30-May-2013	Closing Date (Actual) 28-Feb-2022	
	IBRD/IDA (USD)	Grants (USD)
Original Commitment	105,000,000.00	0.00
Revised Commitment	101,000,000.06	0.00
Actual	95,057,189.68	0.00

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2. Project Objectives and Components

a. Objectives

The original Project Development Objective (PDO) was “to increase the capacity and improve the reliability of the electricity transmission and distribution system in the Lusaka area”. The PDO was stated identically in the Financing Agreement (October 3, 2013, page 5) and in the PAD (page 8).

The PDO was revised. The revised PDO was “to increase the capacity and improve the reliability of the electricity transmission system in the Lusaka area” (Restructuring Paper, May 30, 2013, page 9).



For the purposes of this Implementation Completion Report (ICR) review, the PDO will be assessed as follows:

PDO1: To increase the capacity and improve the reliability of the electricity transmission system in the Lusaka area.

PDO2: To increase the capacity and improve the reliability of the electricity distribution system in the Lusaka area.

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

27-Jun-2018

c. Will a split evaluation be undertaken?

Yes

d. Components

1. Original components

Component 1: Rehabilitation of the 132kV and 88kV Transmission Network in Lusaka Area (cost at appraisal: US\$106.0 million; actual cost: US\$91.1 million) was to invest in the following: (i) upgrades of several transmission lines and substations; (ii) construction of two new substations; and (iii) replacement of the 11kV switchgear in several locations.

Component 2: Rehabilitation of the 33kV and 11kV Distribution Network in Lusaka Area (cost at appraisal: US\$94.0 million; actual cost: US\$2.3 million) aimed to finance the following: (i) upgrades to distribution lines, substations, and transformers; and (ii) construction of distribution lines and substations.

Component 3: Technical Assistance and Project Supervision (cost at appraisal: US\$10 million; actual cost: US\$15.3 million) was to finance: (i) Project's technical supervision; (ii) Project Implementation Unit (PIU) activities; (iii) technical assistance to the electricity utility Zambia Electricity Supply Corporation Limited (ZESCO); and (iv) identification and preparation of energy sector policies and regulations.

Note: Due to the deficiencies of the ICR in presenting Project costs, this Review uses the Project PAD for the costs at appraisal and Project's Restructuring Papers, Implementation Status Reports (ISRs), and Aide Memoires for costs at closure (with the exception of the Component 3 costs, which are sourced from the ICR). The aforementioned deficiencies are as follows: the presentation of the Component 2 costs at closure in the ICR contradicts what is reflected in the June 27, 2018 Restructuring Paper, and in the post-restructuring ISRs and Aide Memoires (including the final Aide Memoire filed at closure). It also does not comply with the Bank's evaluation guidelines. The ICR lists the Component 2 costs as US\$43.06 million at closure (ICR, page 49 and elsewhere), while the Component was cancelled at the point of time when the



disbursement for it was US\$2.3 million (Restructuring Paper, June 27, 2018, page 3). This misrepresents the level of Project's achievements. In addition, the Component 1 costs at closure does not take into account the balance of US\$0.95 million that remained at closure and thus increases the disbursement rate.

2. Changes in components during implementation

The Project underwent two restructurings: a level 1 restructuring on June 27, 2018; and a level 2 restructuring on February 4, 2021. The second restructuring involved only a change in the closing date, by 12 months. The first restructuring involved the following changes:

- i. Component 2 *Rehabilitation of the 33kV and 11kV Distribution Network in Lusaka Area*, to be financed by the European Investment Bank (EIB), was dropped. The reason was that the works under Component 2 had been delayed as compared with the two other components and would not be completed at the same time. The implementation of activities under Component 2 would, however, be finalized within a standalone EIB project, as agreed with the EIB (Restructuring Paper, June 27, 2018, page 6).
- ii. The results framework (RF) was adjusted accordingly. Specifically, the PDO indicator measuring improvements in distribution system reliability (the main outcome of Component 2 activities) - *Average interruption frequency per year (SAIFI) in the project target areas in Lusaka Division* - was replaced by the PDO indicator measuring improvements in transmission system reliability (related to Component 1) - *Unserviced load on the Lusaka transmission network*. This indicator was defined as the percentage of the peak load that was shed out of total peak load (on the Lusaka transmission network). This was the only change to the RF during Project implementation.
- iii. Reallocation of US\$6 million from Component 1 (*Rehabilitation of the 132kV and 88kV Transmission Network in Lusaka Area*) to Component 3 (*Technical Assistance and Project Supervision*) and cancellation of US\$4 million from Component 1. The ICR explains that the reason for this change was that savings in the amount of US\$10 million were achieved in Component 1 due to a revised procurement packaging and close implementation support from the World Bank; and a part of those savings (US\$6 million) were reallocated to Component 3 to finance the project supervision consultant until the extended Project closure (ICR, page 12), while the remaining US\$4 million were cancelled.
- iv. Extension of the closing date by 24 months.

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

Project Cost: The appraisal estimate was US\$210.0 million, and the actual Project cost was US\$108.07 million.

Project Financing: The Project was financed by the following sources: (i) a US\$105 million credit from the International Development Association (IDA) to the Government of Zambia, to be on-lent to ZESCO under terms and conditions satisfactory to IDA (of which US\$93.4 million was disbursed at closure); and (ii) a loan from the European Investment Bank (EIB) in the amount of US\$65.0 million (of which US\$2.3 million was disbursed).

Comment on IDA financing: The original amount of the IDA loan was \$105.0 million. It was reduced to US\$101.0 million at the restructuring of June 27, 2018 when US\$4.0 million was cancelled (see section



“Changes in Components during Implementation” above). From the amount of US\$101.0 million, the amount of US\$6.7 million was lost over the period of Project implementation due to the fluctuations of the Special Drawing Rights (XDR)-US Dollar rates (the Project was denominated in XDR), resulting in total IDA amount of US\$94.3, out of which the amount of US\$93.35 million was disbursed and US\$0.95 million remained undisbursed at closure. (Aide Mémoire Feb 17, 2022, page 4)

Comment on EIB financing: The original amount of the EIB financing (to be funding Component 2) was US\$65.0 million (PAD, page 11). At the time of the second restructuring (June 27, 2018) when Component 2 was cancelled, the disbursements amounted to US\$2.3 million (Restructuring Paper 2018, page 3-4).

Borrower/Recipient contribution: The Borrower’s contribution was US\$40.0 million at appraisal (PAD, page 11), and the actual contribution was US\$15.35 million at closure (ICR, page 49).

Project Dates: The Project was approved on May 30, 2013 and became effective on February 28, 2014. The mid-term review was held on December 20, 2017. The original closing date was February 28, 2019. The Project was extended twice, first to February 19, 2021 (under the first restructuring), and then to February 28, 2022 (under the second restructuring), for the total of three years (or 36 months).

Please see the note in section *d.1. Original Components* regarding ICR deficiencies in presenting Project costs.

3. Relevance of Objectives

Rationale

Country and Sector Context: At approval, the country’s ten-year average annual GDP growth was 5.7 percent, supported by stability and prudent macroeconomic policies, and Zambia was now classified as a Lower Middle-Income country by the World Bank. However, electricity sector deficiencies were creating barriers for continued growth and poverty reduction: electricity demand had outpaced generation and network capacity expansion, leading to electricity supply shortages and its low reliability and quality. Over the decade of 2000-2010, power shortages caused a reduction of the per capita GDP growth rate by more than 0.1 percentage. At the same time, demand for electricity was estimated to grow at 4.6 percent annually in 2012-2020 and at 2.6 percent annually in 2020-2030. The Lusaka area would be affected the most. Improving electricity sector efficiency had become critically important.

Relevance to Government Strategies at approval. The Sixth National Development Plan (6NDP) for the period 2011 - 2015 was organized around the objective of “accelerating infrastructure development, economic growth and diversification, to promote rural investment and accelerate poverty reduction and to enhance human development”; and rehabilitating the existing generation, transmission and distribution facilities and networks was among the key plans for the electricity sector. The Government has promulgated several policies to pursue its energy sector objectives, including approving a revised National Energy Policy in 2007. The National Energy Strategy was seeking to enhance the security of supply and reinforce and extend transmission and distribution networks, among other targets.

Relevance to Government Strategies at closure. At closure, the Seventh NDP (7NDP) for the period 2016-2020, also had a focus on energy sector development through its Development Outcome 4 *Improved*



Energy Production and Distribution for Sustainable Development, which had four strategic directions: (i) enhancing generation, transmission, and distribution of electricity; (ii) enhancing strategic reserves and supply of petroleum products; (iii) promoting renewable and alternative energy; and (iv) improving electricity access in rural and peri-urban areas.

Relevance to the World Bank Group's (WBG's) Assistance Strategies at approval. The Joint Assistance Strategy (JAS) and the Country Partnership Strategy (CPS - March 14, 2013) highlighted energy as one of the key development focus areas. The reviewed Project was directly linked to the CPS objective of improving competitiveness and infrastructure for growth and employment. The CPS articulated seven guiding principles for the World Bank Group's engagement in Zambia, and in all of them, energy was given a prominent role.

Relevance to the WBG's Assistance Strategies at closure. The Project was aligned with the Country Partnership Framework (CPF) FY19–FY23, which supported electricity transmission under Focus Area 3 *Institutions and Resilience*, which had a key objective formulated as "Trade and infrastructure for Economic Integration and Shared Natural Resources Management with the Broader Regional Increases". Under this objective, the aspiration was for Zambia to become a regional hub for electricity trading, which would support enhanced energy security and avoided power shortages.

Other World Bank electricity sector operations in Zambia. The World Bank-financed Power Rehabilitation Project, which closed in December 2005, assisted ZESCO in rehabilitation of the three major hydropower generation plants and transmission and distribution systems in selected areas. The Increased Access to Electricity Services project, approved in May 2008, supported grid extensions, network reinforcements, rural electrification, and access expansion as well as improvement in efficiency and the quality of electricity services. The Kafue Town - Muzuma - Victoria Falls Regional Transmission Line Reinforcement Project, approved in May 2012, supported upgrading the transmission line backbone in project target areas from 220kV to 330kV to facilitate power transfer along the DRC-Zambia-Namibia corridor. The Zambia-Tanzania Interconnector Project, which was approved in 2018, would link the Southern African Power Pool and the East African Power Pool. While the previous World Bank electricity sector projects in Zambia invested in power generation, the transmission backbone, grid extensions, and access in rural areas, the reviewed Project is aiming at modernizing the transmission and distribution network in the priority area (the capital city), where projected increase in electricity demand is the highest, and so is the anticipated gap in electricity availability due to shortages.

At appraisal, the World Bank has a history of joint operations with the EIB in Zambia, namely, to support the improvements in ZESCO's governance and the tariff reform in the country. The two institutions were planning to continue the coordination of their support to electricity sector development, and the reviewed Project was designed in this context.

Thus, the relevance of objective is rated high.

Rating

High

4. Achievement of Objectives (Efficacy)



OBJECTIVE 1

Objective

To increase the capacity and improve the reliability of the electricity transmission system in the Lusaka area.

Rationale

The theory of change (ToC) for the Project was developed retrospectively for the ICR. It showed a direct, logical causal link from inputs to outputs, and to the PDO outcomes of the Project. The Project-financed construction and rehabilitation activities, supported by TA, would produce improved or expanded transmission and distribution networks in the Lusaka area (the outputs); and this would ultimately result in: (i) increased capacity and reliability of the Lusaka area transmission network and (ii) increased capacity and reliability of the Lusaka area distribution network (PDO outcomes). Related to the physical activities under the Project, the TOC is logical and clear and shows the results chain through the cause-effect relationships between inputs, outputs, and outcomes. An important shortcoming was the lack of intermediate outcomes in the TOC. While they were not needed for the physical activities (construction and rehabilitation works) in the Project, it would be useful if the ToC had illustrated how, through which processes, the TA activities were expected to lead to Project outcomes. However, the ToC is missing any links between the TA inputs and Project outcomes, which is considered to be one of its two minor weaknesses. In addition, the ToC's assumptions seem to be related to the sustainability of the overall Project outcomes and not to the achievement of Project objectives. For example, it would make sense to include an assumption related to the risks resulting from the parallel implementation of Project activities by IDA and the EIB, as well as to the risks of inefficient procurement of multiple contracts by the PIU. The ToC does not provide such information, and this constitutes its second minor weakness.

ORIGINAL PROJECT

Outcomes:

- At closure, the achieved transmission capacity amounted to 1,022 MVA, exceeding the original target of 900 MVA. Three transmission lines were upgraded from single to double circuit, which had a higher carrying capacity. As a result, the reliability of the power supply was improved.
- At closure, the unserved load in the Lusaka transmission network was fully removed, reaching the original target of zero percent of the shed peak load over the total peak load.
- At closure, the number of direct project beneficiaries was as per the original target, 1,200,000 people. The share of female beneficiaries was 51 percent, reaching the target, though the mechanism to track this detail lacks any sophistication telling us little about the impact on female beneficiaries.

Outputs:

- All four original transmission line upgrade targets (measured in kilometers) were reached: for the Leopards Hill -Roma; Roma -Lusaka West; Lusaka West – Coventry; and Waterworks - Lusaka South MFEZ. The total length of the transmission lines upgraded was 75 kilometers, reaching the target.



- The original target for the construction of the transmission line (five kilometers) was reached.
- The original substation capacity upgrade target of 270 MVA was reached. This was needed to upgrade the existing operational 88/33/11kV, 165MVA Waterworks substation to 132/33/11kV, 270MVA substation and hence to increase capacity with firm supply of 90MVA at 33kV and 60MVA at 11kV.
- Technical assistance. The training target was exceeded: 224 ZESCO staff were trained, compared to the target of 150 staff. The training courses were focused on procurement, financial management, substation/overhead line engineering design and project management. Studies for the preparation of new energy projects were completed (a binary “Yes-No” indicator). The RF is missing outcome indicators on technical assistance (TA), making it hard to evaluate the TA activities under Component 3. The ICR does not include any discussion of TA under efficacy analysis.

Overall, under PDO1, the Original Project achieved all of its expected outcomes and outputs. Thus, the objective is rated High.

Rating

High

OBJECTIVE 1 REVISION 1

Revised Objective

To increase the capacity and improve the reliability of the electricity transmission system in the Lusaka area.

Revised Rationale

Please see the discussion of the TOC under PDO1, Original Project.

At revision, there was no change in the PDO1, or related Project’s outcomes/outputs, or the targets. Under PDO1, the Revised Project achieved all of its expected outputs and outcomes. Thus, the objective is rated High.

Revised Rating

High

OBJECTIVE 2

Objective

To increase the capacity and improve the reliability of the electricity distribution system in the Lusaka area.

Rationale

Please see the discussion of the TOC under PDO1, Original Project.

PDO2 was to be achieved through the activities under Component 2, which was financed by the EIB, with the support from the Borrower, and with no funding from IDA. Disbursements under Component 2 were very



slow, and by the June 27, 2018 restructuring they only amounted to US\$2.3 million or 2.4 percent of the total financing for Component 2 at appraisal. Specifically, procurement for this component was only completed for four contracts out of the ten planned, with only one of them having reached the implementation stage; and the effectiveness of the other six contracts was yet to be achieved, as the bidding documents were still under preparation. (Restructuring Paper 2018, page 3-4)

Due to the slow progress, this component was dropped at the restructuring of June 27, 2018. The implementation of the dropped activities was to be continued under a separate non-WBG project, financed by the EIB.

Considering the low level of achievement of the expected outcomes under PDO2 by the time of Project restructuring in June 2018 and the cancellation of the PDO2 activities at restructuring, the rating of the achievement of original PDO2 outcomes is Negligible.

Note: the assessment of the Project's achievements under this objective in the ICR (ICR, pages 16-17) contradicts the facts reflected in the June 27, 2018 Restructuring Paper and the Bank's evaluation guidelines. Specifically, the ICR states that the cancelled (on June 27, 2018) Component 2 activities were implemented by Project closure with IDA financing - while it could not have happened under the Project according to the Project's Restructuring Papers, ISRs, and Aide Memoires - and further reports the outcomes of the now-separate EIB-financed project as the reviewed Project's achievements.

Rating
Negligible

OBJECTIVE 2 REVISION 1

Revised Objective

To increase the capacity and improve the reliability of the electricity distribution system in the Lusaka area.

Revised Rationale

Please see the discussion of the TOC under objective 1, Original Project.

The PDO2 was removed from the Project's overall PDO at the June 27, 2018 restructuring, and the Revised Project did not have PDO2.

PDO 2 under the Revised Project is not rated.

Revised Rating
Not Rated/Not Applicable

OVERALL EFFICACY



Rationale

Original Project:

For the Original Project, the overall efficacy is Modest. Under Objective 1, the Original Project achieved or exceeded all of its expected outputs and outcomes. Under Objective 2, the Original Project failed to achieve any of its objectives by closure. Overall, the original Project design only partly achieved its objectives.

Overall Efficacy Rating

Modest

Primary Reason

Low achievement

OVERALL EFFICACY REVISION 1

Overall Efficacy Revision 1 Rationale

Revised Project:

For the Revised Project, the overall efficacy is High. The Revised Project achieved or exceeded all of its expected outputs and outcomes.

Overall Efficacy Revision 1 Rating

High

5. Efficiency

I. Economic and Financial Analysis.

1. At appraisal.

The benefits included: (i) incremental consumption of electricity, as a result of the project (electricity consumption in the retail segment of Lusaka was expected to increase from 2,593 GWh to 3,548 GWh by 2020), and (ii) energy savings resulting from lower technical losses in the network. The benefits were estimated considering improvements in both the transmission and distribution networks (covering Component 1 and Component 2 outcomes together); the benefits would occur to end users and would not be possible without the distribution network improvements (Component 2). The benefit flow started the year following project completion. The costs included the Project costs of network rehabilitation and new construction and the costs of serving additional consumption. The analysis covered 30 years and used a discount rate of 10 percent. A willingness to pay study (for residential and commercial/industrial customers was implemented to assess the monetary value of the incremental consumption of electricity. The economic internal rate of return (EIRR) of the Project was estimated at 39 percent and the net present value (NPV) at US\$573 million.

2. At closure.

The benefits and the costs were estimated the same way as at appraisal, and the discount rate was the same, 10 percent. The economic analysis considered two scenarios: (i) without the distribution component as per the



2018 restructuring of the project, and (ii) with the distribution component, activities for which have continued to be implemented under EIB financing and were scheduled to be completed in 2026. For the first scenario (the Project after restructuring, without the distribution component), the EIRR was estimated at 45.5 percent and the NPV at US\$650 million. For the second scenario (original Project, with the distribution component) the EIRR was estimated at 41.2 percent and the NPV at US\$816 million.

Comparing the EIRRs at appraisal and at closure, the Project seems to be economically efficient: the EIRR for the Bank Project (not including the new EIB's project) at closure (45 percent) was higher than the EIRR at appraisal (39 percent). However, the comparison is not appropriate because the appraisal estimate was made for a larger project, before Component 2 was dropped. At the same time, using the EIRR calculated for a comparable project at closure is inappropriate either because it includes a non-Bank project. The appropriate comparison would be done for Component 1 only, both at appraisal and at closure. Such comparison is not available from the ICR.

II. Administrative efficiency.

The Project was able to achieve its objectives within the original financing envelope, without additional funding. The ICR reports that the project benefited from a full ownership by ZESCO (the implementation agency) and the PIU being embedded in ZESCO and staffed with full-time ZESCO employees, which supported knowledge-based and efficient decision making (ICR, page 19).

However, the original project design turned out to be deficient, with two agencies (the World Bank and the EIB) coordinating ambitious investments in a country where capacity limitation create barriers for the implementation of complex projects. The Project had to be restructured, cancelling Component 2, which equaled to 45 percent of the original financing. This constitutes a significant inefficiency, resulting from design weaknesses.

Component 3 (Project support and TA to ZESCO) costs increased from the original US\$10 million to US\$15.3 million after Component 2 was dropped. The only explanation provided in the ICR states that the US\$6 million were transferred from Component 1 "to Component 3 to finance the project supervision consultant through to the extended project closing date" (ICR, page 12). This seems to be a significantly higher amount than a two-year salary of one consultant.

In addition, the Project was extended twice, for the total of 36 months (three years). In relation to *the first extension*, the ICR reports that the Project's scope and cost were defined too generally at appraisal, and a comprehensive technical review (including the engineering designs, specifications, and bidding documents) had to be conducted in the first two years after effectiveness. This work was only completed in December 2015 (ICR, page 27). The Restructuring Paper provides additional details: the extension was needed to revise and consolidate the supply and installation of the procurement packages under Component 1 in the first three years of Project implementation, which led to increased complexity, resulting in a longer than anticipated time to complete procurement. Additional delays were caused by the unexpected geotechnical conditions at the Project sites. However, disbursement efficiency improved at the end of FY2017 and in FY 2018. (Restructuring Paper of June 27, 2018, page 3)

The second extension was explained by the following: the project encountered delays due to a protracted legal dispute related to land ownership at one of the sites, poor performance by one of the contractors that led to a termination of the contract, and a suspension of activities in another contract due to fatalities during implementation of the works (see details in the Safeguards section). Additionally, the Project was affected by COVID-19. (Restructuring Paper of February 4, 2021, page 3)



The Project's efficiency is rated as Modest.

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	✓	39.00	95.20 <input type="checkbox"/> Not Applicable
ICR Estimate	✓	44.50	85.50 <input type="checkbox"/> Not Applicable

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

6. Outcome

Relevance of objectives: High

Efficacy: Modest

Efficiency: Modest

Outcome: Moderately Unsatisfactory (a value of 3).

Revised Project:

Relevance of objectives: High

Efficacy: High

Efficiency: Modest

Outcome: Moderately Satisfactory (a value of 4).

With the Original Project rated as Moderately Unsatisfactory and the Revised Project rated as Moderately Satisfactory, based on the disbursed funds as a percentage of total funding at closure before and after the June 27, 2018 restructuring (US\$37 million or 34 percent before the restructuring and US\$71.07 million or 66 percent after restructuring), the Overall Project Outcome rating is Moderately Satisfactory:

$0.34 \times 3 + 0.66 \times 4 = 1.02 + 2.64 = 3.66$. This result reflects the benefit of the early restructuring of the project.

a. Outcome Rating



Moderately Satisfactory

7. Risk to Development Outcome

Financial. This risk could arise if ZESCO has insufficient financial resources to maintain the transmission assets that were upgraded or constructed by the Project. This risk is being mitigated considering ZESCO's continued efforts to improve its financial performance and maintain an operating profit (which ZESCO had achieved prior to Project approval). This will depend on a continued adjustment of tariffs to cost recovery level. Within the Project, this risk was mitigated by Component 3 activities, such as the support to energy sector policies and regulations. In particular, the Project financed a cost of service study, which is expected to form the basis of future tariff revisions by the electricity regulator (ICR, page 28).

Institutional. This risk could arise if ZESCO's institutional capacity turns out to be insufficient to support the maintenance of the assets upgraded or constructed by the Project. Institutional (Governance) risk was assessed as Moderate at appraisal and was further mitigated under Component 3 through the provision of training on procurement and financial management to ZESCO employees.

Economic. Continued economic development is expected to result in further increase in demand for electricity in the Lusaka area, putting additional pressure of the transmission network capacity. The ICR states that the Government and ZESCO needs to continue resource mobilization to ensure that Lusaka's electricity network has sufficient capacity considering economic growth and an increased population, and service reliability is maintained. (ICR, page 29)

8. Assessment of Bank Performance

a. Quality-at-Entry

The Project's design adequately responded to the need to improve the availability and reliability of electricity supply through the transmission assets' upgrade and expansion. The design was supported by strong Borrower ownership and ZESCO's sufficient financial and institutional capacity. The IDA credit was provided to the Government and on-lent to ZESCO, who also was the implementing agency for the Project; and this implementation arrangement supported the Project's sound decision making and efficiency.

However, the Project's design had weaknesses. *First*, as the ICR reported, the Project's scope and cost were defined with insufficient details at appraisal, and a comprehensive technical review (including the engineering designs, specifications, and bidding documents) had to be conducted in the first two years after effectiveness, causing implementation delays (ICR, page 27). *Second*, the Project suffered from the misalignment of the implementation progress of its two physical investment components (Component 1 and Component 2). The ICR noted that the misalignment could have been managed through a stronger coordination mechanism (ICR, page 27). As a result of a significantly delayed implementation of Component 2, financed by the EIB, the Project had to undergo level 1 restructuring when the PDO was changed and Component 2 was dropped. *Third*, the ICR concluded that risks associated with safeguards' oversight were underestimated at appraisal (assessed as Moderate). Fatalities and less severe incidents



that occurred during implementation highlighted the Occupational Health Services (OHS) deficiencies that required strengthening of capacity at both the PIU and Owner's Engineer. Stronger mitigation measures at appraisal could have helped to prevent the tragic accidents. (ICR, page 27)

Quality-at-Entry Rating

Moderately Unsatisfactory

b. Quality of supervision

The Project's supervision was complicated by a change in the Project's Task Team Leaders (TTLs) and the fact that both the TTLs and technical specialists were located outside of the country. However, regular supervision missions were conducted, Aide-memoires prepared, and 15 ISRs filed and used for the dialogue with key stakeholders. The Bank team adequately dealt with the supervision challenges that were encountered. Importantly, the misalignment between Component 1 and Component 2 was managed efficiently, and the decision to restructure the Project and drop Component 2 was made sufficiently early considering the disbursement schedule, thus avoiding inefficient use of Project's resources (ICR, page 28). This intervention by the Bank team allowed both the Bank and the EIB to continue the implementation of the ongoing activities without the need to coordinate them and supported the high efficacy of the revised Bank Project.

The ICR reported that the Bank team adequately dealt with the supervision challenges encountered, including fiduciary shortcomings, severe safeguards incidents and the Covid-19 pandemic. A key fiduciary challenge was the over-commitment of IDA resources, which later had to be reimbursed by the implementing agency. Further, tragic site fatalities led to the suspension of activities on one contract. During the Covid-19 pandemic, project activities continued, and the team used virtual supervision missions. (ICR, page 28)

Quality of Supervision Rating

Satisfactory

Overall Bank Performance Rating

Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

Overall, the Project's RF adequately reflected the logic of Project interventions and was sufficiently linked to the PDO. Most of the indicators were quantitative, and all of them were time-bound, had baselines and targets, and were attributable to the Project. There was a gender-disaggregated indicator. The RF adequately measured the project-level outcomes (number of sub-projects implemented, number of beneficiaries, energy and emission savings) and the outputs. The RF was adequate, with the exception of lacking outcome indicators on TA activities (only output TA activity indicators were included). Overall, the



RF is heavily focused on technical indicators measuring the improvements in transmission equipment and could include more developmental indicators (benefits to the economy and the population).

b. M&E Implementation

The ICR reported that the M&E implementation was effective. The PIU was embedded in ZESCO, which supported a satisfactory data collection and reporting. During the Mid-Term Review (MTR) preparation, the PIU showed responsiveness with regards to effective M&E implementation. In connection with the MTR mission, the PIU prepared a comprehensive report describing the context, the progress of implementation, including the challenges that were overcome. Some shortcomings were however identified in relation to fiduciary and safeguards aspects of the project. (ICR, page 24)

c. M&E Utilization

The ICR reported that the monitoring data generated by the PIU had been key in establishing the dialogue among key stakeholders. It informed key implementation decisions with regards to the infrastructure support and system operations, including the June 27, 2018 restructuring, and the February 4, 2021 restructuring. (ICR, page 25)

M&E Quality Rating

Substantial

10. Other Issues

a. Safeguards

Environmental and Social Safeguards. The Project was classified as Environmental Category B, and three safeguards policies were triggered: (i) the Operational Policy (OP) on Environmental Assessment (OP4.01) based on anticipated potential negative impacts under components 1 and 2; (ii) OP 4.11 for Physical Cultural Resources, because of the excavation activities under Component 2; and (iii) OP 4.12 for Involuntary Resettlement based on the assumption that planned construction of new substations may require land acquisition by ZESCO. An Environmental and Social Impact Assessment (ESIA) and an Environmental and Social Management Plan (ESMP) were prepared. A Resettlement Policy Framework (RPF) was prepared; it guided the development of three Resettlement Action Plans (RAPs). Completion reports for three RAPs (Lusaka 132 KV Ring, Waterworks and Greenfield) were prepared and disclosed by the PIU. A Grievance Redress Mechanism (GRM) was operational throughout project implementation. The implementation involved a high number of complaints (72 complaints were recorded in the GRM); and all of them were resolved. (ICR, page 25)

Three fatalities associated with project activities occurred during implementation. The first two happened in April 2020 during blasting activities under the contract for the 132kV Roma-Lusaka West Overhead Line. To allow for the root cause analysis (RCA) and implementation of corrective measures, ZESCO suspended



activities under the contract through September 2020. The third fatality occurred in May 2020 due to an asphyxiation accident with a contractor at a warehouse. In both cases, remedial action was taken at all levels, and based on the RCA undertaken with the Bank's support, ZESCO strengthened its occupational health and safety systems, including the establishment and filling of an OHS Officer position at the PIU and increasing site supervision staff. No further fatalities were recorded on the project. (ICR, page 25-26)

Other serious incidents during Project implementation were as follows: (i) a local community member was trapped by conductors during a de-stringing of a section of transmission line, (ii) a driver employed as a linesman rolled his vehicle off the road after hitting potholes at speed; (iii) a local community member was hit by rock fragments from a blast needed for implementation of Project activities; and (iv) a near-drowning accident occurred in an excavation pit due to vandalization of the security barricades. Following all these incidents, ZESCO undertook RCAs, based on which Safeguards Corrective Action Plans were developed with the support of the Bank. (ICR, page 26)

The ICR reported that the safeguards' risks were underestimated at appraisal (assessed as Moderate) and that fatalities and other serious accidents could have been prevented if stronger mitigation measures were designed at appraisal. (ICR, page 27) The Restructuring Paper of February 4, 2021 (page 4) reported that the fatal accidents revealed gaps in implementation of the safeguards standards.

b. Fiduciary Compliance

Financial Management

The ICR reported that throughout implementation, the PIU met the Interim Financial Report requirements of the project. The audits were completed on time and were unqualified. Disbursements were slow in the first three years of implementation (reflecting the initial delays with procurement of the main supply and install contracts), but the situation improved over time, and by project close, the IDA credit was almost fully disbursed, with the exception of the US\$0.95 million that remained undisbursed at closure. (ICR, page 27)

Procurement

The ICR reported that procurement was slow at commencement of the project due to the additional technical design and detailed engineering required, and the delayed hiring of the Owner's Engineer. Further delays were experienced when for the first main supply and install contract, the PIU combined IDA-financed and EIB-financed activities under a single procurement package. This was contrary to the procurement modalities defined at appraisal whereby Component 1 and Component 2 activities would be procured separately using World Bank and EIB procurement guidelines respectively. There were also gaps in contract management which led to the expiration of an advance guarantee by the insurance company on one of the main supply and install contracts, which led to ZESCO's filing a complaint in court. A final determination of the matter has not yet been reached. Given the previous experience of the World Bank working in the sector, it is disappointing these challenges were not better addressed at design.

c. Unintended impacts (Positive or Negative)



d. Other

11. Ratings

Ratings	ICR	IEG	Reason for Disagreements/Comment
Outcome	Satisfactory	Moderately Satisfactory	Mainly due to several weaknesses in Project efficiency, which lead to the Modest efficiency rating.
Bank Performance	Satisfactory	Moderately Satisfactory	Due to several weaknesses in Project design and multiple accidents including three fatalities on Project sites, which could have been mitigated better at design and during implementation.
Quality of M&E	Substantial	Substantial	
Quality of ICR	---	Modest	

12. Lessons

The following lessons were derived from the ICR with minor modifications by IEG (ICR, pages 30):

1. The modalities of coordination among Project’s co-financiers need to be discussed in detail and agreed upon among the donors and the Borrower prior to Project’s approval. Clear articulation of the added value of both contributions needs to be thoroughly covered in the design and the responsibilities linked in the relevant theory of change.
2. To improve the effectiveness of transmission investment projects, technical readiness for implementation needs to be enhanced. Key stakeholders need to work together to ensure that pre-engineering work and safeguards assessment are thorough to allow a fair and productive bidding process and a timely implementation start. In the reviewed Project, detailed engineering designs and specifications were only completed two years after project effectiveness.
3. Staffing the PIU with employees of the implementing agency is good practice for efficient implementation and sustainability of projects. ZESCO had extensive experience in implementing partner-financed projects of the scope and magnitude of the Project, and therefore integrating the unit within ZESCO’s operations was efficient, cost effective and led to greater ownership. Moreover, the technical expertise gained by the ZESCO staff will scale up ZESCO capabilities to oversee the electricity network and improve the sustainability of achieved outcome.



4. Large scale infrastructure projects are rarely likely to have 'Moderate' safeguards risks given the considerable complexity of works. Stronger emphasis on mitigation approaches to the threats at design stage is likely to limit the potential damage that comes from these activities.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR provided sufficient background information, a good justification of the PDO relevance, useful information regarding Project's M&E quality, Bank performance, safeguards and fiduciary compliance, and risk to development outcome. The ICR has internal consistency. The lessons learned are linked to the narrative. In addition, it is clear that the ICR drew on substantive background research.

However, the ICR had significant shortcomings, considering the IEG criteria for assessing ICR quality. The shortcomings mainly relate to such important issues as the analysis and ratings of the Project's Efficacy and the cost data. Specifically, the assessment of the Project's efficacy under PDO 2 *To increase the capacity and improve the reliability of the electricity distribution system in the Lusaka area* (ICR, pages 16-17) contradicts the facts presented in Project documents and does not comply with the Bank's evaluation guidelines. Specifically, the ICR states that the cancelled (on June 27, 2018) EIB-financed Component 2 activities were implemented by the Project after the cancellation using IDA financing – contradicting the Project's Restructuring Papers, ISRs, and Aide Memoires - and further reports the outcomes of the new EIB-financed project as the restructured Bank Project's achievements. In addition, the ICR incorrectly reports project costs, exaggerating disbursements under Component 2 and failing to report actual disbursements under this component at the time when it was dropped from the Project. This pushes up the disbursement rate, as well as exaggerates the Project's efficacy.

These weaknesses have created barriers to the validation of the ICR, for which it became necessary to review the Restructuring Papers, ISRs, and Aide Memoires for the Project. The conclusion IEG has reached is that the Efficacy analysis in the ICR is inconsistent with the information in Project documents and does not comply with the Bank's requirements. Therefore, the ICR quality is rated as modest.

a. Quality of ICR Rating

Modest

